University of Kent

UNIVERSITY OF KENT CANTERBURY CAMPUS

Disposal Sites BCD Environmental Summary Report

MAY 2024

PUBLIC

University of Kent

UNIVERSITY OF KENT CANTERBURY CAMPUS

Disposal Sites BCD Environmental Summary Report

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 70080896

DATE: MAY 2024

University of Kent

UNIVERSITY OF KENT CANTERBURY CAMPUS

Disposal Sites BCD Environmental Summary Report

WSP

Mountbatten House
Basing View
Basingstoke, Hampshire
RG21 4HJ

Phone: +44 1256 318 800

Fax: +44 1256 318 700

WSP.com

PUBLIC

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks				
Date	24 May 2024			
Prepared by	Alan Heatley			
Signature				
Checked by	David Dixon			
Signature	Dixon, David (UKDDD001) Digitally signed by Dixon, David (UKDDD001) DN: cn=Dixon, David (UKDDD001), ou=Active, email=David.Dixon@wsp.com Date: 2024.05.31 16:26:57 +01'00'			
Authorised by	Justin Sherlock			
Signature	Justin.Sherlock@wsp.com Digitally signed by Justin.Sherlock@wsp.com DN: cn=Justin.Sherlock@wsp.com Date: 2024.05.31 20:49:57 +01'00'			
Project number				
Report number				
File reference				

CONTENTS

QUALITY CONTROL 4

CONTENTS 5

1 INTRODUCTION 0

2 AGRICULTURAL LAND CLASSIFICATION 4

3 AIR QUALITY 6

4 HERITAGE CONSTRAINTS 8

5 MINERALS ASSESSMENT 11

6 NOISE CONSTRAINTS 12

7 PRELIMINARY ECOLOGICAL ASSESSMENT 13

8 BIODIVERITY NET GAIN 14

9 ANCIENT WOODLAND 15

10 FLOOD RISK AND DRAINAGE 27

11 GROUND CONDITIONS 28

12 NUTRIENT ASSESSMENT 29

13 CONCLUSIONS 31

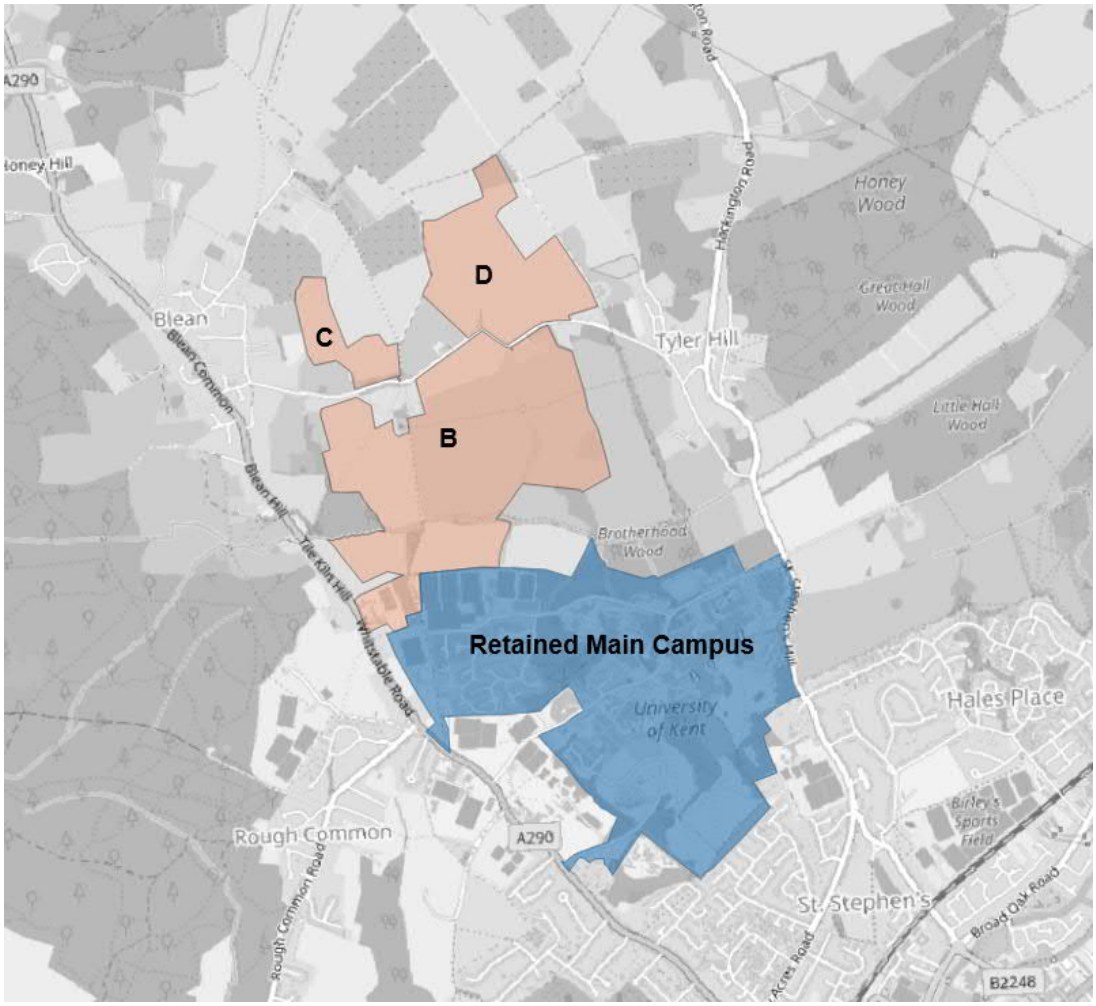
1 INTRODUCTION

BACKGROUND

WSP has been commissioned by the University of Kent (UoK) to provide transport and environmental advice for the development of proposals at various sites in and around their Canterbury Campus.

UoK originally submitted representations in support of an allocation for Sites BCD to Canterbury City Council (CCC) in August 2021 as part of the preferred options Local Plan Consultation (Regulation 18). Since that time the UoK have undertaken a masterplanning exercise that has identified capacity for circa 2000 residential units along with access and other supporting infrastructure as well as significant open space provision on Sites BCD. The location of Sites BCD is shown in **Figure 1**.

Figure 1: UoK Sites BCD



To help inform the development of the masterplan the identification of key environmental constraints was carried out by WSP in early 2021. The findings of the environmental studies were then considered when developing the masterplan for the site and that in turn provides the evidence base to inform the CCC Local Plan process. The intention has been to develop a comprehensive understanding of the environmental constraints that feed into the masterplan design process and to achieve this the following studies/reports have been undertaken/prepared:

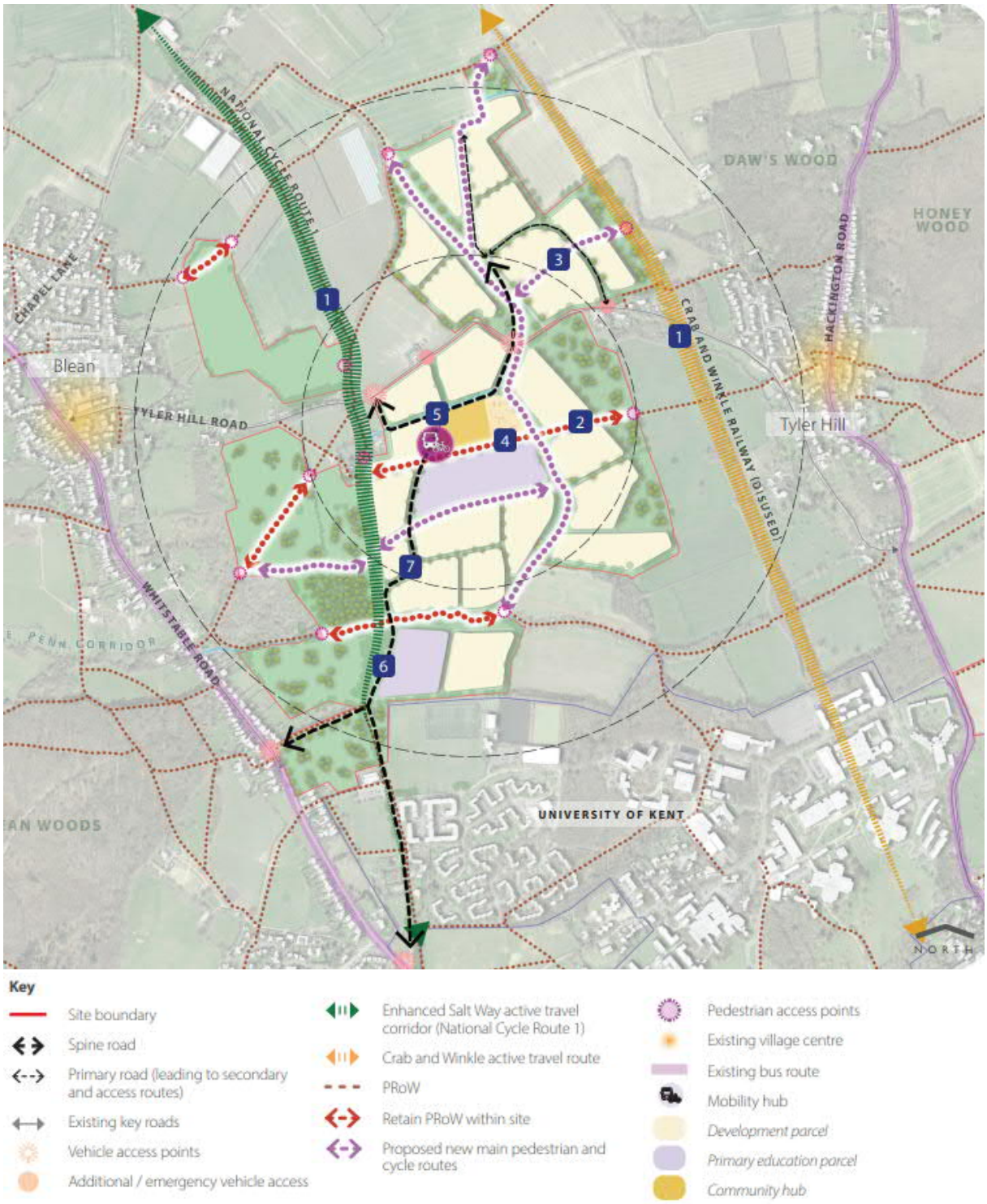
- Agricultural Land Classification Report
- Air Quality Constraints Report
- Heritage Constraints Report
- Minerals Assessment
- Noise Constraints Report
- Preliminary Ecological Assessment
- Initial Biodiversity Net Gain Study
- Flood Risk and Drainage Study
- Ground Conditions Preliminary Risk Assessments
- Nutrient Neutrality Assessment

The original studies were undertaken across a broader range of sites referred to as A to F and as shown in **Figure 2**.

Figure 2: UoK Sites Considered within original Study

The masterplan for sites BCD is shown in Figure 3.

Figure 3 – BCD Masterplan



This summary report has been prepared to set out the key findings of those environmental studies as they relate to Sites BCD to help inform the new Local Plan process commencing with the Regulation 18 local plan consultation (June 2024). It should be noted that the purpose of these studies has been to primarily identify potential environmental constraints. As the proposal progresses further through the planning process, more detailed survey work, analysis and assessment will be undertaken to seek to minimise the environmental consequences of the proposals through firstly avoiding impacts and where not possible mitigating or providing compensatory measures as appropriate. However, initial conclusions can be drawn to indicate whether the existing environmental features of the site present a significant obstruction to the development of the site as proposed.

2 AGRICULTURAL LAND CLASSIFICATION

Reading Agricultural Consultants carried out, on behalf of the UoK, an agricultural land classification study of the relevant land parcels in 2021 to inform the original Regulation 18 consultation representations. The associated report can be found in Appendix A.

Through a combination of desk study, site visit and sample testing the agricultural land classification and soil resources was investigated.

Agricultural land in England and Wales is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose long-term limitations on agricultural use. The principal physical factors influencing grading are climate, site and soil which, together with interactions between them, form the basis for classifying land into one of the five grades.

- Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use.
- Grade 2 is very good quality agricultural land, with minor limitations which affect crop yield, cultivations or harvesting.
- Grade 3 land has moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield, and is subdivided into.
    - Subgrade 3a (good quality land) and
    - Subgrade 3b (moderate quality land).
- Grade 4 land is poor quality agricultural land with severe limitations which significantly restrict the range of crops and/or level of yields.
- Grade 5 is very poor quality land, with very severe limitations which restrict use to permanent pasture or rough grazing.

Land which is classified as Grades 1, 2 and 3a in the ALC system is defined as best and most versatile agricultural land. No Grade 1 agricultural land has been identified within the boundary of the disposal sites with the majority being Grades 3a and 3b. The ALC total area of each grade across all the original plots A to F is given in **Table 1** below. Figure RAC/9118/2 in the ALC report found in **Appendix A** shows the distribution by grade across sites BCD.

Table 1: Agricultural Land Classification Areas

Grade	Description	Area (ha)	%
Grade 2	Very Good Quality	19.3	16
Grade 3a	Good Quality	55.9	45
Grade 3b	Moderate Quality	37.4	30
Non-agricultural		10.9	9
Total		123.5	100

As noted in the table above no Grade 1 agricultural land is affected by the Proposed Development at with the majority (75 %) being Grade 3a or 3b. Therefore, whilst it is acknowledged that there will be some loss of productive agricultural land the impact on the best and most versatile agricultural land is limited.

3 AIR QUALITY

A desk-based, qualitative study to identify the potential air quality constraints and opportunities associated with the development on Sites BCD was undertaken in 2021 and further work in 2023 to inform the original Regulation 18 consultation representations (see **Appendix B**).

Further work was then undertaken in 2023 to understand in more detail the impacts of the proposals on air quality. This work concluded that significant effects with the Proposed Development in place are unlikely when considering the predicted changes against forecast improvements in vehicle emissions and background concentrations. The residual effects are therefore considered to be not significant.

The Proposed Development should be designed to promote sustainable modes of transport including the provision of appropriate infrastructure for pedestrians and cyclists. Infrastructure for EVs should also be incorporated into the Proposed Development.

A Travel Plan will be prepared to accompany the submission of the planning application which will include a number of measures that are also likely to benefit general air quality within the vicinity of the Site.

Furthermore, it is understood that CCC will be undertaking a Habitats Regulation Assessment (HRA) to determine the effects of their emerging Local Plan on Habitats Sites (including Blean Complex SAC). If allocated, this will include the assessment of the Site. Depending on the results of the study, there is the potential that strategic mitigation may be proposed to reduce the effects of the emerging Local Plan on nearby Habitats sites.

It is considered that through the implementation of good construction practices embodied in a Construction Environmental Management Plan (CEMP) that the construction phase of the future development is unlikely to present a constraint to the development of the Sites providing that mitigation proportionate to the level of risk is provided (in accordance with guidance published by the IAQM).

There are other constraints associated with the operational phase of any future development that may require mitigation. The constraints primarily relate to:-

- Potential impacts within nearby AQMAs, in particular within the City Centre AQMA; and
- Potential impacts at nearby ecological sites including Blean Complex SAC, particularly as a result of needing to consider potential effects both ‘alone’ and ‘in-combination’ with other Plans and Projects as part of the HRA process.

However, it should be noted that there are opportunities available to minimise any operational phase effects on local air quality, notably encouraging EV uptake/infrastructure and measures to reduce the reliance on the private car (for example encouraging the use of public transport through use of a Travel Plan and provision of travel vouchers). With these measures in place, any adverse effects will be effectively reduced.

Furthermore, the potential exposure of future occupants/users to air pollution is considered unlikely to be a constraint to the development of the Site/s for the following reasons:

- Pollutant concentrations are likely to be below the relevant AQS objectives in the vicinity of the Site/s (based on CCC's monitoring results and background concentrations obtained from Defra); and
- Forecast reductions in vehicle emissions and background pollutant concentrations with time.

In conclusion, whilst there have been updates to policy and guidance in the intervening period none would have a significant effect on the findings of the work undertaken to date. It is noted that Policy DS16 – Air quality states that 'Proposals for major development in the district will be required to undertake an emissions mitigation assessment and cost calculation in line with the council's air quality guidance to demonstrate that the development will be air quality neutral and will not lead to a net increase in emissions'.

It is considered that at this stage significant effects on air quality from the Proposed Development are not considered likely. This would be subject to the implementation of effective avoidance and mitigation measures through the construction and operation phases. Such measures would be developed during the evolution of the scheme to ensure they are embedded within the design and carried through to construction as part of a comprehensive Construction Environmental Management Plan. The masterplan will be designed to help improve the air quality of the area as a whole.

4 HERITAGE CONSTRAINTS

A Heritage Constraints Appraisal (HCA) was undertaken in 2021 to inform the original Regulation 18 consultation representations (see **appendix C**). The assessment consisted of a preliminary scoping, outlining the likely constraints to future scheme options in terms of buried heritage assets (archaeological remains) and above ground assets (standing buildings of historic interest and their setting). Such assets, whether designated or not, are afforded protection and can represent a constraint to future development.

This high-level appraisal does not constitute an Archaeological or Historical Desk Based Assessment that might be submitted, where required, in support of a future planning application but provides a provisional review to inform early stage scheme development such as masterplanning.

Above Ground Heritage Assets/Designated Heritage Assets

Sites BCD and the associated access road contain seven nationally designated (protected) heritage assets, comprising:

- a scheduled monument of very high heritage significance: the remains of a dispersed medieval settlement and Roman building located on the western side of Site B
- three Grade II listed structures of high heritage significance: two assets at Hothe in the north-western part of the Main Campus: Hothe Court, a 16th century timber framed building, and the adjoining 17th century barn; and Beverley Farmhouse, a 15th century timber framed building located in the south-western part of the Main Campus.

The Site also lies within the boundary of six Conservation Areas (high heritage significance), as designated by the Local Planning Authority. There are also six listed buildings within 200m of the Site, and further designated heritage assets in the wider area. These include the Grade II* listed 13th century Church of St Cosmus and St Damian, of very high heritage significance, and the Grade II Church Cottage, of high heritage significance, which lie adjacent to Site B.

There is high potential for physical impact on the scheduled monuments and listed buildings within the Site where any below ground works, potentially including hard and soft landscaping, extend into the constraints area for either scheduled monument or into the curtilage of any of the listed buildings. There may also be physical impacts on listed buildings on listed buildings from vibration during any construction nearby and during the construction and operation of the proposed new access road.

The Site is high risk in respect of potential impacts to the setting of nearby statutorily and locally designated heritage assets, through the introduction of a significant quantity of built form into the primarily rural landscapes in Sites BCD, additional built form within the Retained University Campus, and the proposed new access road.

Given the nature of the potential constraints a heritage consultant is engaged to advise at the earliest stages of design and throughout the design process, to ensure that proposals minimise harm to the historic environment and where possible maximise opportunities to enhance the

significance of nearby heritage assets through considered design. A Heritage Statement would be required to support a future planning application. This would assess the impact of any proposals on the designated assets within the Site, and on the character and appearance of the conservation areas which extend into the Site and so influence the developing masterplan.

In addition, given the likely settings impacts on designated assets, an Historic Environment Desk Based Assessment (HEDBA), would be required for planning. This would assess the impact of any proposals on the setting of selected designated heritage assets located within and beyond the Site boundary. It would also assess the potential impact of the Proposed Development on buried heritage assets. Again, this would feed into the development of the masterplan with the aim of minimising impact upon heritage assets and where possible providing enhancement.

Prior written permission, known as Scheduled Monument Consent (SMC) is required from the Secretary of State for works physically affecting a scheduled monument. Such works include landscaping SMC is separate from the statutory planning process. On the basis of studies carried out to date it is, however, recommended that no works physically impacting either monument are proposed.

Buried Heritage Assets

The risk is assessed as high in terms of the presence of significant archaeological remains. As detailed above, the Site contains a scheduled monument (in Site B), designated due to its potential for archaeological remains of very high heritage significance. Furthermore, Site BCD is primarily greenfield, with high potential for archaeological survival, while significant parts of the Retained Main Campus have not previously been built on.

Based on this preliminary appraisal, the greatest archaeological potential (high) is for archaeological remains from the prehistoric period, Roman and later medieval periods, particularly on the western side of Site B. Remains from these periods, if present, would potentially be of medium or high/very high heritage significance.

The proposed construction of new buildings across the Site, excavation for new services and any cut below ground level for hard and soft landscaping and/or the proposed new access road would potentially truncate or completely remove any archaeological remains within their footprint, the severity of the impact depending on the depth of these below ground intrusions. Given that Sites BCD are primarily greenfield, while significant parts of the Retained Main Campus have not previously been built on, any archaeological remains in these areas are likely to lie just below the topsoil.

Given the size of the Site, and its potential for significant archaeological remains, the LPA archaeological advisor will almost certainly request that archaeological evaluation is carried out prior to the determination of planning consent. The evaluation would most likely consist of two phases: a geophysical survey followed by targeted trial trenching. The LPA archaeological advisor will be consulted as part of development of the proposals through the local plan process. Carrying out the evaluation at the earliest opportunity will ultimately help to inform the masterplan.

Depending on the results of the evaluation, further archaeological work may be required to mitigate the impact of the scheme. This might include the preservation in situ of remains of very high (national) significance, ie through modifications in design, with such remains most likely to be found within and around the scheduled monuments within the Site. Where this is not necessary, mitigation normally comprises preservation by record through targeted archaeological excavation or by watching brief(s) during groundworks for remains of lesser significance.

In conclusion it is recognised that there are a number of heritage and archaeological constraints that will influence the development of a masterplan for the site. For example, it is clear that any development that encroaches upon the Schedule Monument will be avoided. The setting of other heritage assets will be respected through careful design that acknowledges their heritage value and contribution to the local area. In terms of archaeology further evaluation will be required but where appropriate mitigation measures can be employed to minimise the potential for negative impacts upon any archaeological remains.

5 MINERALS ASSESSMENT

Mineral Resource Assessment in line with requirements of the Canterbury District Local Plan and the Kent Minerals and Waste Local Plan (MWLP) was undertaken in 2021 to inform the original Regulation 18 consultation representations (See Appendix D). The assessment considered all of the disposal sites totalling 125hectares (ha) of UoK land.

Given that areas of the disposal sites have been identified to lie within Mineral Safeguarding Areas (MSA) as part of the planning and disposal strategy it is required to produce a Mineral Resource Assessment (MRA) to identify whether the proposed non-mineral development will cause unnecessary sterilisation of mineral resources. This assessment included:

- An assessment of the geological information underlying the site from geological maps and a review of any pertinent available borehole data;
- Commentary on whether the proposal can be modified to avoid sterilisation of any mineral resources;
- Consideration of whether the mineral resource is of value or potential to warrant safeguarding;
- Where there is an overriding need for the development which outweighs safeguarding or prior extraction of the mineral deposit; and,
- Assessment of whether it is feasible and viable to extract the mineral resource.

The Proposed Development would sterilise the underlying land in the context of mineral extraction beneath Sites B, C and D. However, given the following reasons the sterilisation is considered to be justifiable:

- All of Area C, the majority of Area D and a section in the south of Area B could potentially be underlain with economically viable Brickearth deposits, a section of the southern western area of Area B could also be potentially underlain by River Terrace Deposits.
- Area C is located immediately adjacent to residential properties to the east and for the reasons given above in relation to Area A extraction is unlikely to be possible this close to residential properties.
- Whilst potentially possible to extract from Areas B and D, there is little requirement currently for Brickearth within the Kent area and the future requirement is likely to be met from other areas. If extraction did occur at Areas B and D it would delay the development of residential housing which is a priority as part of the Local Plan it would also create the requirement for backfilling of the quarried area which may present adverse financial implications to the development and delay the development programme.

Overall, given the overriding need for residential development, the difficulties in extracting from immediately adjacent to existing residential areas and the lack of requirement for Brickearth now and in the future it is considered that sterilisation of the mineral resource without prior extraction is acceptable at the site and so unlikely to present a constraint to development of the sites in question.

6 NOISE CONSTRAINTS

A desk based exercise to identify the potential noise constraints associated with potential future development of the disposal sites was undertaken in 2021 to inform the original Regulation 18 consultation representations (See **Appendix E**).

For the majority of the masterplan site there is unlikely to be any significant noise constraints for noise sensitive development (i.e. residential) although good acoustic design measures (e.g. carefully consideration of development layout/ orientation to screen external amenity areas (i.e. gardens)) should be considered for the area of the site located nearest to the A290.

For all sites depending on the nature and scale of the development, all sites have the potential to generate additional road traffic, which has the potential to create noise. This could adversely impact existing sensitive receptors and any new noise sensitive receptors constructed as part of the developments. The following principles will be applied when considering the design and location of new access roads:

- New roads should be located as far as reasonably practicable from existing sensitive receptors;
- Using cut and fill to screen sensitive receptors from roads as much as possible;

Good acoustic design principles will be followed during the masterplanning of new development. Noise sensitive development (e.g. residential) should be avoided near too busy roads where possible, and the offset distance between busy roads and sensitive development should be maximised as much as possible whilst acknowledging other development constraints. The layout and orientation of noise sensitive development closest to new roads should be carefully considered, for example by positioning external amenity space on the ‘quieter side’ of buildings. Therefore, it is concluded that there is unlikely to be any significant adverse impacts due to noise as a result of the Proposed Development of the site.

7 PRELIMINARY ECOLOGICAL ASSESSMENT

Through desk study and site walkover a Preliminary Ecological Assessment was undertaken in 2021 to inform the original Regulation 18 consultation representations (See **Appendix F**).

The desk study was undertaken using species and designated sites data from Kent and Medway Biodiversity Information Centre, publicly available data regarding statutory designated sites, Habitats of Principal Importance, in addition to the use of aerial imagery. The desk study identified 6 National Network sites (the closest being Blean Complex Special Area of Conservation; SAC, 200m to the west of Site B), 5 Sites of Special Scientific Interest; SSSI (the closest being West Blean and Thornden Woods which is directly adjacent to Site F), a single National Nature Reserve; NNR, Blean Woods NNR 200m to the west of Site B and three Local Nature Reserves (the closest being Tyler Hill Meadow 0.8km to the north of the Dismantled Railway Site. Seven non-statutory designated sites (Local Wildlife Sites; LWS) were also identified with CA15 Blean Pastures being located with in the boundary of Site B.

There are patches of broadleaved semi-natural woodland identified as Habitats of Principal Importance (HPI) within Site B. They are considered intrinsically important as they provide supporting habitat for a wide variety of animals and plants. It should be noted that patches of woodland are identified as ancient woodland, with this type of woodland being located within the Survey Area (Site B) and within the wider Study Area around the Disposal Sites.

Suitable habitat is present for protected and notable species and further survey will be carried out at an appropriate time (Planning application stage) for bats, badger; hazel dormouse; otter; water vole, breeding birds (focussing on farmland bird species such as skylark), reptiles, great crested newt, notable plants and invertebrates. No surveys are recommended for hedgehog, but instead precautionary methods of working are recommended to avoid effects on this species.

Retention of important habitats, including those designated within CA15 Blean Pastures LWS in Site B and HPI more widely, is recommended. Where important habitats are to be removed compensatory habitat creation would be required to offset losses and achieve biodiversity net gain. Implementation of recommendations within for avoidance, mitigation and enhancement measures would allow development of the Disposal Sites to proceed in compliance with relevant biodiversity legislation and planning policy, although it should be noted that the findings of further surveys will likely highlight further such requirements.

In line with the National Planning Policy Framework and local planning policy, recommendations to enhance the biodiversity value of the Disposal Sites have also been put forward for incorporation into development designs. It is noted that the Local Plan seeks to boost biodiversity putting it even more firmly at the heart of the plan as well as including 20% tree coverage within the masterplan area. This is recognised and to support this biodiversity will be central to the development of the site with ample land to accommodate biodiversity enhancement features within the masterplan.

8 BIODIVERITY NET GAIN

WSP carried out an initial Biodiversity Net Gain (BNG) assessment in relation to the Disposal Sites in 2021 to inform the original Regulation 18 consultation representations (See **Appendix G**). This has identified the next steps to be carried out through the next stages of the development of the masterplan to optimise opportunities in relation to BNG. For the Proposed Development to achieve both qualitative and quantitative BNG, the recommended next steps are as follows:

- Use the information presented in this report to inform the Proposed Development designs and landscape masterplan. This should include:
  - Retention and protection of ancient woodland (irreplaceable habitat) within the Proposed Disposal Sites (Site B);
  - Habitat enhancement or creation onsite within the Proposed Disposal Sites. The creation of habitats with high biodiversity value, on land currently supporting habitats with low biodiversity value, such as cereal crops, is likely to provide the greatest gain in AHBU, and assist in achieving an overall BNG for the Proposed Development; and
  - Maximised retention of existing hedgerow and trees across all Proposed Disposal Sites.
- Seek to deliver BNG by applying the mitigation hierarchy to avoid, mitigate and restore / recreate habitats within the operational footprint of the Proposed Development where possible.
- Stakeholder engagement. Communicate with stakeholders to jointly agreeing practical solutions that secure Net Gain in perpetuity and, if applicable, work with stakeholders to gather suggestions to identify candidate offset sites and providers.

To maximise the Proposed Development's potential to achieve an overall net gain for biodiversity, the ongoing development of the landscape masterplan should be undertaken in consultation with a BNG specialist. It is recommended that to achieve the Local Authority objective of 20% a full BNG assessment is undertaken on completion of final detailed landscape masterplan. This full BNG assessment should incorporate a Modular River Survey (MoRPh) to ensure condition of the water courses within the Proposed Disposal Sites are correctly accounted for. MoRPh surveys will be a requirement of the upcoming Biodiversity Metric 3.0. It should also be noted that biodiversity specialists will work with the masterplan designers to ensure that the BNG and other biodiversity requirements are embedded within the design.

9 ANCIENT WOODLAND

There is an area of Ancient Woodland that sits within the line of the proposed access to Site B and runs along the southern boundary of the site. Access from the south into the site is necessary as it represents the only safe and practical access to the site (Please refer to WSP Regulation 18 Transport Appraisal for further information on the need for the proposed access arrangements) with the overriding public benefits associated with accessing this site being clearly set out within the representation cover report. WSP have prepared an access strategy document which sets out the rationale for the access arrangement, notably in relation to the potential impacts upon the Ancient Woodland which is contained within Appendix H of this report.

A number of access options have been considered that seek to avoid the Ancient Woodland but these have proven unsuitable. As per Figure 1 of this report, the only existing point of connection to the public highway that is available to Sites BCD is Tyler Hill Road. This is a single carriageway road that connects the A290 Whitstable Road in the west with the village of Tyler Hill and Hackington Road in the east. In its current form Tyler Hill Road is not currently considered suitable to accommodate a significant increase in volumes of traffic. Furthermore, due to the University's limited frontage onto Tyler Hill Road, constrained highway boundary extents and multiple land ownerships fronting the highway, the University has limited potential within its own land ownership to improve the existing Tyler Hill Road.

Alternative routes into the site require access across land parcels in multiple ownerships which would be complex and costly to acquire to allow an access. Therefore, the outcome of studies into access options have concluded that the route from Site B through the Ancient Woodland is the only practical option available. Studies have therefore been carried out to minimise the impact upon the woodland by routing the access through the thinnest part of the woodland and minimising fragmentation. The Access Strategy document in Appendix H provides information on the route choice to minimise the impact on the Ancient Woodland.

Impact on Ancient Woodland

The Access Strategy document shows that all the options identified for the road involved passing through or close to (within the buffer zones of) the area of ancient woodland that runs parallel to the watercourse within Site B (Long Thin Wood). A review of the ancient woodland was undertaken by WSP's Arboriculture and Ecology Teams to identify the potential status of the woodland. This review, whilst it did not identify any trees that would indicate the woodland was ancient (defined as an area of woodland which has been continuously treed from before 1600AD) several trees were noted to have veteran characteristics, and these were located throughout the band of woodland. The alignment of the road was therefore guided towards the narrowest part of the woodland, located close to where the Crab and Winkle Way passes through.

The preferred access road alignment is shown in **Figure 4**. It should be noted that the remainder of the spine road is indicative to inform this stage of the masterplan. As this progresses, the alignment, notably north of the ancient woodland could change.

Figure 4 – Site BCD Preferred Access Road Alignment

Figure 5 provides an overview of the area of ancient woodland.

Figure 5 – Ancient Woodland Overview

While there is some variation in species and tree size through the woodland the general quality is relatively consistent, areas of note highlighted in **Figure 5** are:

A- The narrowest point of the woodland, the frequency of trees is reduced with gaps in the woodland canopy on the south of the stream.

B- Several coppiced ash with some veteran characteristics but also evidence of decline and disease

C- Area of greatest variety of tree species

This section of the woodland has a mixture of native broadleaf trees with ash and oak the dominant species. There is evidence of past management with coppice stools of predominantly ash. A more recent intervention was the planting of a hedge along the southern edge.

There is variation in the size of trees across the site and the largest oak are likely to be between 150 and 200 years old. There are several coppiced ash stools, the age of which is more difficult establish than maiden trees and those present are likely to be much younger than 300 years.

This woodland is shown in the Ancient Woodland Inventory[1], an inventory that records sites that have potential of being ancient. An ancient woodland is an area of woodland which has been continuously treed from before 1600AD. None of the trees within the woodland show signs of being

[1] https://naturalengland-defra.opendata.arcgis.com/datasets/a14064ca50e242c4a92d020764a6d9df/explore

in-situ prior to 1600AD. Other evidence such as maps or estate records would be needed to confirm the status of this woodland as being ancient woodland.

Irrespective of the status of the woodland as ancient or not it has several trees which have some veteran characteristics. Further assessment of these trees will be required in support of any planning application to ensure they are suitably considered in any potential work in or near the woodland.

This is a mature woodland with typically closed canopy and the woodland varies in width. The western end of the woodland has the lowest frequency of trees relative to the rest of the woodland and includes trees which have some veteran characteristics.

Section A (western side) has been identified as the least impactful section of the ancient woodland and as such was identified as the least impactful side to develop the access strategy. The review of this area identified that the ground flora of the woodland habitat was not very diverse or had much variation throughout the site. Notwithstanding this the road proposes a bridge across the woodland so that the woodland habitat can as much as possible be retained.

Compensation measures

The potential effect of routing the access through the Ancient Woodland is acknowledged. For the ancient woodland that is present within Site B, consideration should be given to the enhancement of the habitats, as well as the requirement for a buffer area around the woodland and watercourse to ensure no detrimental impacts occur during construction of the Proposed Development. This follows standing advice from Natural England on the protection of trees and woodlands. The inclusion of buffering habitats, including scrub and riparian planting will maximise the BNG benefits in these parts of the Proposed Development.

Effects on ecological features should be mitigated through application of the 'Mitigation Hierarchy'. CIEEM defines this as "…*everything possible to first avoid and then minimise impacts on biodiversity. Only as a last resort, and in agreement with external decision-makers where possible, compensate for losses that cannot be avoided. If compensating for losses within the development footprint is not possible or does not generate the most benefits for nature conservation, then offset biodiversity losses by gains elsewhere*"[2].

Ancient woodlands are defined as areas that have been continuously wooded since at least 1600 AD, and are complex, irreplaceable ecosystems that have taken hundreds of years to establish. Although the ancient woodland habitat within Site B has no doubt received significant human influence through adjacent agriculture, forestry and in more recent times leisure (due to the adjacent

[2] CIEEM (2019). Biodiversity Net Gain Good Practice Principles for Development. Available at: https://cieem.net/wp-content/uploads/2019/02/Biodiversity-Net-Gain-Principles.pdf

public right of way), it has maintained a continuous link between the ancient woodland present in the past by maintaining tree cover without conversion to another land use type (such as arable, pasture etc). It is therefore not possible to mitigate for removal of this habitat; it is only possible to provide compensation. Clearance of ancient woodland for development will lead to an irreversible alteration from which it could not be restored.

There are a few compensation options that could be used to mitigate the impacts of the loss of ancient woodland. The options would need to be discussed with Natural England to determine a preferred method, however, could consist of the following;

Ancient Woodland Soil Translocation

Although mitigation for ancient woodland loss is not possible, retaining its unique character through habitat compensation may be possible by retention of soils and other living materials, and their translocation to a new site where a new woodland would be established. A number of case studies where ancient woodland soil translocation has occurred have been reviewed below. Translocation could comprise the following:

- Salvaging of ancient woodland soil and applying it to land to become new woodland;
- Translocation of coppice stools to move trees directly between the existing ancient woodland and new woodland site; and
- Movement of leaf litter, dead wood and other materials to supplement the establishment of new woodland.

The size of the compensatory woodland would need to be agreed with Natural England at the planning application stage. Further detailed survey work would be required of the ancient woodland and consultation with the local planning authority, as well as a bespoke mitigation plan to cover issues associated with the irreplaceable nature of the habitats.

Woodland Planting Without Soil Translocation

If translocation techniques are not used then new woodland could be planted directly on land with little or no existing ecological value, such as arable land. In this case it is expected that a greater area would be required to compensate for the loss of ancient woodland characteristics.

Case studies of ancient woodland soil translocation within the UK have been reviewed, and the key techniques and practical considerations highlighted. In general, most translocation exercises appear to retain some of the ancient woodland plants present at the donor site, but the majority of cases report marked differences between donor and receptor woodland communities (e.g. species abundance, composition, structural characteristics). **Table 2** provides a summary of existing case studies within the UK for ancient woodland translocation.

Table 1 - A**ncient woodland soil translocation case studies**

Project	Location	Approx. Area Translocated	Type of woodland (donor)	Key lessons	Successful?	Reference
HS2 Phase 1	Warwickshire and Buckinghamshire	Not stated	▪ N/A	▪ Plan translocation around other ecological requirements (e.g. protected species issues). ▪ Involve a soil scientist and map to document donor site soils. To set a baseline and to inform translocation technique. ▪ Use a grid system to record donor site soils and transfer this system to the receptor site for translocated soils. ▪ Soils scientist and ecologist supervision of works is necessary. ▪ May need to involve forestry and horticulrual expertise when it comes to translocating coppice stools and shrubs. ▪ Seek to preserve the soil profile. ▪ Translocation of soil in turves is preferrable as it preserves soil horizons but may not always be possible.	▪ Not stated – but see Decoy Pond Wood case study below. ▪ Large literature on the practical methods for ancient woodland soil translocation.	HS2 Ltd. (2022)[3]

[3] HS2 Ltd. (2022). Ancient woodland soils translocation. HS2 Learning Legacy [on-line]

				▪ Monitor the moisture content of soils during translocation to prevent excessive drying. ▪ Management of water at receptor site is critical for soils with a high clay content to prevent 'smearing' of translocated soils. ▪ Soils were translocated during the dormant season for plant growth which is c. October to March.		
HS2 Phase 1 - Decoy Pond Wood	Buckinghamshire	1ha	▪ Holly, blackthorn, hazel, hawthorn, oak sp., privet sp., guelder rose, dog rose, honeysuckle, dogwood, wild service tree. ▪ Primrose, yellow archangel, lords and ladies, wood anemone, wood sedge, wild strawberry, germander speedwell, St Johns Wort sp., ribwort	▪ As above for HS2 in general. ▪ Project involved translocation of dead wood, clumps of ancient woodland indicator species (c. 1,000), trees and saplings (c. 40) and coppice stools (c. 130).	▪ Anecdotal evidence provided in HS2 et. al. (undated) of recovering ancient woodland ground flora plants e.g. bluebell.	HS2 Ltd, Fusion and RSK Habitats (Undated)[4]

[4] HS2 Ltd, Fusion and RSK Habitats (Undated). Learning Legacy Case-Study – Decoy Pond Wood

			plantain, bugle, wood speedwell.			
HS2 Phase 1 – Ashow Road	Warwickshire	0.1ha	▪ Intermediate between W10 and W8 woodland.	▪ As above for HS2 in general. ▪ Project involved soil translocation but also coppice stools, living trees and standing deadwood.	▪ Anecdotal evidence provided in HS2 et. al. (undated) of recovering ancient woodland ground flora plants.	LM, Three Shires Ltd, Lochart Garratt (Undated)[5]
National Highways/Balfour Beatty - A21 Tonbridge to Pembury	Kent	15.6ha	▪ Sweet chestnut coppice. ▪ NVC types W8 and W10.	▪ Soil waterlogging frustrated the process in places. ▪ Non-native invasive species and fly tipping of hazardous materials reduced the area of donor woodland available for translocation.	▪ Translocated coppice stools were mainly found to be healthy in the receptor site. ▪ Most receptor sites supported several of the donor site ancient woodland ground flora species (presence/absence not quantified).	Middlemarch Environmental Ltd. (July 2018)[6]
Biggins Wood - Channel Tunnel Rail Link	Kent	1.1ha	▪ Tree canopy consisted of ash, elm, pedunculate oak and	▪ After 25 years the project succeeded in transferring some shade-tolerant elements of the ground flora including over 70 per cent of its ancient woodland indicator species.	▪ After transference there was an increase in the abundance of open-ground species,	Buckley et al. 2016[8]

[5] HS2 Ltd, LM, Three Shires Ltd, Lochart Garratt (Undated). Learning Legacy Case-Study - Ashow Road
[6] Middlemarch Environmental Ltd. (July 2018) A21 Tonbridge to Pembury Dualling Habitat Translocation Monitoring Report - A Report to: Balfour Beatty / Highways England. Report No: RT-MME-115836-20-06

			field maple over hazel, with willow. ▪ Several wet springs were present.	▪ However, the new community was significantly different from the original, principally because soil conditions were drier ▪ In future translocations, the tree species should be carefully chosen to match the prevailing topographic and edaphic factors. ▪ Close spacing to hasten an initial canopy cover may be an advantage at first, but tree 'nurse' crops should be removed promptly once their purpose has been served. ▪ Location of the new site as close as possible to an existing wood may provide additional colonizing sources of propagules. ▪ The priority for the surviving field layers is to re-establish a canopy quickly, but once developed, the long, dark phase of woodland development can become a threat to woodland-edge species and others requiring more light.	reflected in the soil seedbank ▪ Some losses of ancient woodland indicator plants occurred. ▪ The comparatively drier conditions of the receptor strongly influenced the field layer. The planted trees also differed from that of the canopy in the donor wood. ▪ Tree canopy uniformity at the receptor site was much greater than in the donor wood.	
Brickhouse Wood – quarry	Kent	2.8ha	▪ Not stated	▪ Autumn translocation promoted better immediate recovery of forest species than spring translocation.	▪ After 10 yr the field layer at the receptor site still resembled	Craig et al. 2015[7]

[7] Craig, Buckley and Howell, (2015). Responses of an ancient woodland field layer to soil translocation: methods and timing. Applied Vegetation Science 18: 579–590

and landfill site development				▪ Soil placement caused less initial damage than loose-tipping. soils spread by bulldozer rather than loose-tipping had higher levels of total nitrogen and organic matter than loose-tipped areas but were more heavily compacted. ▪ Ancient woodland indicators (AWI) declined by an average of about one species per 4 x 4-m plot.	that of the donor, but with differences in abundance of some individual species.	

The following key messages were drawn from analysis of the studies.

- In general, most translocation exercises appear to retain some of the ancient woodland plants present at the donor site, but the majority of cases report marked differences between donor and receptor woodland communities (e.g. species abundance, composition, structural characteristics);
- In respect to translocated coppice stools, trees and ancient woodland field layer plants, the majority of the translocation projects appear to have achieved their aims as far as preserving the viability of translocated coppice stools, shrubs and the regeneration of ancient woodland field layer plants;
- The HS2 studies quantify the number of coppice stools, shrubs and trees that were translocated;
- There appears to be limited long-term monitoring of these sites. However, both HS2 and A21 projects occurred recently, within the last 5 – 10 years. The Buckley et al. study[8] used a 25-year monitoring period.

A rigorous monitoring strategy should accompany any new proposal for ancient woodland soil translocation. The Woodland Trust suggest that it should continue for a minimum of 25 years.

The Environment Act 2021 enacted a requirement for biodiversity net gain in the UK, which became mandatory for developments requiring planning consent in February 2024. In Kent, the net gain target is 20% above baseline value; more widely in the UK it is 10%. Ancient Woodland is considered by the biodiversity net gain process to be an irreplaceable habitat and thus a bespoke mitigation plan would need to be agreed with the local authority for its loss. It is likely compensation through new woodland establishment would need to be larger than that being lost, although the true area can only be established through negotiation with the LPA. A rigorous monitoring strategy should also accompany any new proposal for ancient woodland soil translocation. The Woodland Trust suggest that it should continue for a minimum of 25 years.

These proposals will be discussed with the local authority as the scheme progresses and a suitable strategy identified, developed and implemented.

[8] Buckley Helliwell, Milne and Howell, (2016). Twenty-five years on – vegetation succession on a translocated ancient woodland soil at Biggins Wood, Kent, UK. *Forestry-An International Journal of Forest Research Science* 90: 561–572

10 FLOOD RISK AND DRAINAGE

An initial flood risk study with particular interest to sites BCD was undertaken in 2021 to inform the original Regulation 18 consultation representations (see **Appendix I**).

The findings of this study identified that there are several watercourses located within and adjacent to the site, namely the River Great Stour (main river), ordinary watercourses9 such as the Sarre Penn and the River Stour Internal Drainage Board (IDB) drains.

A high-level flood risk assessment from all sources of flooding has been performed. Based on this assessment, surface water flood risk is considered to be the main source of flood risk to the assessment area based on the available information. A more detailed assessment and further consultation has been recommended to be carried out in the next design stages of the project.

The above flood risk and high-level drainage strategy shows that:

- There is no risk of fluvial flooding and artificial sources for any of the disposal sites.
- The risk from surface water varies from the different options and a detailed drainage assessment will be required at later stages to manage and mitigate generated overland flows and discharge rates.
- The risk from groundwater flooding ranges between low to medium so it would be required further assessment to understand is mitigation is required in those locations classified as ‘medium’ risk.
- Underlying geology across the sites indicate that London Clay formation and Harwich formation are dominant in this area which indicates that infiltration-based SuDS features might be feasible for all the disposal sites.

It is therefore considered that in terms of flood risk and drainage that with suitable mitigation to be identified as the masterplan develops there will be no impediment to the development of the site. Any flood or drainage issues can be successfully addressed to comply with the appropriate standards through provision of appropriate flood risk management and sustainable drainage systems as per Local Plan policy.

[9] Kent County Council LLFA is the responsible authority for ordinary watercourses that are outside of the internal drainage districts and main river networks.

11 GROUND CONDITIONS

Preliminary Risk Assessments (PRA) was undertaken in 2021 to inform the original Regulation 18 consultation representations (see **Appendix J** for Sites BCD PRAs). This PRA was undertaken in relation to all the sites originally considered to establish the potential risks associated with historical ground contamination or other related issues. Through a combination of desk study and site walkover a high level, non-intrusive investigation has been carried out which has concluded

- For sites B to D there is limited evidence of potential contaminant sources on the sites, and therefore ground contamination is unlikely to be a constraint to development.
- There appear to be some areas of potentially infilled land on Site B. These would require further investigation at a later stage of the development process but again at this stage are not considered a significant constraint.
- As the sites have been used for farming crops there is a potential of herbicides and pesticides to have impacted the shallow ground although the majority of the are sites expected to be generally clean and in terms of ground conditions suitable for development.

The findings of this initial investigation indicates that there is little evidence of the potential for contamination or other ground related conditions to cause significant detrimental issues as a result of the site development and should not inhibit future development of the site.

12 NUTRIENT ASSESSMENT

The land for development at Sites BCD is located within the catchment of the River Stour and is therefore hydrologically connected with the Stodmarsh Lakes, which are internationally designated as a Special Protection Area (SPA), a Special Area of Conservation (SAC) and a Ramsar site. The Stodmarsh Lakes are at risk of deterioration caused by eutrophication from elevated nitrogen and phosphorus levels in the River Stour.

The November 2018 European Court of Justice decision regarding the Habitats Directive has resulted in Natural England requiring all new developments containing overnight accommodation, and which are located in catchments affecting SPAs and SACs that are deteriorating because of nutrients, to demonstrate nutrient neutrality. Natural England has issued technical guidance for the Stodmarsh catchment to be used to assess whether developments are nutrient neutral.

The Proposed Development would generate large nitrogen and phosphorus loads that must be avoided, mitigated or offset prior to CCC being able to approve the development.

A range of avoidance, mitigation and offsetting options are available, with the phosphorus load presenting the greatest challenge. The strategic scheme in development by CCC may offer a solution that provides the greatest certainty and simplicity, but potentially at a higher cost than other approaches.

Further studies were carried out in 2023 to investigate the potential implications of the need for nutrient neutrality in relation to the Proposed Development (see **Appendix K**). This study concluded that the first occupation of all homes will occur after Canterbury Waste Water Treatment Works (WWTW) is upgraded by 2030 (although this could be earlier). This scenario would generate residual nutrient loads of 44.39kgTP/year and 497.95kgTN/year.

These would be mitigated through the delivery of one or more of the following mitigation approaches:

1. The purchase of Natural England Nutrient Mitigation Scheme credits, at a cost of £2.22M (based on a credit cost of £50,000 per kilogram of TP). Typically, the mitigation of a scheme through the purchase of TP credits would also fully mitigate the TN load although this would need to be confirmed once the scheme is operational.
2. The conversion of existing agricultural land to a low nutrient land use, potentially in conjunction with Options No 1 and/or 3.
3. The use of an on-site WWTW with the residual TP and TN loads fully mitigated in conjunction with Options 1 and/or 2.

CCC's Arcgis map provides an updated catchment for the Stodmarsh SPA/SAC/Ramsar site that now excludes the Sarre Penn tributary. The UoK's Proposed Development is located almost entirely within the Sarre Penn catchment and all surface water flows from the scheme could be diverted to it. The foul flow strategy for the development will be decided at a later date but one option is the construction of a cutting-edge on-site WWTW that would provide a higher standard of treatment compared to Canterbury WWTW. The high-quality treated effluent could be discharged to the Sarre

Penn catchment (subject to consultation with and agreement from the Environment Agency). The Sarre Penn catchment bypasses the Stodmarsh site and joins the Great Stour just upstream of Plucks Gutter. The Great Stour is tidal at this point and there is a possibility that the highly treated effluent discharged from the development, since diluted into and through the Sarre Penn and Great Stour, could be conveyed upstream by tidal flows towards or beyond the Stodmarsh site. Hydrological modelling could be used to investigate / establish whether any discharge from the development would have a measurable impact on nutrient loads to the Stodmarsh protected site. A precedent for this approach has been set in the December 2020 report for Dover City Council entitled 'Impact of Dambridge WWTW on Nutrient Load in Stodmarsh SSSI'.

Based upon the strategy identified and options presented above it is anticipated that the Proposed Development can achieve nutrient neutrality and so comply with policy.

13 CONCLUSIONS

WSP has been commissioned by the University of Kent to identify the environmental constraints associated with the Disposal Sites BCD at University of Kent, Canterbury Campus. A number of studies have been undertaken since 2021 that have provided a comprehensive understanding of the key environmental features and issues that will influence the evolution of a masterplan for the development of the Disposal Sites. This will allow environmental issues to be central to design decisions going forward seeking solutions that not only minimise impacts upon the existing environment but also promotes opportunities to enhance the existing environment.

Whilst it is acknowledged that a number of environmental features/constraints are associated with the site it is considered that many of these are not a barrier to the successful development of the site. Significant issues such as the presence of ancient woodland and heritage assets are acknowledged but it is considered that with careful design and a comprehensive, focussed mitigation and compensation strategy that these features can be successfully incorporated into a sensitive masterplan for the site.

Next Steps

Environmental Information

Extensive environmental information has been gathered on the proposed site and the relevant surrounding area to establish potential environmental constraints and those issues that need to be taken into consideration during the development of the proposals. As demonstrated within this report a good understanding of the baseline environmental features has been developed and the potential constraints and opportunities associated with these have been identified.

Next steps include maintaining the robustness of this environmental information and ensuring it remains up to date. Therefore, all environmental information will be kept under review to ensure it remains robust and up to date noting any significant changes to the baseline environment that may influence the Proposed Development. Those subject areas that are subject to greater potential change such as ecology may be subject to further update survey work as required.

Regulation 19 Consultation

The next stage of the Local Plan process is the Regulation 19 Consultation where representations can be made on the proposed amendments to the Local Plan prior to its examination by the Planning Inspector. In advance of this a further review of the environmental information held will be undertaken so that any representations are fully supported by up to date relevant environmental information. It is anticipated that additional desk based and site walkover surveys will be undertaken, particularly with regard to biodiversity, to achieve this.

APPENDIX A

Agricultural Land Classification Report

READING AGRICULTURAL CONSULTANTS

April 2021

WSP UK Limited
Agricultural Land Classification and Soil Resources

at

University of Kent, Canterbury Campus

Beechwood Court,
Long Toll, Woodcote,
RG8 0RR

01491 684 233
www.reading-ag.com

Table of Contents

1 INTRODUCTION.....1

2 SITE AND CLIMATIC CONDITIONS 2

3 AGRICULTURAL LAND QUALITY 5

APPENDIX 1: MAFF SURVEY REPORT AND MAP AREA F.....13

APPENDIX 2: LABORATORY DATA.....34

APPENDIX 3: SOIL PROFILE SUMMARIES AND DROUGHTINESS CALCULATIONS.....36

APPENDIX 4: PHOTOGRAPHS.....54

FIGURE RAC/9118/1: OBSERVATION MAPPING.....60

FIGURE RAC/9118/2: AGRICULTURAL LAND CLASSIFICATION.....61

FIGURE RAC/9118/3: AREAS SURVEYED.....62

1 Introduction

1.1 Reading Agricultural Consultants Ltd (RAC) is instructed by WSP UK Limited on behalf of the University of Kent to investigate the Agricultural Land Classification (ALC) and soil resources of five parcels of land around the University's Canterbury Campus, referred to herein as Areas A to E (and shown on Figure RAC/9118/3), by means of a detailed survey of soil and site characteristics. A sixth site, Area F, has been surveyed previously on behalf of the former Ministry of Agriculture, Fisheries and Food (MAFF) and the report of survey and map[1] are attached as Appendix 1.

1.2 Guidance for assessing the quality of agricultural land in England and Wales is set out in the MAFF revised guidelines and criteria for grading the quality of agricultural land (1988)[2], and summarised in Natural England's Technical Information Note 049[3].

1.3 Agricultural land in England and Wales is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose long-term limitations on agricultural use. The principal physical factors influencing grading are climate, site and soil which, together with interactions between them, form the basis for classifying land into one of the five grades.

1.4 Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use. Grade 2 is very good quality agricultural land, with minor limitations which affect crop yield, cultivations or harvesting. Grade 3 land has moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield, and is subdivided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). Grade 4 land is poor quality agricultural land with severe limitations which significantly restrict the range of crops and/or level of yields. Grade 5 is very poor quality land, with very severe limitations which restrict use to permanent pasture or rough grazing.

1.5 Land which is classified as Grades 1, 2 and 3a in the ALC system is defined as best and most versatile agricultural land.

---

[1] **ADAS (1995).** *Canterbury District Local Plan, RUR 12: Land at Eastdown Farm, ALC Map and Report. Ref. 2002/051/95*

[2] **MAFF (1988).** *Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land*. MAFF Publications.

[3] **Natural England (2012).** *Technical Information Note 049 - Agricultural Land Classification: protecting the best and most versatile agricultural land*, Second Edition.

1.6 As explained in Natural England's TIN049, the whole of England and Wales was mapped from reconnaissance field surveys in the late 1960s and early 1970s, to provide general strategic guidance on agricultural land quality for planners. This Provisional Series of maps was published on an Ordnance Survey base at a scale of One Inch to One Mile (1:63,360). The Provisional ALC map shows Area A as urban land; Areas B and D as mostly Grade 3 with some Grade 2 in the north; Area C as Grade 2; and Areas E and F as Grade 3. However, TIN049 explains that:

> *"These maps are not sufficiently accurate for use in assessment of individual fields or development sites, and should not be used other than as general guidance. They show only five grades: their preparation preceded the subdivision of Grade 3 and the refinement of criteria, which occurred after 1976. They have not been updated and are out of print. A 1:250 000 scale map series based on the same information is available. These are more appropriate for the strategic use originally intended …"*

1.7 TIN049 goes on to explain that a definitive ALC grading should be obtained by undertaking a detailed survey according to the published guidelines, at an observation density of one boring per hectare. This survey follows the detailed methodology set out in the MAFF guidelines.

2 Site and climatic conditions

General features, land form and drainage

2.1 The areas surveyed collectively extend to around 123.5ha of agricultural land primarily in arable use. Area A is under permanent grass and is cut for hay annually.

2.2 Area A is located on the south side of the campus and is bounded by woodland and University Road to the north-west, Chaucer College Canterbury to the west, residential properties off Harkness Drive and Durnford Close to the south and south-east and other grassland to the east and north-east. The land slopes down from around 42m above Ordnance Datum (AOD) in the north-west to 30m AOD in the south.

2.3 Areas B, C and D are located north of the campus. Area B is on the south side of Tyler Hill Road and otherwise bounded to the west mainly by woodland and to the east by a dismantled railway line. A brook runs through the south of Area B, aligned east to west, and is at the lowest altitude of 50m AOD. The valley sides fall to the brook from around 65m AOD from the south and 70m AOD from the north. The landform is undulating across the slopes.

2.4 Areas C and D are on the north side of Tyler Hill Road and are largely level at around 75m and 70m AOD respectively. The parcels are otherwise surrounded by agricultural land, other than the eastern boundary of Area D which is also marked by the dismantled railway.

2.5 Areas E and F are located east of the campus, off Canterbury Hill, on the south side of a private road. The Areas are separated by Little Hall Farm. Other agricultural land is to the south of both Areas and Brickhouse Wood is additionally to the east of Area F. The topography is gently sloping from 66m AOD in the west of Area E to 55m AOD in the east of Area F. The slopes direct water to channels to the south-east which carry water toward the Westbere Marshes.

Agro-climatic conditions

2.6 Agro-climatic data for the site have been interpolated from the Meteorological Office's standard 5km grid point data set for each Area at a representative altitude, and are given in Table 1. The Areas are moderately dry and moderately warm to warm. Moisture deficits are large to very large. The numbers of Field Capacity Days are smaller than average for lowland England (150) and are favourable for providing opportunities for agricultural field work. There is no overriding climatic limitation to agricultural land quality.

Table 1: Local agro-climatic conditions

Parameter	**Value**					
Area	A	B	C	D	E	F
Altitude (AOD)	35m	60m	75m	70m	65m	55m
Grid Reference	TR14005910	TR13376049	TR12656098	TR13236129	TR14526017	TR15316053
Average Annual Rainfall	632mm	631mm	634mm	631mm	642mm	636mm
Accumulated Temperatures >0°C	1,456 day°	1,428 day°	1,410 day°	1,416 day°	1,422 day°	1,433 day°
Field Capacity Days	132 days	131 days	130 days	130 days	133 days	132 days
Average Moisture Deficit, wheat	121mm	118mm	117mm	117mm	117mm	118mm
Average Moisture Deficit, potatoes	117mm	114mm	112mm	113mm	112mm	114mm

Soil parent material and soil type

2.7 The underlying geology across Areas B to F mapped by the British Geological Survey[4] is the London Clay Formation, consisting of blue-grey or grey-brown, slightly calcareous, silty clay with some layers of sandy clay.

2.8 The north of Area A is underlain by the Harwich Formation which comprises silty or sandy clays, silts and fine- to coarse-grained sands, some of which are gravelly or flinty. In the south of Area A is the Lambeth Group, including variable sequences of clay with sands and gravels, minor limestones and lignites (brown coal) and occasional sandstone and conglomerate (cemented pebbles).

2.9 Superficial deposits of glacial head are mapped across Areas A, C and D, on the highest ground of Area B and in pockets across Areas E and F. The deposit includes poorly sorted rock debris and clayey material, with inclusions of gravel, sand and clay depending on the source.

2.10 The Soil Survey of England and Wales soil association mapping[5] (1:250,000 scale) shows Area A to be urban. The Park Gate association is mapped to the south of the brook in Area B, across all of Area C and in a band across Area D. Park Gate soils are mainly silty clay loam throughout and are moderately permeable but affected by high winter water tables. Profiles are seasonally waterlogged and may vary from Wetness Class (WC) II to IV.

2.11 The Wickham 4 association is mapped north of the brook in Area B, in the south of Area D and at Areas E and F. In Kent, Wickham soils are mostly fine silty in the upper horizons and overlie clay subsoils which become progressively greyer. Profiles are waterlogged for long periods (WC IV).

2.12 The Windsor association is mapped in the north of Area D. The main soils include clay loam or clay topsoils over stoneless, light brownish grey to brown clay subsoil horizons. The subsoils are mottled and waterlogged for long periods (WC IV)[6].

[4] **British Geological Survey (2021).** *Geology of Britain viewer*, http://mapapps.bgs.ac.uk/geologyofbritain/home.html

[5] **Soil Survey of England and Wales (1984).** *Soils of South East England* (1:250,000), Sheet 6

[6] **Jarvis et al (1984).** *Soils and Their Use in South East England*. Soil Survey of England and Wales Bulletin 15, Harpenden.

3 Agricultural land quality

Soil survey methods

3.1 In total, 100 soil profiles were examined across Areas A to E using an Edelman (Dutch) auger at an observation density of approximately one per hectare in accordance with the established recommendations for ALC surveys[3]. An additional 18 observations were made with an auger in Area F in surveys undertaken previously. Collectively, eight soil pits were also excavated to examine subsoil structures and stone content. The locations of observations are indicated on Figure RAC/9118/1. At each observation point the following characteristics were assessed for each soil horizon up to a maximum of 120cm or any impenetrable layer:

- soil texture;
- significant stoniness;
- colour (including localised mottling);
- consistency;
- structural condition;
- free carbonate; and
- depth.

3.2 Eight topsoil samples were submitted for laboratory determination of particle size distribution, pH, organic matter content and nutrient contents (P, K, Mg). Results are presented in Appendix 2.

3.3 Soil Wetness Class (WC) was determined from the matrix colour, presence or absence of, and depth to, greyish and ochreous gley mottling, and slowly permeable subsoil layers at least 15cm thick, in relation to the number of Field Capacity Days at the location.

3.4 Soil droughtiness was investigated by the calculation of moisture balance equations (given in Appendix 3). Crop-adjusted Available Profile Water (AP) is estimated from texture, stoniness and depth, and then compared to a calculated moisture deficit (MD) for the standard crops wheat and potatoes. The MD is a function of potential evapotranspiration and rainfall. Grading of the land can be affected if the AP is insufficient to balance the MD and droughtiness occurs.

Agricultural land classification and site limitations

3.5 Assessment of agricultural land quality has been carried out according to the MAFF revised ALC guidelines (1988)[2]. Soil profiles have been described according to Hodgson (1997)[7] which is the recognised source for describing soil profiles and characteristics according to the revised ALC guidelines.

3.6 Agricultural land quality across the six areas is mainly limited by wetness and/or droughtiness, with small areas limited by topsoil stone content. Most of the collective area is classified as Subgrades 3a and 3b, with the remainder as Grade 2. Photographs taken at the site are given in Appendix 4.

3.7 It should be noted that due to the marginal differences in the numbers of FCD applicable to each Area, the criteria for assigning wetness classes also differs. When estimating WC from depths to gleying and slowly permeable layers, Areas with 130 FCD (C and D) are eligible for WC I to WC III, whilst those with 131 FCD or more (A, B, E and F) may also be of WC IV.

Area A (132 FCD)

3.8 Topsoil is mainly medium clay loam, with some heavy silty clay loam at the highest altitude in the north of the area. The average topsoil depth is 35cm and the colour is very dark or dark greyish brown (10YR3/2 or 10YR4/2 in the Munsell soil colour charts[8]). The topsoil is non-calcareous and slightly stony and was in a moist but mostly friable condition at the time of survey. In the north of the area where the topsoil is heavier, few ochreous mottles are present.

3.9 Upper subsoil is mostly brown (10YR5/3) heavy clay loam or clay which is stoneless to very slightly stony. The consistency is firm and compressed when augered in the west of the area. There are common to many ochreous mottles, which indicate intermittent wetness in the soil; the upper subsoil is gleyed. The structure is weak and the subsoil is slowly permeable. The profiles are of WC III or IV. One profile of WC III with medium clay loam topsoil is limited by wetness to Subgrade 3a. One profile of WC III with heavy silty clay loam topsoil and one profile of WC IV with medium clay loam topsoil are limited by wetness to Subgrade 3b.

3.10 A separate soil type is identified in the south of Area A. The topsoil is as for the bulk of the site but is much deeper, with no distinct change within 52cm depth. The subsoil comprises slightly stony, brown (10YR4/3) medium silty clay loam which passes to dark yellowish brown (10YR4/4)

[7] **Hodgson, J. M. (Ed.) (1997).** *Soil survey field handbook.* Soil Survey Technical Monograph No. 5, Silsoe.

[8] **Munsell Color (2009).** *Munsell Soil Color Book*. Grand Rapids, MI, USA

at depth. There are common but faint ochreous mottles. The structure becomes weaker at depth where permeability is reduced. The profile is assessed as WC II and is limited to Grade 2 by both droughtiness and wetness.

Area B (131 FCD)

3.11 Four soil types have been identified across Area B.

Type 1

3.12 South of the brook, the topsoil consists of brown (10YR4/3) medium silty clay loam of 32cm average depth. The topsoil is very slightly stony, non-calcareous and most was moist at the time of survey, but friable. Upper subsoil is brown (10YR5/3) silty clay loam which is stoneless to very slightly stony, non-calcareous and gleyed, with common to many ochreous mottles. The upper subsoil frequently compressed. The structure is weakly developed, but moderately permeable. Where able to be observed, lower subsoil is greyish brown (10YR5/2) clay which is stoneless, gleyed, firm and slowly permeable.

3.13 In the south-east of Area B, groundwater was encountered at depths of 60cm and 90cm and just south of the brook the auger became stuck. Correlating with the mapped Park Gate association, soil profiles are of WC II or III and limited by wetness to Grade 2 or Subgrade 3a respectively.

Type 2

3.14 In the centre of Area B, the topsoil comprises medium or heavy clay loam, with the lighter texture generally found at higher altitudes. The topsoil is dark greyish brown (10YR4/2), non-calcareous and has an average depth of 32cm. Stone content is slight but ranges from around 2% by volume to 15%, comprising hard stones, a majority of which are smaller than 2cm.

3.15 Upper subsoil is brown (10YR5/3) clay which is slightly stony, non-calcareous and gleyed. The consistency is firm and permeability is poor. The clay typically becomes greyer with depth (10YR5/2) and continues to be slowly permeable. Profiles are of WC IV and limited by wetness to Subgrade 3b.

Type 3

3.16 In a central band aligned north to south, the soil profiles include topsoil of medium clay loam or sandy loam of 31cm average depth. The topsoil is dark greyish brown (10YR4/2) and slightly stony, at 8-15% by volume. The surface layer of soil has a well developed structure which is moderately developed underneath, and forms fine subangular blocky peds. Roots and worms are common. The consistency is friable.

3.17 Upper subsoil is brown (10YR4/3 or 10YR5/3) heavy clay loam or sandy clay loam. The stone content is estimated at 10-15%. Ochreous mottles are common. Few roots grow into the upper subsoil which has a moderately developed, fine subangular blocky structure and is permeable. Lower subsoil horizons comprise heavy clay loam, clay or occasionally sandy clay which is mostly brown (10YR5/3). The consistency is firm. The lower subsoil has a medium and coarse angular blocky structure and is slowly permeable. Soil profiles are of WC II or III. The main limitation is droughtiness due to the increased proportions of sand and stone throughout the profiles. Profiles are limited to Subgrade 3a.

Type 4

3.18 Mainly in the east but also across central areas, the topsoil is dark greyish brown (10YR4/2) medium clay loam or sandy loam of 30cm average depth. Most of the topsoil is slightly stony although in the east is moderately stony, with 20-30% by volume (estimated from a small pit), including large stones over 6cm.

3.19 The upper subsoil is variable in texture, ranging from sandy clay loam to loamy coarse sand, with the coarser textures generally found further east. The colour is brown to yellowish brown (10YR4/3, 10YR5/3, 10YR4/4 or 10YR5/4) and the stone content is estimated at around 25-30% by volume. The stone content hindered further observation of most profiles which were observed to an average depth of 47cm. In the far east of Area B, the lower subsoil stone content is assumed to increase significantly as per the mapped soil association. In central areas, ochreous mottles are common in the upper subsoil.

3.20 In the north-west of Area B is a distinct lower subsoil is present, comprising stoneless greenish grey (10Y6/1) fine sandy silt loam. The horizon is mottled and gleyed, but permeable, suggesting localised fluctuating groundwater.

3.21 Profiles of this soil type are limited by droughtiness. Most are limited to Subgrade 3b. In the east of Area B there is an equal topsoil stone limitation. The central profiles are limited less severely to Subgrade 3a by droughtiness, with one point also affected by high groundwater.

<u>Area C (130 FCD)</u>

3.22 One soil type is present across Area C. The topsoil is dark greyish brown or brown (10YR4/2 or 10YR4/3) medium silty clay loam, to an average depth of 30cm. The topsoil is stoneless to very slightly stony, at 0-2%. The topsoil has is medium subangular blocky structure and the consistency is friable.

3.23 The upper subsoil comprises light brownish grey or pale brown (10YR6/2 or 10YR6/3) heavy silty clay loam. Upper subsoil is stoneless and has a medium angular blocky structure. The consistency is friable and soil breaks down into peds under little pressure. The upper subsoil contains ochreous mottling and ferri-manganiferous nodules and is gleyed, but permeable.

3.24 Where a lower subsoil boundary is identified, it also comprises light brownish grey or pale brown (10YR6/2 or 10YR6/3) heavy silty clay loam. However, the lower subsoil has a firm consistency and a coarse angular blocky structure. Soils within this horizon are slowly permeable restricting drainage through the soil profile.

3.25 These profiles are assessed as WC II or III depending on the presence and depth of a slowly permeable layer. WC II soils are limited to Grade 2 by soil wetness and most are limited by droughtiness to the same extent. Soils assessed as WC III are limited by soil wetness to Subgrade 3a.

Area D (130 FCD)

3.26 Two similar soil types have been identified and are present in roughly equal proportions.

Type 1

3.27 The topsoil is medium silty clay loam in the west and medium or heavy clay loam in the east. The colour is grey, greyish brown or brown (10YR4/1, 10YR4/2, 10YR5/2 or 10YR5/3) and the average depth is 33cm. The topsoil is stoneless to very slightly stony and is non-calcareous. The structure is weakly developed and forms firm medium subangular blocky peds. Large clods were also extracted from the pit but break into peds under only mild pressure.

3.28 Frequently across Area D, subsoil horizons compressed when disturbed by the auger. The upper subsoil is heavy silty clay loam or heavy clay loam, most of which is brown (10YR5/3), or in the south-east, the upper subsoil is pale brown to light yellowish brown (10YR6/3 or 10YR6/4) clay. The upper subsoil is often stoneless and has a weakly developed medium angular blocky structure, but is friable. Ochreous mottles are commonly present. Most upper subsoil horizons are gleyed, but all are permeable.

3.29 Lower subsoil horizons are similar but also include yellowish brown and light brownish grey colours (10YR5/4 and 10YR6/2). Occasionally the consistency becomes firm and the subsoil is slowly permeable from around 70cm depth. Most profiles are assessed as WC II. Where there is no gleying and no slowly permeable layer, the profiles are WC I. All profiles of this soil type are limited to Grade 2 by both soil wetness and droughtiness.

Type 2

3.30 The topsoil is typically medium silty clay loam in the west and medium clay loam in the east with occasional heavier textures. The average depth is 29cm. The colour is greyish, including dark grey, dark greyish brown and greyish brown (10YR4/1, 10YR4/2 and 10YR5/2). The topsoil is non-calcareous, slightly stony in the west and stoneless in the east.

3.31 Upper subsoil is most often clay, although heavy (silty) clay loam is also present. In the west the upper subsoil is primarily brown (10YR5/3) and in the east also includes grey, yellowish brown and pale brown (10YR5/1, 10YR5/6 and 10YR6/3). There are few to no stones and common mottles. Most of the upper subsoil horizons are gleyed.

3.32 Lower subsoil horizons comprise brown or yellowish brown (10YR5/3 or 10YR5/6) clay that contains common or many mottles. The consistency is firm and the structure is poor and slowly permeable. Profiles are assessed as WC III and are limited by wetness to Subgrade 3a.

Area E (133 FCD)

3.33 Three soil types are present at Area E.

Type 1

3.34 In the east, the topsoil is dark brown, dark greyish brown or brown (10YR3/3, 10YR4/2 or 10YR4/3) medium clay loam, to an average depth of 25cm. Stone content is very slight to moderate, at 5-17%. The topsoil has a friable consistency and a medium subangular blocky structure.

3.35 Upper subsoil comprises greyish brown or light greyish brown (10YR5/2 or 10YR6/2) clay. Stone content is very slight, at 2-5%. The upper subsoil has a coarse angular blocky structure and a firm consistency. Clay within this horizon is mottled throughout and is gleyed and slowly permeable.

3.36 Lower subsoil is grey (10YR5/1 or 10YR6/1) clay. Stone content is moderate at 20% and restricted the auger observation. The lower subsoil also has a coarse angular blocky and a firm consistency. Soils are gleyed and slowly permeable. Profiles within this soil type are assessed as WC IV and are limited to Subgrade 3b by soil wetness.

Type 2

3.37 Soils within Type 2 are identified mainly in the west of Area E and largely match soil Type 1 with a dark greyish brown (10YR4/2) medium clay loam topsoil and a mottled slowly permeable grey (10YR5/1) dominantly clay lower subsoil. However upper subsoil comprises medium clay loam,

heavy clay loam or clay which is permeable. All profiles are assessed as WC III and are limited to Subgrade 3a by soil wetness.

Type 3

3.38 The soil profile at Observation 6 comprises medium clay loam topsoil over sandy clay loam upper subsoil, in turn over medium sandy loam, becoming coarser with depth. This profile is assessed as WC I and limited to Grade 2 on droughtiness. However this soil type and the associated grading is an isolated occurrence and therefore has been incorporated into the surrounding Subgrade 3a unit.

Area F (132 FCD)

3.39 The Area was surveyed by ADAS in 1995[1]. Two soil types were identified.

Type 1

3.40 Topsoil comprises medium clay loam with an average depth of 26cm. The colour is dark grey, dark greyish brown or greyish brown (10YR4/1, 10YR4/2 or 10YR5/2) and the stone content is low at 0-5%.

3.41 Upper subsoil horizons mainly comprise slightly stony, grey or greyish brown (10YR5/1, 2.5Y5/1 or 10YR5/2, 2.5Y5/2) heavy clay loam. There are common to many mottles. The upper subsoil is gleyed and slowly permeable, with a weak coarse subangular blocky structure.

3.42 Lower subsoil consists of clay which is similarly grey or greyish brown and slightly stony. The consistency is firm. The lower subsoil is gleyed and slowly permeable. Soil profiles are assessed as WC IV which results in a wetness limitation to Subgrade 3b.

Type 2

3.43 The topsoil is mainly brown (10YR4/3) sandy loam of 25cm average depth. Stone content is low at 0-5% by volume.

3.44 Upper subsoil is commonly brown (10YR4/3 or 10YR5/3) medium sandy loam which is often mottled and gleyed. The stone content is estimated at 5-10%.

3.45 Lower subsoil textures include sandy clay loam, sandy loam, loamy sand and coarse sand which varies in colour from brownish yellow (10YR6/8) to light greyish (2.5Y6/2 and 2.5Y7/2) and light olive grey (5Y6/2). The subsoil horizons have a moderately developed coarse angular blocky or subangular blocky structure. The consistency is friable to very friable.

3.46 Profiles of this soil type are most affected by droughtiness and are limited to Subgrade 3a.

3.47 The ALC distribution across each of the areas is shown in Figure RAC/9118/2 and the total area of each grade is given in Table 2. The areas referred to above and in the profile summaries are shown in Figure RAC/9118/3.

Table 2: ALC areas

Grade	Description	Area (ha)	%
Grade 2	Very good quality	19.3	16
Subgrade 3a	Good quality	55.9	45
Subgrade 3b	Moderate quality	37.4	30
Non-agricultural		10.9	9
Total		123.5	100

Appendix 1: MAFF survey report and map Area F

A1

Canterbury District Local Plan
RUR 12: Land at Eastdown Farm
ALC Map and Report
March 1995

AGRICULTURAL LAND CLASSIFICATION REPORT

CANTERBURY DISTRICT LOCAL PLAN
RUR 12: LAND AT EASTDOWN FARM

1. Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for a number of sites in the Canterbury district of Kent. The work forms part of MAFF's statutory input to the Canterbury District Local Plan.

1.2 The land at Eastdown Farm comprises 18.0 hectares of land at Eastdown Farm, near Broad Oak, to the north of Canterbury, Kent. An Agricultural Land Classification (ALC) survey was carried out during March 1995. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 19 borings and two soil inspection pits were described in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose a long term limitation on its use for agriculture.

1.3 The work was carried out by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.

1.4 At the time of the survey the land was under permanent grass.

1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas and extent are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading. This survey supersedes previous ALC surveys on this land.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Agricultural Land
3a	5.0	27.8
3b	13.0	72.2
Total area of site	18.0	100.0

1.6 Appendix I gives a general description of the grades, subgrades and land use categories identified in the survey. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and the expected level and consistency of yield.

1.7 Two areas of Subgrade 3a, good quality land, occur on this site. Land of this quality is primarily limited by soil droughtiness because of sandy textured soils. To the south-west of Eastdown Farm, part of the land is limited by soil wetness. Slowly permeable clay occurring at moderate depths within the soil profile results in imperfect soil drainage conditions.

1.8 The majority of land has been classified as Subgrade 3b, moderate quality, because of severe soil wetness and workability limitations. Medium clay loam topsoils are directly underlain by slowly permeable clay subsoils resulting in poor soil drainage conditions. Consequently, this land will be subject to significant restrictions in the flexibility of cropping, stocking and cultivations.

2. Climate

2.1 The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

2.2 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall, as a measure of overall wetness, and accumulated temperature, as a measure of the relative warmth of a locality.

2.3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met. Office, 1989). The details are given in the table below and these show that there is no overall climatic limitation affecting the site. However climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations. The soil moisture deficits are relatively high, in a regional context, at this locality. High soil moisture deficits increase the likelihood of soil droughtiness limitations.

Table 2 : Climatic Interpolation

Grid Reference	TR 155 606
Altitude (m)	55
Accumulated Temperature (degree days, Jan-June)	1433
Average Annual Rainfall (mm)	635
Field Capacity (days)	132
Moisture Deficit, Wheat (mm)	118
Moisture Deficit, Potatoes (mm)	114
Overall Climatic Grade	1

2.4 No other local climatic factors, such as exposure or frost risk, are believed to affect the site.

3. Relief

3.1 The site is relatively flat, lying at approximately 55 to 60 m AOD.

4. Geology and Soil

4.1 The relevant geological sheet (BGS, 1974) maps the entire site as London Clay. Drift deposits of head are shown to cover discrete areas in the centre and west of the site.

4.2 The most recent published soils information (SSEW, 1983) shows the entire site to comprise soils of the Wickham 4 Association. These soils are described as 'slowly permeable seasonally waterlogged fine loamy over clayey and fine silty over clayey soils associated with similar clayey soils, often with brown subsoils'. The soils for this area are similarly described in the Soils of Kent (SSEW, 1980).

4.3 Detailed field examination found two broad soil types, the predominant being that of poorly drained heavy textured soils. The secondary soil type comprises well drained coarse textured sandy soils.

5. Agricultural Land Classification

5.1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map.

5.2 The location of the soil observation points are shown on the attached sample point map.

Subgrade 3a

5.3 Land classified as Subgrade 3a, good quality, is associated with soils derived from the drift deposits of head. Most of this mapping unit is restricted by moderate soil droughtiness limitations, arising from sandy textured soils. Medium sandy loam and, occasionally, sandy clay loam topsoils overlie medium sandy loam upper subsoils. These overlie variably textured lower subsoils, namely medium or coarse sandy loams, loamy medium sands and sandy clay loams. Profiles are generally gleyed within 40 cm. However, the interaction between the coarse textured soils and low field capacity days means that these profiles are still assessed as being well drained (Wetness Class I). These profiles are stoneless to very slightly stony, containing 0-5% total flints by volume.

5.4 From Pit 2, which represents such profiles, it could be seen that the medium sandy loam horizons are moderately structured; loamy medium sands are well structured. It was also observed that the changeable nature of the lower subsoils (namely the variable soil textures and depth to/thickness of the loamy medium sand horizon) resulted in a range of soil moisture deficits.

5.5 The interaction between the soil textures and relatively dry local climate meant that Pit 2 was classified as Subgrade 3a. This land is subject to moderate soil droughtiness limitations because of a relatively broad loamy medium sand horizon which occurred at moderate depth within the soil pit profile. The auger borings within this vicinity and in the west of the site were originally assessed as Grade 2. This grade was assigned because of slight soil droughtiness limitations.

5.6 This difference in grading arose because, in comparison to Pit 2, the loamy medium sand occurred at greater depths within the auger borings. Consequently, such profiles would retain slightly more profile available water than Pit 2. However, the variable nature of these sandy profiles, as highlighted by Pit 2, means that all of the land comprising sandy textured soils has been classified as Subgrade 3a. The moderate restriction in the amount of profile available water may result in lowered levels and consistency of crop yields from risk of drought stress.

5.7 In the west of the site, part of the Subgrade 3a land is restricted by soil wetness limitations. These arise from heavier textured soils. Non-calcareous medium clay loam topsoils and upper subsoils pass into slowly permeable clay subsoils at approximately 45 to 50 cm depth. The occurrence of clay at moderate depths within the soil profile results in imperfect soil drainage conditions (Wetness Class III). This drainage impedance is indicated by gleying from the surface. The interaction between the relatively light topsoil textures and soil drainage status with the prevailing climate means that this land is subject to some restrictions on the flexibility of cropping, stocking and cultivations.

Subgrade 3b

5.8 Land classified as Subgrade 3b, moderate quality, is restricted by significant soil wetness and workability limitations. This land is associated with soils derived from the underlying London Clay. Non-calcareous medium clay loam topsoils overlie heavy clay loam and clay upper subsoils and clay lower subsoils. All subsoils are slowly permeable causing poor soil drainage conditions. This is indicated by gleying from the surface. Such profiles, which are represented by Pit 1, are assigned to Wetness Class IV. The interaction between the topsoil textures and poor soil drainage conditions with the prevailing local climate means that this land is classified as Subgrade 3b. This land will be subject to significant restrictions on the flexibility of cultivations, cropping and stocking. Soil wetness will also adversely affect crop growth and development.

SOURCES OF REFERENCE

British Geological Survey (1974), Sheet No. 273, Faversham, 1:50,000 Series (solid and drift edition).

MAFF (1988), Agricultural Land Classification of England and Wales : Revised guidelines and criteria for grading the quality of agricultural land.

Meteorological Office (1989), Climatological Data for Agricultural Land Classification.

Soil Survey of England and Wales (1980), Bulletin No. 9, Soils of Kent and accompanying maps at 1:250,000.

Soil Survey of England and Wales (1983), Sheet 6, Soils of South East England, 1:250,000 and accompanying legend.

APPENDIX I

DESCRIPTION OF THE GRADES AND SUBGRADES

Grade 1 : Excellent Quality Agricultural Land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 : Very Good Quality Agricultural Land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural or horticultural crops can usually be grown but on some land of this grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1 land.

Grade 3 : Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When more demanding crops are grown, yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a : Good Quality Agricultural Land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b : Moderate Quality Agricultural Land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass, or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4 : Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or the level of yields. It is mainly suited to grass with occasional arable crops (eg. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 : Very Poor Quality Agricultural Land

Land with severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religous buildings, cemetries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including: private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm woodland.

Agricultural Buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg. polythene tunnels erected for lambing) may be ignored.

Open Water

Includes lakes, ponds and rivers as map scale permits.

Land Not Surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above, eg. buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will be shown.

APPENDIX II

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

Definition of Soil Wetness Classes

Wetness Class	Duration of Waterlogging[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years.[2]
II	The soil profile is wet within 70 cm depth for 31-90 days in most years **or**, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.

[1]The number of days specified is not necessarily a continuous period.
[2]'In most years' is defined as more than 10 out of 20 years.

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents :

Soil Abbreviations - Explanatory Note

Soil Pit Descriptions

Database Printout - Boring Level Information

Database Printout - Horizon Level Information

SOIL PROFILE DESCRIPTIONS : EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database. This uses notations and abbreviations as set out below.

Boring Header Information

1. **GRID REF** : national 100 km grid square and 8 figure grid reference.

2. **USE** : Land use at the time of survey. The following abbreviations are used.

ARA : Arable	**WHT** : Wheat	**BAR** : Barley
CER : Cereals	**OAT** : Oats	**MZE** : Maize
OSR : Oilseed rape	**BEN** : Field Beans	**BRA** : Brassicae
POT : Potatoes	**SBT** : Sugar Beet	**FCD** : Fodder Crops
LIN : Linseed	**FRT** : Soft and Top Fruit	**FLW** : Fallow
PGR : Permanent Pasture	**LEY** : Ley Grass	**RGR** : Rough Grazing
SCR : Scrub	**CFW** : Coniferous Woodland	**DCW** : Deciduous Wood
HTH : Heathland	**BOG** : Bog or Marsh	**FLW** : Fallow
PLO : Ploughed	**SAS** : Set aside	**OTH** : Other
HRT : Horticultural Crops		

3. **GRDNT** : Gradient as estimated or measured by a hand-held optical clinometer.

4. **GLEY/SPL** : Depth in centimetres (cm) to gleying and/or slowly permeable layers.

5. **AP (WHEAT/POTS)** : Crop-adjusted available water capacity.

6. **MB (WHEAT/POTS)** : Moisture Balance. (Crop adjusted AP - crop adjusted MD)

7. **DRT** : Best grade according to soil droughtiness.

8. If any of the following factors are considered significant, 'Y' will be entered in the relevant column.

MREL : Microrelief limitation	**FLOOD** : Flood risk	**EROSN** : Soil erosion risk
EXP : Exposure limitation	**FROST** : Frost prone	**DIST** : Disturbed land
CHEM : Chemical limitation		

9. **LIMIT** : The main limitation to land quality. The following abbreviations are used.

OC : Overall Climate	**AE** : Aspect	**EX** : Exposure
FR : Frost Risk	**GR** : Gradient	**MR** : Microrelief
FL : Flood Risk	**TX** : Topsoil Texture	**DP** : Soil Depth
CH : Chemical	**WE** : Wetness	**WK** : Workability
DR : Drought	**ER** : Erosion Risk	**WD** : Soil Wetness/Droughtiness
ST : Topsoil Stoniness		

Soil Pits and Auger Borings

1. **TEXTURE** : soil texture classes are denoted by the following abbreviations.

S :	Sand	**LS** :	Loamy Sand	**SL** :	Sandy Loam
SZL :	Sandy Silt Loam	**CL** :	Clay Loam	**ZCL** :	Silty Clay Loam
ZL :	Silt Loam	**SCL** :	Sandy Clay Loam	**C** :	Clay
SC :	Sandy Clay	**ZC** :	Silty Clay	**OL** :	Organic Loam
P :	Peat	**SP** :	Sandy Peat	**LP** :	Loamy Peat
PL :	Peaty Loam	**PS** :	Peaty Sand	**MZ** :	Marine Light Silts

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction will be indicated by the use of the following prefixes:

F : Fine (more than 66% of the sand less than 0.2mm)
M : Medium (less than 66% fine sand and less than 33% coarse sand)
C : Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content: **M** : Medium (<27% clay) **H** : Heavy (27-35% clay)

2. **MOTTLE COL** : Mottle colour using Munsell notation.

3. **MOTTLE ABUN** : Mottle abundance, expressed as a percentage of the matrix or surface described.

F : few <2% **C** : common 2-20% **M** : many 20-40% **VM** : very many 40% +

4. **MOTTLE CONT** : Mottle contrast

F : faint - indistinct mottles, evident only on close inspection
D : distinct - mottles are readily seen
P : prominent - mottling is conspicuous and one of the outstanding features of the horizon

5. **PED. COL** : Ped face colour using Munsell notation.

6. **GLEY** : If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.

7. **STONE LITH** : Stone Lithology - One of the following is used.

HR :	all hard rocks and stones	**SLST** :	soft oolitic or dolimitic limestone
CH :	chalk	**FSST** :	soft, fine grained sandstone
ZR :	soft, argillaceous, or silty rocks	**GH** :	gravel with non-porous (hard) stones
MSST :	soft, medium grained sandstone	**GS** :	gravel with porous (soft) stones
SI :	soft weathered igneous/metamorphic rock		

Stone contents (>2cm, >6cm and total) are given in percentages (by volume).

8. **STRUCT** : the degree of development, size and shape of soil peds are described using the following notation:

degree of development	**WK** : weakly developed **ST** : strongly developed	**MD** : moderately developed
ped size	**F** : fine **C** : coarse	**M** : medium **VC** : very coarse
ped shape	**S** : single grain **GR** : granular **SAB** : sub-angular blocky **PL** : platy	**M** : massive **AB** : angular blocky **PR** : prismatic

9. **CONSIST** : Soil consistence is described using the following notation:

L : loose **VF** : very friable **FR** : friable **FM** : firm **VM** : very firm
EM : extremely firm **EH** : extremely hard

10. **SUBS STR** : Subsoil structural condition recorded for the purpose of calculating profile droughtiness : **G** : good **M** : moderate **P** : poor

11. **POR** : Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'Y' will appear in this column.

12. **IMP** : If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropiate horizon.

13. **SPL** : Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.

14. **CALC** : If the soil horizon is calcareous, a 'Y' will appear in this column.

15. Other notations
APW : available water capacity (in mm) adjusted for wheat
APP : available water capacity (in mm) adjusted for potatoes
MBW : moisture balance, wheat
MBP : moisture balance, potatoes

SOIL PIT DESCRIPTION

Site Name : CANTERBURY LP RUR 12 Pit Number : 1P

Grid Reference: TR15306060
Average Annual Rainfall : 635 mm
Accumulated Temperature : 1433 degree days
Field Capacity Level : 132 days
Land Use : Permanent Grass
Slope and Aspect : degrees SE

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 29	MCL	10YR41 00	2	5	HR	C				
29- 55	HCL	25Y 51 00	0	8	HR	M	WKCSAB	FR	M	
55- 80	C	25Y 51 61	0	8	HR	M	WKCSAB	FM	P	

Wetness Grade : 3B
Wetness Class : IV
Gleying : 0 cm
SPL :029 cm

Drought Grade :
APW : mm MBW : 0 mm
APP : mm MBP : 0 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : CANTERBURY LP RUR 12 Pit Number : 2P

Grid Reference: TR15406080
Average Annual Rainfall : 635 mm
Accumulated Temperature : 1433 degree days
Field Capacity Level : 132 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	MSL	10YR43 00	2	5	HR					
28- 48	MSL	10YR42 53	0	5	HR	C	MDCAB	FR	M	
48- 80	LMS	10YR63 00	0	0		M	MDCSAB	VF	G	
80-100	MSL	25Y 62 00	0	0		M			M	
100-120	SC	05Y 62 00	0	0		M			P	

Wetness Grade : 1
Wetness Class : I
Gleying :028 cm
SPL :100 cm

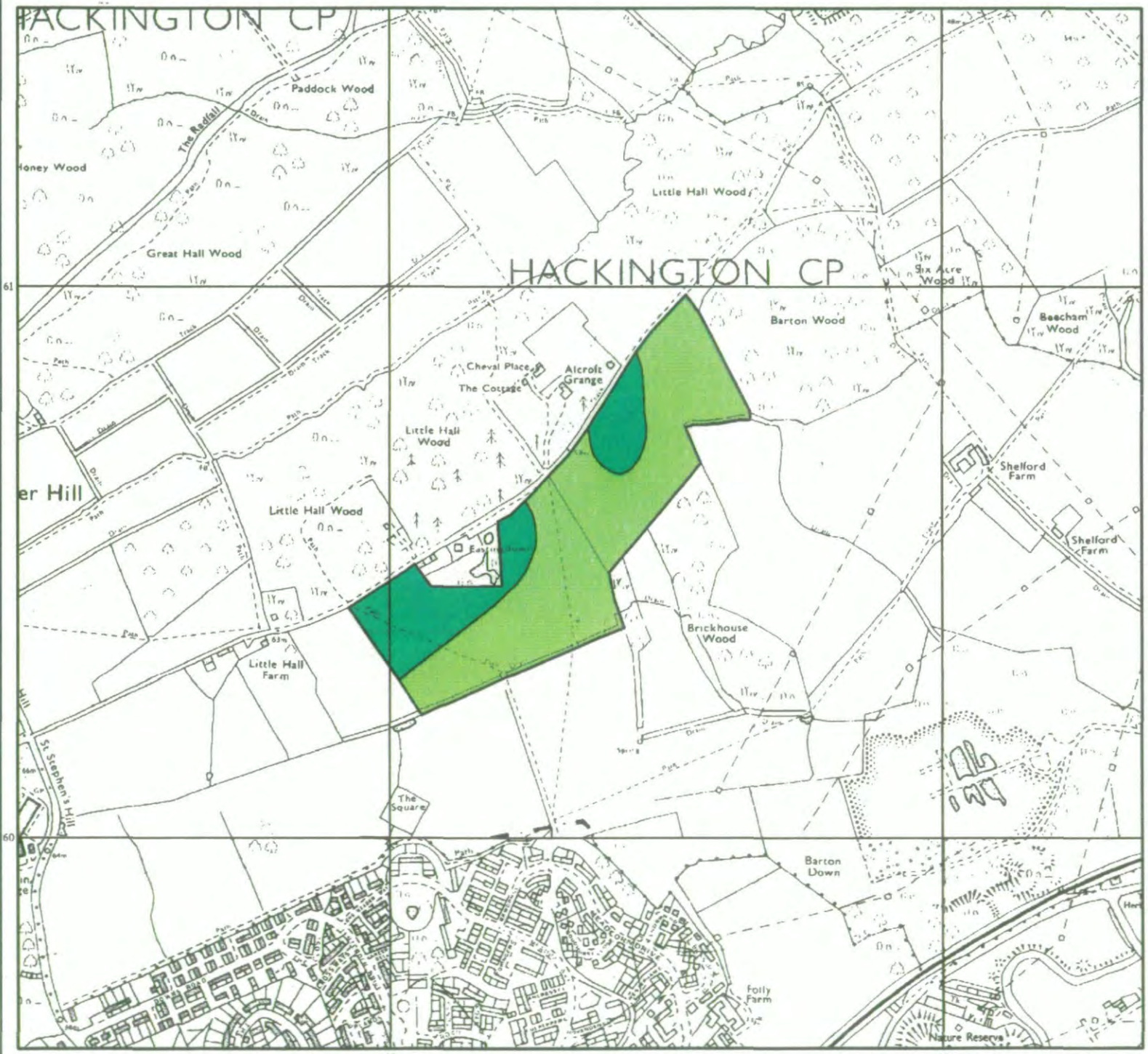
Drought Grade : 3A
APW : 135mm MBW : 17 mm
APP : 95 mm MBP : -19 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	TR15506090	PGR			0	048	3	3A		0		0					WE	3A	Sandy 48
1A	TR15546D90	PGR			0	025	4	3B		0		0					WE	3B	Wet
1P	TR15306060	PGR	SE		0	029	4	3B		0		0					WE	3B	Pit dug to 80
2	TR15406080	PGR	SE	01			1	1	139	21	106	-8	2				DR	2	Sandy
2P	TR15406080	PGR			028	100	1	1	135	17	95	-19	3A				DR	3A	Pit90 Augd120
3	TR15506080	PGR			0	025	4	3B		0		0					WE	3B	
4	TR15606080	PGR	SE	01	0	025	4	3B		0		0					WE	3B	Wet
5	TR15406070	PGR	SE		030		1	1	137	19	106	-8	2				DR	2	Very wet 80
6	TR15506070	PGR			0	025	4	3B		0		0					WE	3B	Plastic 35
7	TR15306060	PGR			0	025	4	3B		0		0					WE	3B	
8	TR15406060	PGR	S	02	025		1	1	76	-42	77	-37	3B				DR	3B	I60sandy/stny
9	TR15206050	PGR			010		2	1	112	-6	103	-11	3A				DR	3A	Imp 90 flinty
10	TR15306050	PGR			0	050	3	3A		0		0					WE	3A	
11	TR15406050	PGR	S	02	0	025	4	3B		0		0					WE	3B	Plastic 25
12	TR15006040	PGR	SE		030		1	1	157	39	111	-3	2				DR	2	Sandy
13	TR15106040	PGR	SE		0	050	3	3A		0		0					WE	3A	
14	TR15206040	PGR	SE		0	020	4	3B		0		0					WE	3B	
15	TR15306040	PGR	SE		0	025	4	3B		0		0					WE	3B	
16	TR15406040	PGR	SE	02	0	055	3	3A		0		0					WE	3A	
17	TR15106030	PGR	SE		025	025	4	3B		0		0					WE	3B	
18	TR15206D30	PGR	SE		0	045	3	3A		0		0					WE	3A	

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1	0-28	mcl	10YR42 00	75YR46 00	C			Y	0	0	HR	5							
	28-48	scl	10YR52 00	10YR58 00	M			Y	0	0	HR	10		M					
	48-70	c	25Y 52 00	10YR58 00	M			Y	0	0	HR	10		P			Y		
1A	0-25	mcl	10YR42 00	75YR46 00	C			Y	0	0	HR	5							
	25-70	c	25Y 52 00	10YR58 00	M			Y	0	0	HR	2		P			Y		
1P	0-29	mcl	10YR41 00	10YR46 00	C			Y	2	0	HR	5							
	29-55	hcl	25Y 51 00	10YR58 00	M			Y	0	0	HR	8	WKCSAB	FR M	Y		Y		
	55-80	c	25Y 51 61	75YR58 00	M			Y	0	0	HR	8	WKCSAB	FM P	Y		Y		
2	0-25	msl	10YR43 00						0	0	HR	5							
	25-45	msl	10YR43 56						0	0	HR	5		M					
	45-85	msl	10YR56 00						0	0	HR	2		M					
	85-120	lms	10YR68 00						0	0	HR	2		G					
2P	0-28	msl	10YR43 00						2	0	HR	5							
	28-48	msl	10YR42 53	10YR58 00	C			Y	0	0	HR	5	MDCAB	FR M					
	48-80	lms	10YR63 00	75YR58 00	M			Y	0	0		0	MDCSAB	VF G					
	80-100	msl	25Y 62 00	75YR68 00	M			Y	0	0		0		M					LS inside ped
	100-120	sc	05Y 62 00	75YR68 00	M			Y	0	0		0		P			Y		
3	0-25	mcl	10YR42 00	75YR46 00	C			Y	0	0	HR	10							
	25-34	hcl	10YR52 00	10YR58 00	M			Y	0	0	HR	10		M			Y		
	34-60	c	25Y 52 00	10YR58 00	M			Y	0	0	HR	10		P			Y		
4	0-25	mcl	10YR52 00	75YR46 00	M			Y	0	0	HR	5							
	25-70	c	25Y 52 00	10YR58 00	M			Y	0	0	HR	2		P			Y		
5	0-30	msl	10YR43 00						0	0	HR	5							
	30-50	msl	10YR53 00	10YR56 00	C			Y	0	0	HR	5		M					
	50-80	msl	10YR53 00	05YR46 56	M			Y	0	0	HR	5		M					
	80-120	lms	10YR53 00	10YR56 00	M			Y	0	0	HR	2		G					
6	0-25	mcl	10YR52 00	75YR46 00	M			Y	0	0	HR	5							
	25-33	hcl	10YR51 00	75YR46 00	M			Y	0	0	HR	5		M			Y		
	33-70	c	25Y 61 00	75YR68 00	M			Y	0	0		0		P			Y		
7	0-25	mcl	10YR51 00	75YR46 00	M			Y	0	0	HR	5							
	25-55	hcl	25Y 51 00	10YR58 00	M			Y	0	0	HR	8		M			Y		
	55-75	c	25Y 61 00	75YR56 00	M			Y	0	0	HR	8		P			Y		
8	0-25	msl	10YR43 00						0	0	HR	5							
	25-40	msl	10YR53 00	10YR56 00	C			Y	0	0	HR	10		M					
	40-50	msl	10YR53 00	10YR56 00	C			Y	0	0	HR	30		M					
	50-70	cs	10YR53 00	10YR68 00	M			Y	0	0	HR	35		M					
9	0-10	mszl	10YR42 00						0	0		0							
	10-30	scl	25Y 51 61	10YR46 00	M			Y	0	0	HR	5		M					
	30-50	scl	25Y 41 00	10YR46 00	M			Y	0	0	HR	5		M					
	50-75	scl	05Y 61 00	10YR46 56	M			Y	0	0	HR	10		M					
	75-90	scl	25Y 52 00	10YR58 00	M			Y	0	0	HR	15		M					

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
10	0-30	mcl	10YR42 52	10YR56 00	C			Y	0	0	HR	5						
	30-50	mcl	25Y 51 00	10YR56 66	M			Y	0	0	HR	5		M				poss hcl
	50-70	c	25Y 61 62	10YR68 00	M		00MN00 00	Y	0	0	HR	15		P		Y		
	70-120	c	05Y 71 73	10YR68 78	M			Y	0	0	HR	15		P		Y		
11	0-25	hcl	25Y 52 00	75YR46 00	M			Y	0	0	HR	3						
	25-55	c	25Y 51 00	75YR56 00	M			Y	0	0	HR	3		P		Y		
12	0-30	scl	10YR42 00						0	0		0						
	30-65	msl	10YR63 62	10YR58 00	C			Y	0	0		0		M				
	65-80	scl	25Y 62 00	75YR58 00	M			Y	0	0		0		M				
	80-120	csl	25Y 72 00	75YR58 00	M			Y	0	0		0		M				
13	0-25	mcl	10YR41 00	10YR46 00	C			Y	0	0		0						
	25-50	mcl	10YR53 52	10YR68 00	M			Y	0	0		0		M				poss scl
	50-90	c	25Y 62 00	10YR68 00	M			Y	0	0	HR	10		P		Y		
14	0-20	mcl	10YR52 53	10YR56 00	C			Y	0	0		0						
	20-35	hcl	25Y 51 61	10YR58 68	M			Y	0	0	HR	5		M		Y		
	35-70	c	05Y 61 00	10YR68 00	M		00MN00 00	Y	0	0	HR	5		P		Y		
15	0-25	mcl	10YR41 51	10YR46 00	C			Y	0	0		0						
	25-45	hcl	25Y 53 63	10YR58 00	M			Y	0	0	HR	5		M		Y		
	45-90	c	25Y 63 00	10YR68 00	M			Y	0	0	HR	5		P		Y		
16	0-25	mzcl	10YR42 52	10YR56 00	C			Y	0	0		0						
	25-35	mzcl	10YR52 00	10YR66 00	C			Y	0	0		0		M				
	35-55	mzcl	25Y 53 63	10YR68 00	M			Y	0	0		0		M				
	55-120	zc	25Y 62 63	10YR68 00	M		00MN00 00	Y	0	0		0		P		Y		
17	0-25	mcl	10YR43 00						0	0		0						
	25-45	hcl	10YR53 52	10YR66 00	C			Y	0	0		0		M		Y		
	45-90	c	25Y 61 00	10YR68 00	M			Y	0	0	HR	10		P		Y		
18	0-30	mcl	10YR41 00	10YR46 00	C			Y	0	0		0						
	30-45	mcl	25Y 62 00	10YR58 00	C			Y	0	0		0		M				
	45-90	c	25Y 61 62	10YR68 00	M			Y	0	0	HR	15		P		Y		



MAFF Ministry of Agriculture Fisheries and Food

Agricultural Land Classification

Canterbury Local Plan

RUR 12: Land at Eastdown Farm

Agricultural Land

Grade	Quality	Area (ha)
1	Excellent	nil
2	Very Good	nil
3a	Good	5.0
3b	Moderate	13.0
4	Poor	nil
5	Very Poor	nil

Other Land Categories

	Area (ha)
Urban	nil
Non-Agricultural	nil
W Woodland	nil
Agricultural Buildings	nil
Open Water	nil
Not Surveyed	nil
Total agricultural land area	18.0
Total survey area	18.0

* Grade/category not present within survey area

Scale - 1:10,000

0 100 200 300 400 500 600 Metres

Further details contained in MAFF (1988) Agricultural Land Classification of England and Wales - Revised guidelines and criteria for grading the quality of agricultural land. MAFF (Publications), London SE99 7TP. The information is accurate at the base map scale but any enlargement would be misleading. Reproduction in whole or in part by any means is prohibited without the prior permission of MAFF.

Surveyed & drawn by the Resource Planning Team, ADAS Statutory Unit Guildford

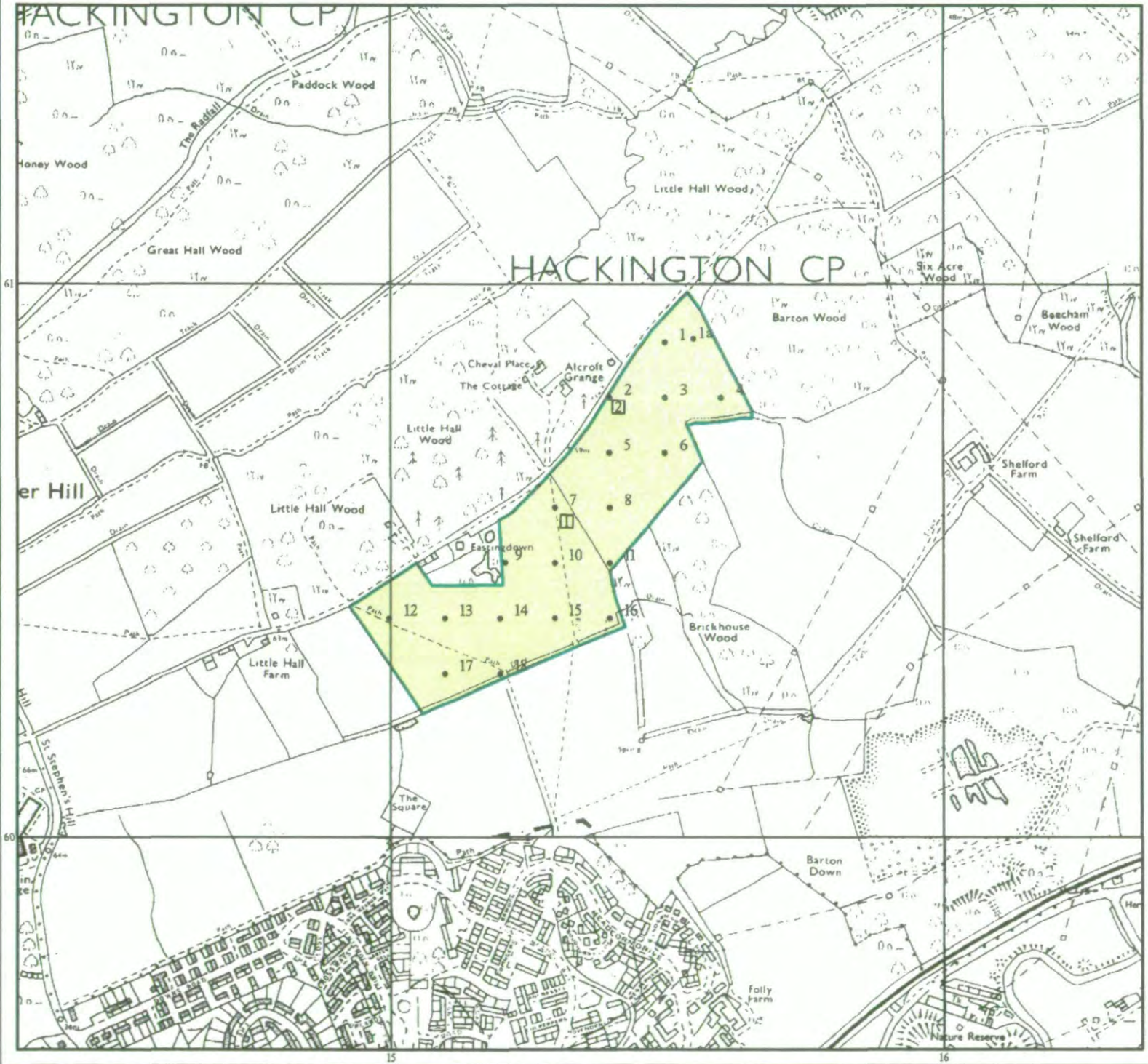
Based on the 1974 Ordnance Survey 1:10,000 map with the permission of the Controller of Her Majesty's Stationery Office. **Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings.**

Source Map(s): TR16SE

MAFF Licence No: GD272361

Reference no. 2002/051/95

©Crown Copyright Reserved 1995



MAFF Ministry of Agriculture Fisheries and Food

Agricultural Land Classification

Canterbury Local Plan

RUR 12: Land at Eastdown Farm

SAMPLE POINT MAP

LOCATION OF SOIL PIT

LOCATION OF AUGER SAMPLE POINT

AREA OF SURVEY

Other Land Categories

		Area (ha)
*	Urban	nil
*	Non-Agricultural	nil
*W	Woodland	nil
*	Agricultural Buildings	nil
*	Open Water	nil
*	Not Surveyed	nil
	Total agricultural land area	18.0
	Total survey area	18.0

* Grade/category not present within survey area

Scale – 1:10,000

0 100 200 300 400 500 600 Metres

Further details contained in MAFF (1988) Agricultural Land Classification of England and Wales – Revised guidelines and criteria for grading the quality of agricultural land. MAFF (Publications), London SE99 7TP. The information is accurate at the base map scale but any enlargement would be misleading. Reproduction in whole or in part by any means is prohibited without the prior permission of MAFF.

Surveyed & drawn by the Resource Planning Team, ADAS Statutory Unit Guildford

Based on the 1973 Ordnance Survey 1:10,000 map with the permission of the Controller of Her Majesty's Stationery Office. **Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings.**

Source Map(s): TR16SE MAFF Licence No: GD272361

Reference no. 2002/051/95 ©Crown Copyright Reserved 1995

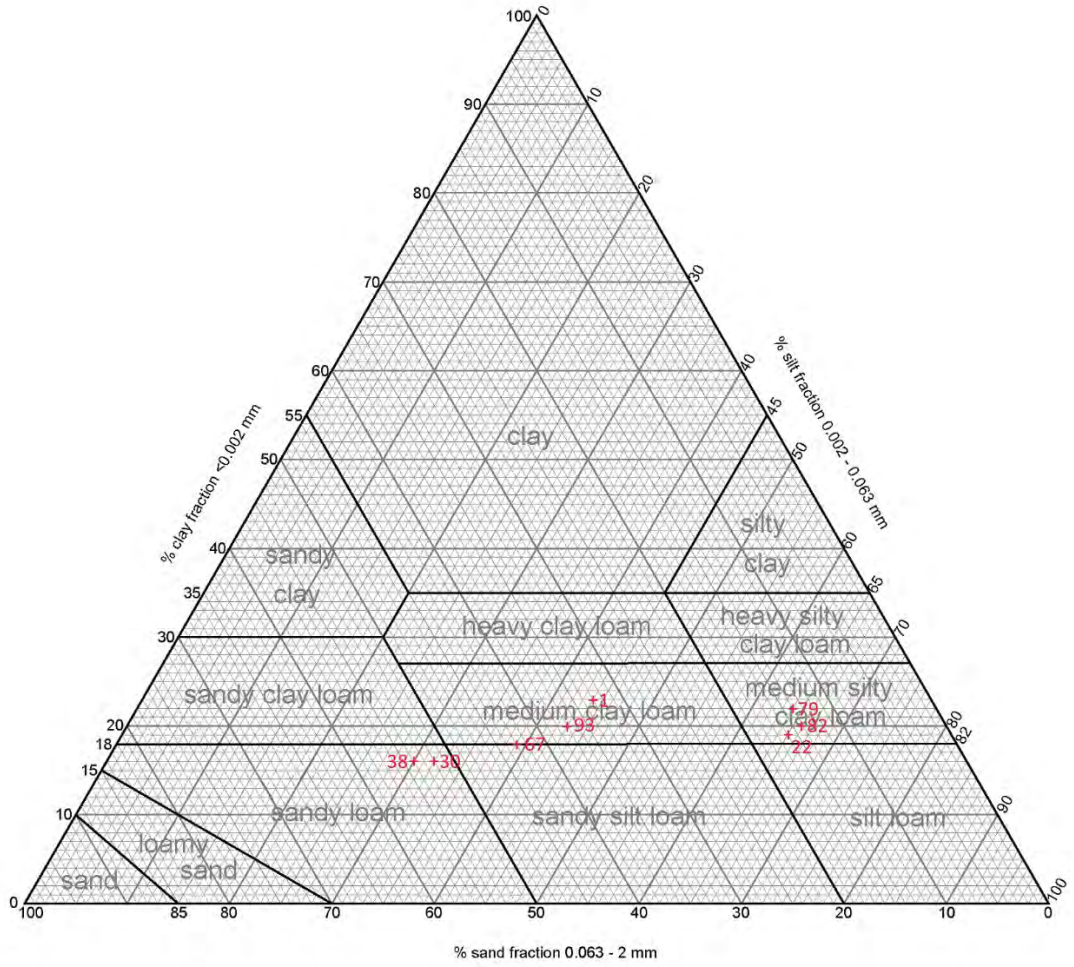
Appendix 2: Laboratory Data

Determinand	1	22	30	38	67	74	82	92	Units
Sand 2.00-0.063 mm	33	16	52	54	43	14	14	37	% w/w
Silt 0.063-0.002 mm	44	65	32	30	39	64	66	43	% w/w
Clay <0.002 mm	23	19	16	16	18	22	20	20	% w/w
Organic Matter	4.5	2.4	4.1	4.7	2.3	2.2	2.5	3.8	% w/w
Texture	Medium Clay Loam	Medium Silty Clay Loam	Sandy Loam	Sandy Loam	Medium Clay Loam/Sandy Silt Loam	Medium Silty Clay Loam	Medium Silty Clay Loam	Medium Clay Loam	

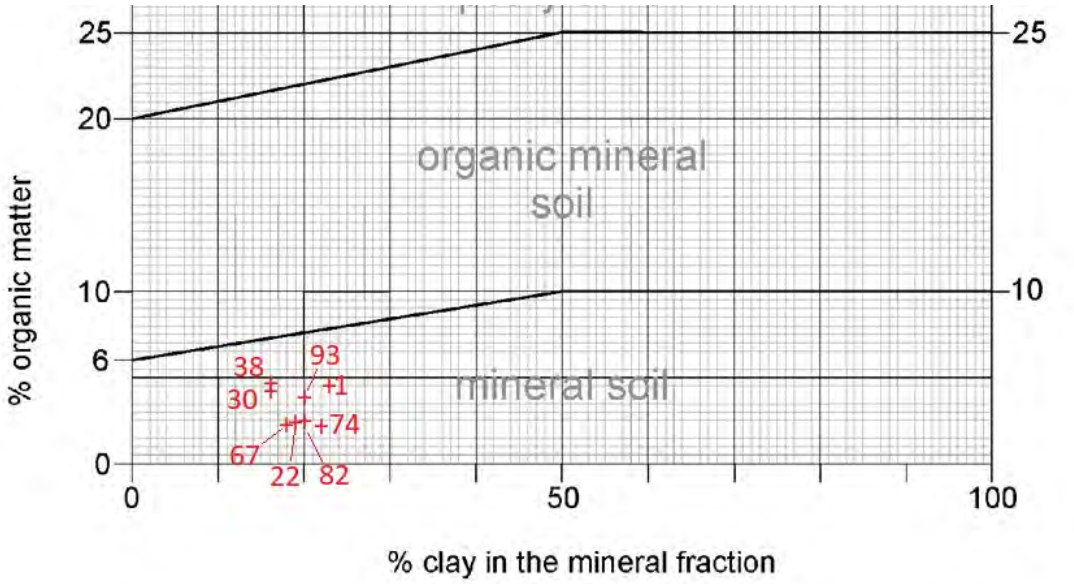
Determinand	1	22	30	38	67	74	82	92	Units
Soil pH	6.1	7.1	6.8	6.7	6.5	6.8	7.8	6.2	
Phosphorus (P)	25.0	12.4	8.0	20.4	13.0	4.4	9.6	21.0	Mg/l (av)
Potassium (K)	99.5	68.5	65.3	93.5	67.7	55.6	82.6	196	Mg/l (av)
Magnesium (Mg)	94.0	45.9	40.1	90.2	32.1	46.8	39.3	58.3	Mg/l (av)

Determinand	1	22	30	38	67	74	82	92	Units
Phosphorus (P)	2	1	0	2	1	0	1	2	ADAS Index
Potassium (K)	1	1	1	1	1	0	1	2+	ADAS Index
Magnesium (Mg)	2	1	1	2	1	1	1	2	ADAS Index

Soil Texture by Particle Size Analysis



Organic Matter Class



Appendix 3: Soil Profile Summaries and Droughtiness Calculations

Area A

Wetness calculations are made according to the methodology given in Appendix 3 of the ALC guidelines, MAFF 1988

Droughtiness calculations are made according to the methodology given in Appendix 4 of the ALC guidelines, MAFF 1988.

Grades are shown for drought, wetness and any other soil or site factors which are relevant. The overall Grade is set by the most limiting factor and shown on the right.

Stone types		
%	TAv	EAv
hard	1	0.5
.		

hard flint & pebble

Climate Data	
MDwheat	121
MDpotato	117
FCD	132

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm	>63cm	36-63cm	<36cm	
SPL within 80cm, gleying at 40-70cm	>44cm	<44cm		
No SPL but gleying within 40cm	coarse subsoil	*I*	other cases	*II*

Maximum depth of auger penetration is underlined

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone% .	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
1	T	0	35	mCL		10YR4/2			5		-	60	60	n	n	*II*	2	**2**	WE DR
		35	52	mZCL		10YR4/2			5			26	27	n	n				
		52	70	mZCL		10YR4/3	Fe	com	2			18	30	n	n				
		70	120	mZCL		10YR4/4			5		m/poor	48	0	n	y				
											Total	**151**	**117**						
											MB	30	0						
									Droughtiness grade (DR)			1	2						
2	T	0	32	mCL		10YR4/2			5			55	55	n	n	*IV*	3b	**3b**	WE
		32	120	C		10YR5/3	Fe	many	0		poor	72	49	y	y				
											Total	**127**	**104**						
											MB	6	-13						
									Droughtiness grade (DR)			2	3a						
3	T	0	37	mCL		10YR3/2			2			65	65	n	n	*II-III*	3a	**3a**	WE
		37	80	hCL		10YR5/3	Fe	com.	1		m/poor	50	52	y	n				
		80	120	hCL		10YR5/3	Fe	com.	1		m/poor	40	0	y	n				
											Total	**155**	**118**			Subsoil firm but moderately permeable			
											MB	34	1						
									Droughtiness grade (DR)	1	2								
4	T	0	38	hZCL		10YR4/2	Fe	few	5			69	69	n	n	*III*	3b	**3b**	WE
		38	75	hCL		10YR5/3	Fe	com.	1		poor	32	38	y	y				
		75	120	hCL		10YR5/3	Fe	com.	1		poor	31	0	y	y				
											Total	**131**	**107**						
											MB	10	-10						
									Droughtiness grade (DR)	2	3a								

Area B

Wetness calculations are made according to the methodology given in Appendix 3 of the ALC guidelines, MAFF 1988

Droughtiness calculations are made according to the methodology given in Appendix 4 of the ALC guidelines, MAFF 1988.

Grades are shown for drought, wetness and any other soil or site factors which are relevant. The overall Grade is set by the most limiting factor and shown on the right.

Stone types		
%	TAv	EAv
hard	1	0.5
.		

hard flint & pebble

Climate Data	
MDwheat	118
MDpotato	114
FCD	131

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm	>63cm	36-63cm	<36cm	
SPL within 80cm, gleying at 40-70cm	>44cm	<44cm		
No SPL but gleying within 40cm	coarse subsoil	*I*	other cases	*II*

Maximum depth of auger penetration is underlined

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone% .	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
13	T	0	30	hZCL		10YR4/2					-	57	57	0	n	*II*	3a	**3a**	WE
		30	52	hZCL		10YR5/3	Fe+Mn	com			M	36	37	y	n				
		52	120	C		10YR6/2	Fe+grey	many				54	29	y	n				
											Total	**147**	**123**			LSS - moderately permeable. No SPL but clay is sticky and compressive			
											MB	29	9						
											Droughtiness grade (DR)	2	2						
14	T	0	28	hZCL		10YR4/2					-	53	53	0	n	*II*	3a	**3a**	WE
		28	55	hZCL		10YR5/3	Fe	com				42	46	y	n				
		55	120	C		10YR6/2	Fe+grey	many				52	24	y	n				
											Total	**148**	**123**			LSS - moderately permeable. No SPL but clay is sticky and compressive			
											MB	30	9						
											Droughtiness grade (DR)	1	2						
15	T	0	26	hZCL		10YR4/2			2			48	48	n	n	*II*	3a	**3a**	WE
		26	45	C		10YR5/3	Fe+Mn	com	10			27	27	y	n				
		45	120	C		10YR6/2	Fe	com.	2			63	39	y	n				
											Total	**139**	**115**						
											MB	21	1						
											Droughtiness grade (DR)	2	2						
16	T	0	28	hZCL		10YR4/2			1			53	53	n	n	*III*	3b	**3b**	WE
		28	58	hZCL		10YR5/4	Fe+grey	com.	2			45	50	y	n				
		58	120	C		10YR6/3	Fe	many	0		poor	43	16	y	y				
											Total	**141**	**118**						
											MB	23	4						
											Droughtiness grade (DR)	2	2						
17	T	0	30	mZCL		10YR4/3			2		-	56	56	n	n	*II*	2	**2**	WE
		30	70	mZCL		10YR5/3	Fe	many	1		m/poor	53	67	y	n				
		70	90	mZCL		10YR5/3	Fe	many	1		m/poor	20	0	y	n				
		90	120	C		10YR5/3	Fe	com	0		poor	21	0	y	y				

									Total	**150**	**123**							
									MB	32	9							
								Droughtiness grade (DR)		1	2							
18	T	0	32	mZCL	10YR4/3			2		60	60	n	n	*IV*	3b	**3b**	WE	
		32	60	C	10YR5/3	Fe	many	1	poor	30	36	y	y					
		60	120	C	10YR5/2	Fe+grey	com.	0	poor	42	13	y	y					
									Total	**132**	**109**							
									MB	14	-5							
								Droughtiness grade (DR)		2	2							
19	T	0	32	mZCL	10YR4/3			2		60	60	n	n	*II*	2	**2**	WE	
		32	90	mZCL	10YR5/3	Fe	many	1	m/poor	70	64	y	n					
		90	120	C	10YR5/2	Fe	com.	0	poor	21	0	y	y					
									Total	**151**	**124**			Groundwater at 90cm				
									MB	33	10							
								Droughtiness grade (DR)		1	2							
20	T	0	33	mZCL	10YR4/3			2		61	61	n	n	*III*	3a	**3a**	WE GW	
		33	90	mZCL	10YR5/3	Fe	many	1	m/poor	68	62	y	n					
		90	120	C	10YR5/2	Fe	com.	0	poor	21	0	y	y					
									Total	**151**	**124**			Groundwater at 60cm				
									MB	33	10							
								Droughtiness grade (DR)		1	2							
21	T	0	28	mZCL	10YR4/3			1		53	53	n	n	*III*	3a	**3a**	WE	
		28	60	ZCL	10YR5/3	Fe	com.	0	m/poor	47	54	y	n					
		60	90	ZCL	10YR5/3	Fe	com.	0	poor	18	12	y	y					
		90	120	C	10YR5/3	Fe	com.	0	poor	21	0	y	y					
									Total	**139**	**119**			Auger stuck				
									MB	21	5							
								Droughtiness grade (DR)		2	2							
22	T	0	35	mZCL	10YR4/3			1		66	66	n	n	*II*	2	**2**	WE	
		35	80	ZCL	10YR5/3	Fe	com.	0	m/poor	56	60	y	n					
		80	90	ZCL	10YR5/3	Fe	com.	0	poor	6	0	y	y					
		90	120	C	10YR5/3	Fe	com.	1	poor	21	0	y	y					
									Total	**148**	**125**			Auger stuck				
									MB	30	11							
								Droughtiness grade (DR)		1	1							
23	T	0	36	hCL	10YR4/2			12		57	57	n	n	*IV*	3b	**3b**	WE	
		36	60	C	10YR5/3	Fe	com.	15	poor	22	27	y	y					
		60	120	C	10YR5/3	Fe	com.	15	poor	37	11	y	y					
									Total	**115**	**95**							
									MB	-3	-19							
								Droughtiness grade (DR)		3a	3a							

24	T	0	30	hCL	10YR4/2			12		48	48	n	n	*IV*	3b	**3b**	WE
		30	50	C	10YR5/3	Fe	com.	20	poor	21	21	y	y				
		50	120	C	10YR5/2	Fe	com.	1	poor	49	26	y	y				
									Total	**117**	**94**						
									MB	-1	-20						
								Droughtiness grade (DR)		3a	3a						
25	T	0	38	hCL	10YR4/2			12		60	60	n	n	*III*	3b	**3b**	WE
		38	58	C	10YR5/2	Fe	com.	5	poor	20	25	y	y				
		58	65	C	10YR5/3	Fe	com.	20	poor	4	7	y	y				
		65	120	C	10YR5/3	Fe	com.	20	poor	32	5	y	y				
									Total	**116**	**97**			Groundwater at 60cm+			
									MB	-2	-17						
								Droughtiness grade (DR)		3a	3a						
26	T	0	22	C	10YR4/2			8		34	34	n	n	*IV*	3b	**3b**	WE
		22	60	C	10YR5/3	Fe	com.	0	poor	43	49	y	y				
		60	120	C	10YR5/2	Fe	c/many	0	poor	42	13	y	y				
									Total	**120**	**97**						
									MB	2	-17						
								Droughtiness grade (DR)		3a	3a						
27	T	0	27	mCL	10YR4/2			8		45	45	n	n	*II*	2	**3a**	DR
		27	55	hCL	10YR4/3	FeMn	com.	15		36	38	n	n				
		55	75	C	10YR5/3	Fe	com.	0	poor	14	20	y	y				
		75	120	C	10YR5/2	Fe	c/many	0	poor	32	0	y	y				
									Total	**126**	**102**						
									MB	8	-12						
								Droughtiness grade (DR)		2	3a						
28	T	0	33	hCL	10YR4/2			8		55	55	n	n	*IV*	3b	**3b**	WE
		33	80	C	10YR5/3	FeMn	com.	5	poor	41	46	y	y				
		80	120	C	10YR5/2	Fe	com.	0	poor	28	0	y	y				
									Total	**124**	**100**						
									MB	6	-14						
								Droughtiness grade (DR)		2	3a						
29	T	0	27	mCL	10YR4/2			12		43	43	n	n	*II*	2	**3b**	DR
		27	48	SCL	10YR5/3	Fe	com.	10		28	28	y	n				
		48	76	mS	10YR5/4	Fe	com.	25		11	12	n	n				
		76	120	mS	10YR5/4	Fe	com.	25		18	0	n	n				
									Total	**100**	**83**			Groundwater at 50cm+			
									MB	-18	-31						
								Droughtiness grade (DR)		3a	3b						
30	T	0	35	mSL	10YR4/2			15		51	51	n	n	*III*	2	**3a**	DR
Pit 1		35	45	hCL	10YR5/3	Fe	com.	12		14	14	y	n				

		45	60	C	10YR5/3	Fe	com.	10	m/poor	15	22	y	y					
		60	120	C	10YR5/3	Fe	com.	10	m/poor	44	14	y	y					
									Total	**123**	**101**							
									MB	5	-13							
									Droughtiness grade (DR)	2	3a							
31	T	0	30	mSL	10YR4/2			15		43	43	n	n	*III*	2	**3a**	DR	
		30	50	hCL	10YR5/3	Fe	com.	12		28	28	y	n					
		50	120	C	10YR5/3	Fe	com.	10	m/poor	51	29	y	y					
									Total	**123**	**100**							
									MB	5	-14							
									Droughtiness grade (DR)	2	3a							
32	T	0	33	mSL	10YR4/2			15		48	48	n	n	*I*	1	**3b**	DR	
		33	45	LcS	10YR5/3	Fe	com.	25		7	7	y	n					
		45	120	LcS	10YR5/3	Fe	com.	25		36	15	y	n					
									Total	**91**	**70**							
									MB	-27	-44							
									Droughtiness grade (DR)	3b	3b							
33	T	0	25	mCL	10YR4/2			30		32	32	n	n	*I*	1	**3b**	DR ST	
Pit 2		25	45	mCL	10YR4/3			30		22	22	n	n					
		45	60	mCL	10YR4/3			30		13	17	n	n					
		60	120	mSL				75		21	4	n	n					
									Total	**88**	**74**			Mapped soil type extremely stony lower subsoil				
									MB	-30	-40							
									Droughtiness grade (DR)	3b	3b							
34	T	0	28	mCL	10YR4/2			30		35	35	n	n	*I*	1	**3b**	DR ST	
		28	60	hZCL	10YR4/3			30		33	38	n	n					
		60	120	C	10YR4/3			50		27	8	n	n					
									Total	**96**	**81**							
									MB	-22	-33							
									Droughtiness grade (DR)	3b	3b							
35	T	0	34	mCL	10YR4/2			20		49	49	n	n	*I*	1	**3b**	DR ST	
		34	45	mCL	10YR4/3			25		13	13	n	n					
		45	60	mCL	10YR4/3			30		13	17	n	n					
		60	120	mSL				75		21	4	n	n					
									Total	**96**	**83**			Mapped soil type extremely stony lower subsoil				
									MB	-22	-31							
									Droughtiness grade (DR)	3b	3b							
36	T	0	35	mSL	10YR4/2			20		48	48	n	n	*I*	1	**3b**	DR ST	
		35	40	LcS	10YR4/3			25		3	3	n	n					
		40	60	LcS	10YR4/3			30		10	11	n	n					
		60	120	mSL				75		21	4	n	n					

									Total	**82**	**66**			Mapped soil type extremely stony lower subsoil			
									MB	-36	-48						
								Droughtiness grade (DR)		3b	3b						
37	T	0	36	mCL	10YR4/2			5		65	65	n	n	*IV*	3b	**3b**	WE
		36	70	C	10YR5/3	Fe	com.	1	poor	29	41	y	y				
		70	120	C	10YR5/3	Fe	com.	5	poor	34	0	y	y				
									Total	**128**	**106**						
									MB	10	-8						
								Droughtiness grade (DR)		2	2						
38	T	0	30	mSL	10YR4/2			2		53	53	n	n	*III*	2	**3a**	DR
		30	60	C	10YR5/3	Fe+Mn	com.	5	poor	35	43	y	n				
		60	120	C	10YR5/3	Fe	com.	5	poor	37	6	y	y				
									Total	**125**	**102**						
									MB	7	-12						
								Droughtiness grade (DR)		2	3a						
39	T	0	33	hCL	2.5Y4/2			5		56	56	n	n	*II*	3a	**3a**	WE
		33	54	C	2.5Y5/4	Fe+grey	few	2		30	33	n	n				
		54	120	C	2.5Y6/1	Fe+Mn	com.	2	poor	45	20	y	y				
									Total	**132**	**110**			TS - lenses of fine sand			
									MB	14	-4						
								Droughtiness grade (DR)		2	2						
40	T	0	32	mCL	10YR4/3			5		55	55	n	n	*IV*	3b	**3b**	WE
		32	65	C	10YR5/3	Fe+grey	many	1	poor	34	42	y	y				
		65	120	C	10YR5/3	Fe	com.	5	poor	37	6	y	y				
									Total	**125**	**103**						
									MB	7	-11						
								Droughtiness grade (DR)		2	3a						
41	T	0	25	mCL	2.5Y4/2			5		43	43	n	n	*IV*	3b	**3b**	WE
		25	63	C	10YR6/3	Fe	com.	10	poor	38	44	y	y				
		63	120	C	10YR6/3	Fe	com.	10	poor	36	8	y	y				
									Total	**117**	**95**						
									MB	-1	-19						
								Droughtiness grade (DR)		3a	3a						
42	T	0	25	mCL	10YR4/2			2		44	44	n	n	*III*	3a	**3a**	WE
		25	60	C	10YR6/3	Fe	com.	2		47	55	y	n				
		60	120	C	10YR6/3	Fe	com.	5	poor	40	12	y	y				
									Total	**131**	**111**						
									MB	13	-3						
								Droughtiness grade (DR)		2	2						
43	T	0	30	mCL	10YR4/2			0		54	54	n	n	*III*	3b	**3a**	WE
		30	65	C	10YR5/3	Fe+grey	many	2		43	55	y	n				

		65	120	C	10YR5/6	Fe+grey	com.	5	poor	37	6	y	y					
									Total	**134**	**115**			TS - lenses of medium sand				
									MB	16	1			Surface water - very wet				
								Droughtiness grade (DR)		2	2							
44	T	0	28	mCL	10YR4/2	Fe	few	2		49	49	n	n	*III*	3a	**3a**	WE	
		28	50	C	10YR5/1	Fe+Mn	many	5		33	33	y	n					
		50	120	C	2.5Y5/3	Fe	many	5	poor	47	25	y	y					
									Total	**130**	**108**							
									MB	12	-6							
								Droughtiness grade (DR)		2	2							
45	T	0	26	C	10YR4/3			0		44	44	n	n	*IV*	3b	**3b**	WE	
		26	60	C	10YR5/2	Fe+grey	com.	0	poor	38	44	y	y					
		60	120	C	10YR5/2	Fe	com.	0	poor	42	13	y	y					
									Total	**124**	**101**							
									MB	6	-13							
								Droughtiness grade (DR)		2	3a							
46	T	0	29	mSL	10YR4/2			15		42	42	n	n	*I*	1	**3b**	DR	
		29	50	LcS	10YR5/4	Fe	com.	25		13	13	y	n					
		50	120	LcS	10YR5/4	Fe	com.	25		33	12	y	n					
									Total	**88**	**67**							
									MB	-30	-47							
								Droughtiness grade (DR)		3b	3b							
47	T	0	25	mCL	10YR4/2			15		38	38	n	n	*II*	2	**3a**	DR	
		25	50	SCL	10YR5/3	Fe	com.	25		28	28	y	n					
		50	70	SCL	10YR5/3	Fe	com.	25		16	23	y	n					
		70	120	LcS	10YR5/4	Fe	com.	25		24	0	y	n					
									Total	**106**	**89**							
									MB	-12	-25							
								Droughtiness grade (DR)		3a	3a							
48	T	0	32	mSL	7.5YR3/2			10		49	49	n	n	*I*	1	**3a**	DR	
		32	80	mSL	10YR4/4	Fe	com.	10		54	51	n	n					
		80	120	fSZL	10Y6/1	Fe	com.	0		60	0	y	n					
									Total	**163**	**100**							
									MB	45	-14							
								Droughtiness grade (DR)		1	3a							
49	T	0	31	mCL	10YR4/2			12		49	49	n	n	*II-III*	1	**3a**	GW	
		31	45	mSL	10YR4/3	Fe	com.	8		19	19	n	n					
		45	120	mSL	10YR5/3	Fe	com.	5		81	36	y	n					
									Total	**149**	**104**			Groundwater at 45cm+				
									MB	31	-10							
								Droughtiness grade (DR)		1	2							

50	T	0	35	mCL	10YR4/2			15		54	54	n	n	*II*	1	**3a**	DR
		35	65	SCL	10YR4/3	Fe	com.	5		36	43	n	n				
		65	80	SCL	10YR5/3	Fe	com.	15		13	6	y	n				
		80	120	SCL	10YR5/3	Fe	com.	15		35	0	y	n				
									Total	**137**	**103**			Groundwater at 65cm+			
									MB	19	-11						
									Droughtiness grade (DR)	2	3a						
51	T	0	32	mSL	10YR4/2			12		48	48	n	n	*I*	1	**3a**	DR
		32	65	SCL	10YR4/3	Fe	com.	10		38	45	n	n				
		65	75	hCL	10YR4/4	Fe	com.	15		9	7	n	n				
		75	120	hCL	10YR4/4	Fe	com.	15		39	0	n	n				
									Total	**133**	**99**						
									MB	15	-15						
									Droughtiness grade (DR)	2	3a						
52	T	0	32	mCL	10YR4/2			15		49	49	n	n	*IV*	3b	**3b**	WE
		32	60	C	10YR5/3	Fe	com.	5	poor	29	35	y	y				
		60	120	C	10YR5/3	Fe	com.	5	poor	40	12	y	y				
									Total	**118**	**96**						
									MB	0	-18						
									Droughtiness grade (DR)	3a	3a						
53	T	0	31	mCL	10YR4/2			12		49	49	n	n	*IV*	3b	**3b**	WE
		31	53	C	10YR5/3	Fe	com.	12	poor	24	25	y	y				
		53	73	C	10YR5/4	Fe	com.	10		15	24	n	n				
		73	120	C	10YR5/4	Fe	com.	10		34	0	n	n				
									Total	**122**	**99**						
									MB	4	-15						
									Droughtiness grade (DR)	3a	3a						
54	T	0	32	mCL	10YR4/2			15		49	49	n	n	*II*	2	**3a**	DR
		32	60	SCL	10YR4/3	Fe	com.	10		33	38	n	n				
		60	75	SC	10YR5/3	Fe	com.	12	poor	11	11	y	y				
		75	120	SC	10YR5/3	Fe	com.	12	poor	32	0	y	y				
									Total	**125**	**98**						
									MB	7	-16						
									Droughtiness grade (DR)	2	3a						
55	T	0	28	mCL	10YR4/2			15		43	43	n	n	*II*	2	**3a**	DR
		28	60	SCL	10YR5/3	Fe	com.	10		39	43	y	n				
		60	120	hCL	10YR5/3	Fe	com.	12		54	14	y	n				
									Total	**135**	**100**						
									MB	17	-14						
									Droughtiness grade (DR)	2	3a						

56	T	0	30	mCL	10YR4/2			5		51	51	n	n	*III*	3a	**3a**	WE	
		30	55	mZCL	10YR6/2	Fe	com.	5		37	40	y	n					
		55	120	C	2.5Y7/1	Fe	many	10	poor	42	18	y	y					
									Total	**130**	**109**							
									MB	12	-5							
									Droughtiness grade (DR)	2	2							
57	T	0	30	mCL	10YR4/2			5		51	51	n	n	*III*	3a	**3a**	WE	
		30	50	hZCL	10YR6/2	Fe+grey	many	10		31	31	y	n					
		50	120	C	2.5Y7/1	Fe	many	10	poor	45	23	y	y					
									Total	**127**	**105**							
									MB	9	-9							
									Droughtiness grade (DR)	2	2							
58	T	0	28	mCL	10YR4/2			5		48	48	n	n	*III*	3a	**3a**	WE DR	
		28	45	hZCL	10YR6/2	Fe+grey	many	10		26	26	y	n					
		45	120	C	2.5Y7/1	Fe	many	10	poor	50	30	y	y					
									Total	**125**	**104**							
									MB	7	-10							
									Droughtiness grade (DR)	2	3a							
59	T	0	28	C	10YR4/2	Fe	com.	0		48	48	y	n	*III*	3b	**3b**	WE	
		28	53	C	10YR6/3	Fe+grey	com.	2		37	39	y	n					
		53	120	C	2.5Y7/1	Fe+grey	many	2	poor	46	22	y	y					
									Total	**131**	**108**						Lenses of medium sand in USS	
									MB	13	-6							
									Droughtiness grade (DR)	2	2							
60	T	0	30	hCL	2.5Y5/1	Fe	com.	0		54	54	y	n	*III*	3b	**3b**	WE	
		30	55	hCL	2.5Y6/2	Fe+grey+Mn	many	0		37	40	y	n					
		55	120	C	10YR6/2	Fe	many	0	poor	46	20	y	y					
									Total	**136**	**114**						Observation near to surface water	
									MB	18	-1							
									Droughtiness grade (DR)	2	2							
61	T	0	22	mZCL	10YR4/2			0		42	42	n	n	*III*	3a	**3a**	WE	
		22	48	hZCL	10YR5/2	Fe+Mn	many	2		43	43	y	n					
		48	120	C	10YR6/2	Fe+Mn	many	0	poor	52	29	y	y					
									Total	**137**	**114**						TS - lenses of fine sand	
									MB	19	0						USS - Large Mn fragments	
									Droughtiness grade (DR)	2	2							
62	T	0	28	mZCL	10YR4/2			0		53	53	n	n	*III*	3a	**3a**	WE	
		28	48	C	10YR5/2	Fe+Mn	many	2		31	31	y	n					
		48	120	C	10YR6/2	Fe	com.	0	poor	52	29	y	y					

									Total	**136**	**113**			TS - lenses of fine sand				
									MB	18	-1							
								Droughtiness grade (DR)		2	2							
63	T	0	35	mZCL	10YR5/2			2		65	65	n	n	*I*	1	**2**	DR	
		35	60	hCL	10YR5/6	Fe	com.	0		34	40	n	n					
		60	120	C	10YR5/6	Fe	few	0		48	16	n	n					
									Total	**147**	**121**			Lenses of medium sand in USS				
									MB	29	7							
								Droughtiness grade (DR)		2	2							
64	T	0	33	mCL	10YR5/2			0		59	59	n	n	*I*	1	**3a**	DR	
		33	58	mZCL	10YR6/6	Fe+grey	com.	0		37	43	n	n					
		58	100	mLS	7.5YR5/8			0		0	0	n	n					
		100	120	fS	10YR6/6			0		24	0	n	n					
									Total	**120**	**102**							
									MB	2	-12							
								Droughtiness grade (DR)		3a	3a							
65	T	0	30	mZCL	10YR4/2			2		56	56	n	n	*III*	3a	**3a**	WE	
		30	55	hZCL	10YR6/2	Fe+grey	many	2		38	42	y	n					
		55	120	C	10YR6/1	Fe	com.	0	poor	46	20	y	y					
									Total	**140**	**117**			TS - lenses of fine sand				
									MB	22	3							
								Droughtiness grade (DR)		2	2							
66	T	0	21	mZCL	10YR4/3			2		39	39	n	n	*III*	3a	**3a**	WE	
		21	55	hZCL	10YR6/2	Fe+grey	many	2		53	57	y	n					
		55	120	C	10YR6/1	Fe+grey	many	0		52	24	y	y					
									Total	**144**	**120**							
									MB	26	6							
								Droughtiness grade (DR)		2	2							
67	T	0	35	mCL	10YR5/2			0		63	63	n	n	*II*	3a	**3a**	WE	
Pit 3		35	60	mZCL	10YR6/6	Fe	many	0		36	43	y	n					
		60	90	mLS	7.5YR5/8			0		0	0	n	n					
		90	120	fS	10YR6/6			0		36	0	n	n					
									Total	**134**	**106**							
									MB	16	-9							
								Droughtiness grade (DR)		2	2							
68	T	0	30	mCL	10YR4/2			2		53	53	n	n	*I*	1	**2**	DR	
		30	60	mZCL	7.5YR5/6			0		44	51	n	n					
		60	105	C	5Y7/1	Fe	many	2		35	16	y	n					
		105	120	fS	10YR6/6			2		18	0	n	n					
									Total	**150**	**120**							
									MB	32	6							

									Droughtiness grade (DR)			1	2							
69	T	0	30	mZCL		10YR5/2			2			56	56	n	n	*II*	2	**2**	WE DR	
		30	62	hCL		10YR5/6	Fe	com.	0			44	51	y	n					
		62	120	C		10YR5/6	Fe	few	0			46	13	n	n					
											Total	**146**	**120**							
											MB	28	6							
									Droughtiness grade (DR)			2	2							

Lenses of medium sand in USS

Prominent mottling in USS

Area C

Wetness calculations are made according to the methodology given in Appendix 3 of the ALC guidelines, MAFF 1988

Droughtiness calculations are made according to the methodology given in Appendix 4 of the ALC guidelines, MAFF 1988.

Grades are shown for drought, wetness and any other soil or site factors which are relevant. The overall Grade is set by the most limiting factor and shown on the right.

Stone types		
%	TAv	EAv
hard	1	0.5
.		

hard flint & pebble

Climate Data	
MDwheat	117
MDpotato	112
FCD	130

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm	>62cm	<62cm		
SPL within 80cm, gleying at 40-70cm	>43cm	<43cm		
No SPL but gleying within 40cm	coarse subsoil	*I*	other cases	*II*

Maximum depth of auger penetration is underlined

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone% .	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
70	T	0	30	mZCL	n	10YR4/2			0			54	54	n	n	*II*	2	**2**	WE DR
		30	76	mZCL	n	10YR6/2	Fe	com	0			60	68	y	n				
		76	120	hZCL	n	10YR6/2	Femn	v.many	0		poor	26	0	y	y				
											Total	**140**	**122**						
											MB	23	10						
									Droughtiness grade (DR)			2	1						
71	T	0	32	mZCL	n	10YR4/3			0			58	58	n	n	*II*	2	**2**	WE
		32	100	hZCL	n	10YR6/3	Femn	many	0			81	65	y	n				
		100	120	hZCL	n	10YR6/2	Femn	v.many	0		poor	12	0	y	y				
											Total	**150**	**122**						
											MB	33	10						
									Droughtiness grade (DR)			1	1						
72	T	0	30	mZCL	n	10YR4/3			0			54	54	n	n	*III*	3a	**3a**	WE
		30	58	hZCL	n	10YR6/3	Femn	many	0			42	48	y	n				
		58	120	hZCL	n	10YR6/2	Femn	v.many	0		poor	37	14	y	y				
											Total	**133**	**116**						
											MB	16	4						
									Droughtiness grade (DR)			2	2						
73	T	0	28	mZCL	n	10YR4/3			0			50	50	n	n	*III*	3a	**3a**	WE
		28	55	hZCL	n	10YR6/3	Femn	many	0			42	46	y	n				

		55	120	hZCL	n	10YR6/2	Femn	many	0	poor	39	18	y	y						
										Total	**132**	**114**		Small area of standing water between fields						
										MB	15	2								
									Droughtiness grade (DR)		2	2								
74	T	0	30	mZCL	n	10YR4/3			2		53	53	n	n	*III*	3a	**3a**	WE		
Pit 4		30	50	hZCL	n	10YR6/3	Femn	many	0		34	34	y	n						
		50	120	hZCL	n	10YR6/2	Femn	many	0	poor	42	24	y	y						
										Total	**129**	**111**								
										MB	12	-1								
									Droughtiness grade (DR)		2	2								
75	T	0	30	mZCL	n	10YR4/2			2		53	53	n	n	*II*	2	**2**	WE DR		
		30	65	hZCL	n	10YR6/3	Femn	many	0		49	60	y	n						
		65	120	hZCL	n	10YR5/2	Femn	v.many	0	poor	33	6	y	y						
										Total	**135**	**118**								
										MB	18	6								
									Droughtiness grade (DR)		2	2								
76	T	0	32	mZCL	n	10YR4/3			2		56	56	n	n	*II*	2	**2**	WE DR		
		32	120	hZCL	n	10YR6/3	Femn	many	0		101	65	y	n						
										Total	**157**	**121**								
										MB	40	9								
									Droughtiness grade (DR)		1	2								
77	T	0	30	mZCL	n	10YR4/3			2		53	53	n	n	*II*	2	**2**	WE DR		
		30	120	hZCL	n	10YR6/3	Femn	many	0		104	68	y	n						
										Total	**157**	**121**								
										MB	40	9								
									Droughtiness grade (DR)		1	2								

Area D

Wetness calculations are made according to the methodology given in Appendix 3 of the ALC guidelines, MAFF 1988

Droughtiness calculations are made according to the methodology given in Appendix 4 of the ALC guidelines, MAFF 1988.

Grades are shown for drought, wetness and any other soil or site factors which are relevant. The overall Grade is set by the most limiting factor and shown on the right.

Stone types		
%	TAv	EAv
hard	1	0.5
.		

hard flint & pebble

Climate Data	
MDwheat	117
MDpotato	113
FCD	130

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm	>62cm	<62cm		
SPL within 80cm, gleying at 40-70cm	>44cm	<44cm		
No SPL but gleying within 40cm	coarse subsoil	*I*	other cases	*II*

Maximum depth of auger penetration is underlined

Site No.		**Depth cm**	**Texture**	**$CaCO_3$**	**Colour**	**Mottle colour**	**abund-ance**	**stone% hard**	**stone% .**	**Struct-ure**	**APwheat mm**	**AP potato mm**	**Gley**	**SPL**	**WC**	**Wetness grade WE**	**Final Grade**	**Limiting Factor(s)**

78	T	0	38	mZCL	10YR4/1			2	-	71	71	n	n	*II*	2	**2**	WE DR	
		38	120	hZCL	10YR5/3	Fe	com	1		64	41	y	n					
									Total	**135**	**112**							
									MB	18	-1							
									Droughtiness grade (DR)	2	2							
79	T	0	38	mZCL	10YR4/1			2	-	71	71	n	n	*III*	3a	**3a**	WE	
		38	120	C	10YR5/3	Fe	com	1	poor	64	41	y	y					
									Total	**135**	**112**							
									MB	18	-1							
									Droughtiness grade (DR)	2	2							
80	T	0	43	mZCL	10YR4/1			2	-	84	84	n	n	*III*	3a	**3a**	WE	
		43	120	C	10YR5/3	Fe	com	1	poor	55	32	y	y					
									Total	**139**	**116**							
									MB	22	3							
									Droughtiness grade (DR)	2	2							
81	T	0	37	mZCL	10YR4/2			5	-	67	67	n	n	*II*	2	**2**	WE DR	
		37	70	hZCL	10YR5/3	Fe	com	10		38	50	y	n					
		70	85	hZCL	10YR5/3	Fe	com	0	poor	9	0	y	y					
		85	120	hZCL	10YR5/3	Fe	com	0	poor	21	0	y	y					
									Total	**135**	**117**							
									MB	18	4							
									Droughtiness grade (DR)	2	2							
82	T	0	36	mZCL	10YR4/2			1	-	68	68	n	n	*II*	2	**2**	WE DR	
Pit 5		36	60	hZCL	10YR5/3	Fe	com	0		34	41	y	n					
		60	70	hZCL	10YR5/3	Fe	com	0		10	17	y	n					
		70	80	hZCL	10YR5/3	Fe	com	0	poor	6	0	y	y					
		80	120	hZCL	10YR5/3	Fe	com	0	poor	24	0	y	y					
									Total	**142**	**126**			Pit dug to 60cm, augered to 80cm				
									MB	25	13							
									Droughtiness grade (DR)	2	1							
83	T	0	38	mZCL	10YR4/2			2	-	71	71	n	n	*II*	2	**2**	WE DR	
		38	55	mCL	10YR4/1	Fe	com	0		24	27	y	n					
		55	90	mCL	10YR5/3	Fe	com	0		35	24	y	n					
		90	120	mCL	10YR5/3	Fe	com	0		30	0	y	n					
									Total	**160**	**122**							
									MB	43	9							
									Droughtiness grade (DR)	1	2							
84	T	0	32	mZCL	10YR4/1			2	-	60	60	n	n	*II*	2	**2**	WE DR	
		32	55	hCL	10YR5/3	Fe	com	0		34	37	y	n					

		55	80	hCL	10YR5/4	Fe	com	0		25	24	n	n						
		80	120	hCL	10YR5/4	Fe	com	0		40	0	n	n						
									Total	**158**	**120**								
									MB	41	7								
									Droughtiness grade (DR)	1	2								
85	T	0	30	mZCL	10YR4/1			2	-	56	56	n	n	///	3a	**3a**	WE		
		30	120	C	10YR5/3	Fe	com	1	poor	74	51	y	y						
									Total	**130**	**107**								
									MB	13	-6								
									Droughtiness grade (DR)	2	2								
86	T	0	28	mZCL	10YR4/1			2	-	52	52	n	n	///	3a	**3a**	WE		
		28	55	hZCL	10YR5/3	Fe	com	1		42	45	y	n						
		55	120	ZC	10YR5/3	Fe	com	1	poor	45	18	y	y						
									Total	**139**	**115**								
									MB	22	2								
									Droughtiness grade (DR)	2	2								
87	T	0	31	mZCL	10YR4/2			15	-	50	50	n	n	///	3a	**3a**	WE DR		
		31	57	C	10YR5/2	Fe	com	25		27	31	y	n						
		57	120	C	10YR5/3	Fe	com	10	poor	40	15	y	y						
									Total	**118**	**96**								
									MB	1	-17								
									Droughtiness grade (DR)	3a	3a								
88	T	0	22	mCL	10YR4/2			0		40	40	n	n	///	3a	**3a**	WE		
		22	60	C	10YR6/3	Fe+Mn	many	0		53	61	y	n						
		60	120	C	10YR5/6	Fe+Mn	com.	0	poor	42	13	y	y						
									Total	**134**	**113**			USS - very sticky, compressed clay.					
									MB	17	0								
									Droughtiness grade (DR)	2	2								
89	T	0	31	mZCL	10YR4/2			8	-	54	54	n	n	///	3a	**3a**	WE DR		
		31	60	hCL	10YR5/2	Fe	com	5	poor	28	33	y	y						
		60	120	hCL	10YR5/3	Fe	com	5	poor	40	11	y	y						
									Total	**123**	**99**								
									MB	6	-14								
									Droughtiness grade (DR)	2	3a								
90	T	0	28	mCL	10YR5/2			0		50	50	n	n	///	3a	**3a**	WE		
		28	70	C	10YR5/1	Fe	many	0		51	67	y	n						
		70	120	C	10YR5/6	Fe	com.	0	poor	35	0	n	y						
									Total	**137**	**118**			USS - very sticky. LSS inferred					
									MB	20	5			Compressed and sticky clay - auger stuck at 70cm					

							Droughtiness grade (DR)		2	2							
91	T	0	23	mCL	10YR4/2		0		41	41	n	n	///	3a	**3a**	WE	
		23	50	hCL	10YR5/4	Fe+Mn	com. 0		43	43	n	n					
		50	120	C	10YR5/6	Fe+Mn	com. 0	poor	49	26	n	y					
								Total	**134**	**111**			LSS - difficult to auger, compressed and sticky clay				
								MB	17	-2							
							Droughtiness grade (DR)		2	2							
92	T	0	20	mCL	10YR4/2		0		35	35	n	n	///	3a	**3a**	WE	
Pit 6		20	60	C	10YR6/3	Fe+Mn	com. 0		51	58	y	n					
		60	120	C	10YR5/6	Fe	many 0	poor	41	12	y	y					
								Total	**127**	**105**			Compressed and sticky clay				
								MB	10	-8							
							Droughtiness grade (DR)		2	2							
93	T	0	22	mCL	10YR5/3		0		40	P	n	n	///	3a	**3a**	WE	
		22	60	C	10YR5/6	Fe+Mn	many 0		53	54	y	n					
		60	120	C	10YR5/6	Fe	com. 0	poor	42	19	y	y					
								Total	**134**	**113**			USS - very sticky. LSS inferred				
								MB	17	0			Compressed and sticky clay - auger stuck at 60cm				
							Droughtiness grade (DR)		2	2							
94	T	0	22	mZCL	10YR5/3		0		42	42	n	n	//	2	**2**	WE DR	
		22	45	hZCL	10YR5/3	Fe	com. 0		39	39	y	n					
		45	120	C	10YR6/3	Fe+Mn	many 0		64	40	y	n					
								Total	**145**	**121**							
								MB	28	8							
							Droughtiness grade (DR)		2	2							
95	T	0	35	mCL	10YR4/2		0		63	63	n	n	//	2	**2**	WE DR	
		35	70	hCL	10YR5/3	Fe+Mn	com. 0		44	56	y	n					
		70	120	C	10YR6/2	Fe	few 0		40	0	n	n					
								Total	**147**	**119**							
								MB	30	6			No SPL but clay is sticky and compressive				
							Droughtiness grade (DR)		1	2							
96	T	0	28	hZCL	10YR4/2		0	-	53	53	n	n	//	3a	**3a**	WE	
		28	55	hZCL	10YR5/3	Fe	com. 0		42	46	y	n					
		55	120	C	10YR6/2	Fe+grey	many 0		52	24	y	n					
								Total	**148**	**123**			LSS - moderately permeable. No SPL but clay is sticky and compressive				
								MB	31	10							
							Droughtiness grade (DR)		1	1							
97	T	0	30	hCL	10YR5/2		0	-	54	54	n	n	///	3a	**3a**	WE	
		30	65	C	10YR5/3	Fe+Mn	com. 0		44	56	y	n					

		65	120	C	10YR5/6	Fe+Mn	many	0	poor	39	7	y	y						
									Total	**136**	**117**			USS - compressed clay/moderately permeable					
									MB	19	4								
									Droughtiness grade (DR)	2	2								
98	T	0	27	hCL	10YR5/2			0		49	49	n	n	*I*	2	**2**	WE DR		
		27	45	C	10YR6/4	Mn	few	0		29	29	n	n						
		45	120	C	10YR6/4	Fe	com.	0		64	40	n	n						
									Total	**141**	**117**								
									MB	24	4								
									Droughtiness grade (DR)	2	2								
99	T	0	30	hCL	10YR5/2			0		54	54	n	n	*I*	2	**2**	WE DR		
		30	55	C	10YR6/4	Fe	few	0		36	40	n	n						
		55	120	C	10YR6/4	Fe	com.	0		52	24	n	n						
									Total	**142**	**118**								
									MB	25	5								
									Droughtiness grade (DR)	2	2								
100	T	0	30	hCL	10YR5/2			0		54	54	n	n	*I*	2	**2**	WE DR		
		30	55	C	10YR6/3	Fe+Mn	few	0		36	40	n	n						
		55	120	C	10YR6/3	Fe	many	0		52	24	y	n						
									Total	**142**	**118**								
									MB	25	5								
									Droughtiness grade (DR)	2	2								

Area E

Wetness calculations are made according to the methodology given in Appendix 3 of the ALC guidelines, MAFF 1988

Droughtiness calculations are made according to the methodology given in Appendix 4 of the ALC guidelines, MAFF 1988.

Grades are shown for drought, wetness and any other soil or site factors which are relevant. The overall Grade is set by the most limiting factor and shown on the right.

Stone types		
%	TAv	EAv
hard	1	0.5
.		

hard flint & pebble

Climate Data	
MDwheat	117
MDpotato	112
FCD	133

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm	>63cm	36-63cm	<36cm	
SPL within 80cm, gleying at 40-70cm	>45cm	<45cm		
No SPL but gleying within 40cm	coarse subsoil	*I*	other cases	*II*

Maximum depth of auger penetration is underlined

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone% .	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
5	T	0	27	mCL	n	10YR4/2			15		-	41	41	n	n	*III*	3a	**3a**	WE
		27	40	hCL	n	10YR4/3			5			15	15	n	n				
		40	60	C	n	10YR5/2	Fe	v.many	5		poor	27	35	y	y				

		60	120	C	n	10YR5/1	Fe	com	0	poor	42	13	y	y						
										Total	**126**	**104**								
										MB	9	-8		ST. stones >2cm				5%		
										Droughtiness grade (DR)	2	2								
6	T	0	30	mCL	n	10YR3/2			10		49	49	n	n	*I*	1		**2**	DR ST	
		30	62	SCL	n	10YR3/3			10		38	43	n	n						
		62	100	mSL	n	10YR5/4	Fe	com	10		38	11	n	n						
		100	120	cSL	n	10YR5/4			20		18	0	n	n						
										Total	**143**	**103**								
										MB	26	-9		ST. stones >2cm				5%		
										Droughtiness grade (DR)	2	2								
7	T	0	27	mCL	n	10YR4/2			15		41	41	n	n	*IV*	3b		**3b**	WE	
		27	67	C	n	10YR6/2	Fe	many	5	poor	40	49	y	y						
		67	120	C	n	10YR5/1	Fe	many	20	poor	31	3	y	y						
										Total	**112**	**94**								
										MB	-5	-18		ST. stones >2cm				10%		
										Droughtiness grade (DR)	3a	3a								
8	T	0	30	mCL	n	10YR4/2			17		45	45	n	n	*III*	3a		**3a**	WE DR	
		30	52	mCL	n	10YR5/2	Fe	com	5		32	33	y	n						
		52	65	SC	n	10YR5/3	Fe	many	20	poor	9	14	y	y						
		65	120	C	n	10YR5/1	Fe	many	20	poor	32	5	y	y						
										Total	**118**	**97**								
										MB	1	-15		ST. stones >2cm				7%		
										Droughtiness grade (DR)	3a	3a								
9	T	0	25	mCL	n	10YR4/2			17		37	37	n	n	*IV*	3b		**3b**	WE	
		25	60	C	n	10YR6/2	Fe	many	5	poor	38	43	y	y						
		60	120	C	n	10YR5/1	Fe	many	20	poor	35	10	y	y						
										Total	**110**	**91**		Ob near pond						
										MB	-7	-21		ST. stones >2cm				7%		
										Droughtiness grade (DR)	3a	3a								
10	T	0	22	mCL	n	10YR4/3			10		36	36	n	n	*IV*	3b		**3b**	WE	
		22	55	C	n	10YR5/2	Fe+grey	many	2	poor	39	42	y	y						
		55	120	C	n	10YR6/1	Fe	many	20	poor	38	16	y	y						
										Total	**112**	**93**								
										MB	-5	-19		USS - Lenses of medium sand						
										Droughtiness grade (DR)	3a	3a								
11	T	0	25	mCL	n	10YR4/2			5		43	43	n	n	*III*	3a		**3a**	WE	
		25	60	C	n	10YR5/2	Fe	com	5		46	53	y	n						

		60	120	C	n	10YR5/1	Fe	many	5	poor	40	12	y	y						
										Total	**129**	**108**		LSS - prominent mottles						
										MB	12	-4								
										Droughtiness grade (DR)	2	2								
12	T	0	22	mCL	n	10YR3/3			15		34	34	n	n	///	3a	**3a**	WE DR		
		22	40	C	n	10YR3/1	Fe	few	20		23	23	n	n						
		40	120	C	n	10YR5/1	Fe	many	5	poor	59	37	y	y						
										Total	**116**	**94**		Impeded @ 40 cm.						
										MB	-1	-18		LSS inferred from nearby observations						
										Droughtiness grade (DR)	3a	3a								

Appendix 4: Photographs

Area A

Observation 2 – slowly permeable subsoil

Area B

Pit 1

Pit 1 topsoil and subsoil

Pit 1 topsoil stone

Pit 2 large stone (>2cm and >6cm)

Pit 3

Area C

Pit 4

Pit 4 subsoil

Surface stone

Area D

Pit 5

Pit 5 topsoil

Pit 5 permeable subsoil

Pit 6

Pit 6, topsoil and subsoil

Area E

Permeable upper subsoil type

Slowly permeable upper subsoil type

N

KEY

Survey Boundary

Observations

RAC Auger

RAC Pit

MAFF Auger

MAFF Pit

Plan reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office. Crown Copyright Reserved. Ordnance Survey Copyright Licence Number: 100005584

Title
OBSERVATION MAPPING

Reading Agricultural Consultants Ltd
Gate House
Beechwood Court
Long Toll
Woodcote
RG8 0RR
01491 684233
www.reading-ag.com

READING AGRICULTURAL CONSULTANTS

Ref	Rev.
RAC/9118/1	
Drawn by: AGM	Checked by: SRW
Scales: 1:10,000@A3	Date: 04/2021

0 100 200 300 400 m

N

KEY

Agricultural Land Classification

- Grade 1
- Grade 2
- Subgrade 3a
- Subgrade 3b
- Grade 4
- Grade 5
- Non-Agricultural
- Not Present

Plan reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office. Crown Copyright Reserved. Ordnance Survey Copyright Licence Number: 100005584

Title
AGRICULTURAL LAND CLASSIFICATION MAPPING

Reading Agricultural Consultants Ltd
Gate House
Beechwood Court
Long Toll
Woodcote
RG8 0RR
01491 684233
www.reading-ag.com

READING AGRICULTURAL CONSULTANTS

Ref	Rev.
RAC/9118/2	
Drawn by: AGM	Checked by: SRW
Scales: 1:10,000@A3	Date: 04/2021

0 100 200 300 400 m

N

Areas surveyed
- A
- B
- C
- D
- E
- F

0 100 200 300 400 m

Plan reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office. Crown Copyright Reserved. Ordnance Survey Copyright Licence Number: 100005584

Title
Areas surveyed

Reading Agricultural Consultants Ltd
Gate House
Beechwood Court
Long Toll
Woodcote
RG8 0RR
01491 684233
www.reading-ag.com

READING AGRICULTURAL CONSULTANTS

Ref	Rev.
RAC/9118/3	
Drawn by: AGM	Checked by: SRW
Scales: 1:10,000@A3	Date: 04/2021

APPENDIX B

Air Quality Report

University of Kent

CANTERBURY CAMPUS

Air Quality Assessment: Disposal Sites BCD

001
MARCH 2022

PUBLIC

University of Kent

CANTERBURY CAMPUS

Air Quality Assessment: Disposal Sites BCD

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 70080896

OUR REF. NO. 001

DATE: MARCH 2022

WSP

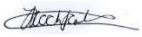
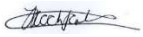
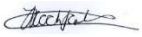
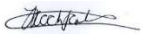
Mountbatten House
Basing View
Basingstoke, Hampshire
RG21 4HJ

Phone: +44 1256 318 800

Fax: +44 1256 318 700

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Draft	Issued		
Date	14/03/22	24/03/22		
Prepared by	Carol Chan	Carol Chan		
Signature				
Checked by	Joanna Rochfort	Joanna Rochfort		
Signature				
Authorised by	Joanna Rochfort	Joanna Rochfort		
Signature				
Project number	70080896	70080896		
Report number	001	001		
File reference	\\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\AQ Air Quality\11 Report			

CONTENTS

1. INTRODUCTION 1

2. SCOPE OF THE ASSESSMENT 2

2.1. SCOPE OF THE ASSESSMENT 2
2.2. POTENTIAL EFFECTS 2
2.3. RELEVANT LEGISLATION AND PLANNING POLICY 3

3. METHODOLOGY 5

3.1. STUDY AREA 5
3.2. BASELINE STUDY 8
3.3. CONSTRUCTION PHASE ASSESSMENT 8
3.4. OPERATIONAL PHASE ASSESSMENT 9
3.5. MODELLING METHODOLOGY 9
3.6. SIGNIFICANCE CRITERIA 14
3.7. LIMITATIONS & ASSUMPTIONS 15

4. BASELINE CONDITIONS 16

4.1. LOCAL EMISSION SOURCES 16
4.2. CCC'S REVIEW & ASSESSMENT OF AIR QUALITY 16
4.3. LOCAL AUTHORITY AIR QUALITY MONITORING DATA 16
4.4. BACKGROUND CONCENTRATIONS OF NO_X 17
4.5. BACKGROUND N AND ACID DEPOSITION 18
4.1. BACKGROUND CONCENTRATIONS OF NH_3 19

5. ASSESSMENT OF IMPACTS 21

5.1. CONSTRUCTION PHASE 21
5.2. OPERATION PHASE 24

5.3. SUMMARY OF THE AIR QUALITY MODELLING RESULTS 45

6. MITIGATION AND RESIDUAL EFFECTS 46

6.1. CONSTRUCTION PHASE 46

6.2. OPERATIONAL PHASE 46

7. SUMMARY AND CONCLUSIONS 48

TABLES

Table 1 - Dry Deposition Velocities 13

Table 2 - Dry deposition flux conversion factors for nutrient nitrogen deposition 14

Table 3 - Background Concentrations of NO_X ($\mu g/m^3$) 17

Table 4 - Background N-deposition and Acid deposition at Ecological Receptors 18

Table 5 - Background NH_3 at Ecological Receptors 19

Table 6 - Potential dust emission magnitude 22

Table 7 - Sensitivity of the study area 23

Table 8 - Summary of dust risks 23

Table 9 - Indication of exceedances of 1% of the Critical Level for NO_X 25

Table 10 - Indication of exceedances of 1% of the Critical Level for NH_3 29

Table 11 - Indication of exceedances of 1% of the Critical Load for N Deposition 33

Table 12 - Indication of exceedances of 1% of the Critical Load for Acid Deposition 41

FIGURES

Figure 1 - Location of Designated Sites and Transects 7

APPENDICES

APPENDIX A

GLOSSARY

APPENDIX B

RELEVANT LEGISLATION AND PLANNING POLICY

APPENDIX C

IAQM CONSTRUCTION IMPACT ASSESSMENT METHODOLOGY

APPENDIX D

CRITICAL LEVELS AND CRITICAL LOADS

APPENDIX E

TRAFFIC DATA

APPENDIX F

MODEL VERIFICATION

APPENDIX G

WIND ROSE

APPENDIX H

MODEL RESULTS

1. INTRODUCTION

1.1.1. WSP has been commissioned by University of Kent to carry out an assessment of the potential air quality impacts arising from the Proposed Development situated on land currently owned by the University of Kent, hereafter referred to as the 'Proposed Development' or 'Site'. The Site comprises of three development parcels (Sites B, C and D) which have been considered within a single Masterplan for development. The Site is located on farmland to the north of the main university campus, between the villages of Blean and Tyler Hill, and comprises an area of 230.37 ha.

1.1.2. The current emerging masterplan is for a new residential-led community comprising circa 2,000 dwellings and associated uses. The information presented within this report will be used to promote the Site as a proposed allocation within Canterbury City Council's (CCC's) emerging Local Plan.

1.1.3. This report presents the findings of the air quality assessment undertaken to assess the likely effects of changes in air quality on nearby designated ecological sites (including nearby Ancient Woodlands and Blean Complex Special Area of Conservation (SAC)), during both the construction and operation of the Proposed Development. Notably, consideration has been given to the effects of both the proposed Access Strategy and traffic associated with the Proposed Development, once operational.

1.1.4. Whilst a Habitats Regulations Assessment (HRA) will be undertaken to inform the evidence base for the emerging Local Plan, which will include traffic contributions from the Site as a potential strategic allocation, this will consider potential effects on Habitats Sites only. Whereas the assessment presented herein:

- Includes consideration of air quality effects on all designated ecological sites (not just Habitats Sites); and
- Allows consideration of the likely effects of the Proposed Development 'alone' as well as 'in-combination' with other Plans and Projects.

1.1.5. A glossary of terms used in this report is provided in Appendix A.

2. SCOPE OF THE ASSESSMENT

2.1. SCOPE OF THE ASSESSMENT

2.1.1. There is the potential for effects on nearby designated ecological sites[1] to occur during both the construction and operational phases of the Proposed Development. These comprise:

- The effects of dust and particulate matter due to construction activities (including the construction of the site access road);
- Emissions to air (namely nitrogen oxide (NO_X) and particulate matter) from traffic associated with the construction phase of the Proposed Development; and
- Changes in air quality due to:
  - Traffic associated with future occupants/users of the Proposed Development; and
  - The redistribution of traffic on the local road network which may occur as a result of the proposed Access Strategy/changes to the capacity of nearby roads due to the operation of the Proposed Development.

2.1.2. These potential effects are discussed further in Section 2.2 below.

2.2. POTENTIAL EFFECTS

INCREASED DUST DEPOSITION

2.2.1. Increased dust deposition can affect designated ecological sites in one of two ways:

- Direct impacts on vegetation or aquatic ecosystems; and/or
- Indirect impacts on fauna (e.g. on foraging habitat).

2.2.2. The Institute of Air Quality Management's (IAQM's) guidance on the assessment of dust from demolition and construction[2] describes some of the potential effects of dust from demolition and construction sites on vegetation. Namely:

"Dust from demolition and construction sites deposited on vegetation may create ecological stress within the local plant community. During long dry periods dust can coat plant foliage adversely affecting photosynthesis and other biological functions. Rainfall removes the deposited dust from foliage and can rapidly leach chemicals into the soil. Plant communities near short-term works are likely to recover within a year of the dust soiling stress ceasing. However, large scale construction sites may give rise to dust deposition over an extended period of time and adversely affect vascular plants. For example cement dust deposited on leaves can increase the surface alkalinity, which in

[1] Ramsar site, Special Area of Conservation (SAC), Special Protection Area (SPA), Site of Special Scientific Interest (SSSI) , Areas of Special Scientific Interest (ASSI), Local Wildlife Site (LWS), Local Nature Conservation Site (LNCS), Site of Importance for Nature Conservation (SINC), Area in the Ancient Woodland Inventory (AWI), National Nature Reserves (NNR), Local Nature Reserves (LNR) and Ancient Woodland (AW).

[2] Institute of Air Quality Management (Version 1.1 Updated June 2016). *Guidance on the Assessment of Dust from Demolition and Construction*

turn can hydrolyse lipid and wax components, penetrate the cuticle, and denature proteins, finally causing the leaf to wilt.

Limestone dust coating of lichen has been shown to damage its photosynthetic apparatus. These types of damage over a long period have the potential to change plant community structure and function. Noticeable effects include the increase in ruderal and pioneer plant communities."

2.2.3. The sensitivity of a particular site to increased dust deposition will depend on its reason for designation. Specialist ecological advice should be sought to determine the sensitivity of the ecological receptors to dust impacts. The requirement for this is considered in Sections 5 and 6.

CHANGES IN POLLUTANT CONCENTRATIONS IN RELATION TO THE CRITICAL LOAD AND LEVELS

2.2.4. Guidance published by the Institute of Air Quality Management (IAQM) specifies that there are two categories of pollutants that can impact upon designated ecological sites. These are:

- Pollutants that have an effect on vegetation/habitats in a gaseous form (namely NO_X and ammonia (NH_3) concentrations); and
- Those which have an effect through deposition (nitrogen (N) and acid deposition).

2.2.5. Changes in NO_X and NH_3 concentrations are assessed in relation to the relevant Critical Levels. Critical Levels are used to estimate the exposure of sensitive vegetation and ecosystems to some important airborne pollutants, below which significant harmful effects are not expected to occur. They are not habitat specific, as with Critical Loads, but have been set to cover broad vegetation types. These levels have been adopted by the European Union and the United Nations Economic Commissions for Europe (UNECE) and are used as regulatory standards.

2.2.6. The Critical Level for NO_x is a concentration of 30µg/m^3, measured as an annual mean. The Critical Level for ammonia (NH_3) for higher plants (including heathland, grassland and forest ground flora) is 3µg/m^3. There is also a lower Critical Level for NH_3 of 1ug/m^3 which applies only where lichens and bryophytes are present.

2.2.7. In addition to the direct effect of pollutant concentrations in the air, vegetation can also be affected by the deposition of pollutants and particles onto both the ground and vegetation. Close to roads, nitrogen deposition can be of concern for sensitive ecological sites as it can result in a variety of adverse effects depending on the habitats present (e.g., interfering with photosynthesis, increasing acidification, altering species composition etc).

2.2.8. When considering the effects of nitrogen deposition from the air onto habitats and vegetation, the relevant assessment benchmarks are known as 'Critical Loads'. Critical Loads are defined as: *"…a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge".* Critical Loads have been established for a wide range of habitat and vegetation types, reflecting the variation in ecosystem responses.

2.2.9. The Critical Levels and Loads applied to this assessment are detailed within Section 3.6.

2.3. RELEVANT LEGISLATION AND PLANNING POLICY

2.3.1. Relevant legislation and planning policy is listed below. Further detail can be found within Appendix B.

RELEVANT LEGISLATION

- Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS)[3];
- The Air Quality (England) Regulations 2000[4];
- The Air Quality (England) (Amendment) Regulations 2002[5];
- The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020[6];
- The Air Quality Standards Regulations 2010[7];
- The Air Quality Standards (Amendment) Regulations 2016[8];
- The Environment Act 2021[9]; and
- The Habitats Regulations[10].

PLANNING POLICY

- The Government's National Planning Policy Framework[11]; and
- The Government's Clean Air Strategy 2019[12].

[3] Department for Environment, Food and Rural Affairs (Defra) and the Devolved Administrations (2007). *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volumes 1 and 2)*

[4] The Air Quality (England) Regulations 2000. Available at: http://www.legislation.gov.uk/uksi/2000/928/contents/made

[5] The Air Quality (England) (Amendment) Regulations 2002. Available at: http://www.legislation.gov.uk/uksi/2002/3043/contents/made

[6] The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 – Statutory Instrument No.1313. Available at: https://www.legislation.gov.uk/uksi/2020/1313/regulation/1/made

[7] The Air Quality Standards Regulations 2010. Available at: http://www.legislation.gov.uk/uksi/2010/1001/contents/made

[8] The Air Quality Standards (Amendment) Regulations 2016. Available at: https://www.legislation.gov.uk/uksi/2016/1184/contents/made

[9] Environment Bill 2021 (c.30). Available from https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted

[10] The Conservation of Habitats and Species Regulations 2017. Available at: http://www.legislation.gov.uk/uksi/2017/1012/contents/made

[11] Ministry of Housing, Communities and Local Government (July 2021) National Planning Policy Framework.

[12] Defra (January, 2019). Clean Air Strategy 2019.

3. METHODOLOGY

3.1. STUDY AREA

CONSTRUCTION

3.1.1. The study area for the construction phase assessment has been defined on the basis of the construction guidance produced by the Institute of Air Quality Management (IAQM)[13] which has been used within the assessment presented herein. This determines that a construction phase assessment should be undertaken where there are:

- 'Human receptors' within 350m of the site boundary, or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s); and/or
- 'Ecological receptors' within 50m of the site boundary, or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

3.1.2. It is within these distances that the impacts of dust soiling and increased particulate matter in the ambient air will have the greatest impact on local air quality at sensitive receptors.

3.1.3. As this report focuses on potential effects on nearby designated ecological sites (as opposed to potential impacts on human receptors), the construction phase assessment and associated study area has been assessed on the basis of the criteria for ecological receptors only.

OPERATION

3.1.4. Guidance published by both Natural England[14] and the IAQM[15] has been referred to in determining the study area for the air quality assessment. Both guidance documents advocate the use of threshold criteria to determine the need for further assessment, where designated ecological sites are present within 200m of the road edge. These criteria are as follows:

- Changes in traffic due which exceed 1000 vehicles a day (as Annual Average Daily Traffic (AADT)); and/or
- Changes in pollutant concentrations/deposition which exceed 1% of the relevant Critical Level/Load.

3.1.5. Where an exceedance of the above thresholds is not triggered by the Proposed Development 'alone', there is a requirement to consider the Proposed Development against the above thresholds 'in-combination' with other Plans and Projects.

---

[13] Institute of Air Quality Management (Version 1.1 Updated June 2016). *Guidance on the Assessment of Dust from Demolition and Construction*

[14] Natural England, 2018, *Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations*

[15] Institute of Air Quality Management, 2019. *A guide to the assessment of air quality impacts on designated nature conservation sites*

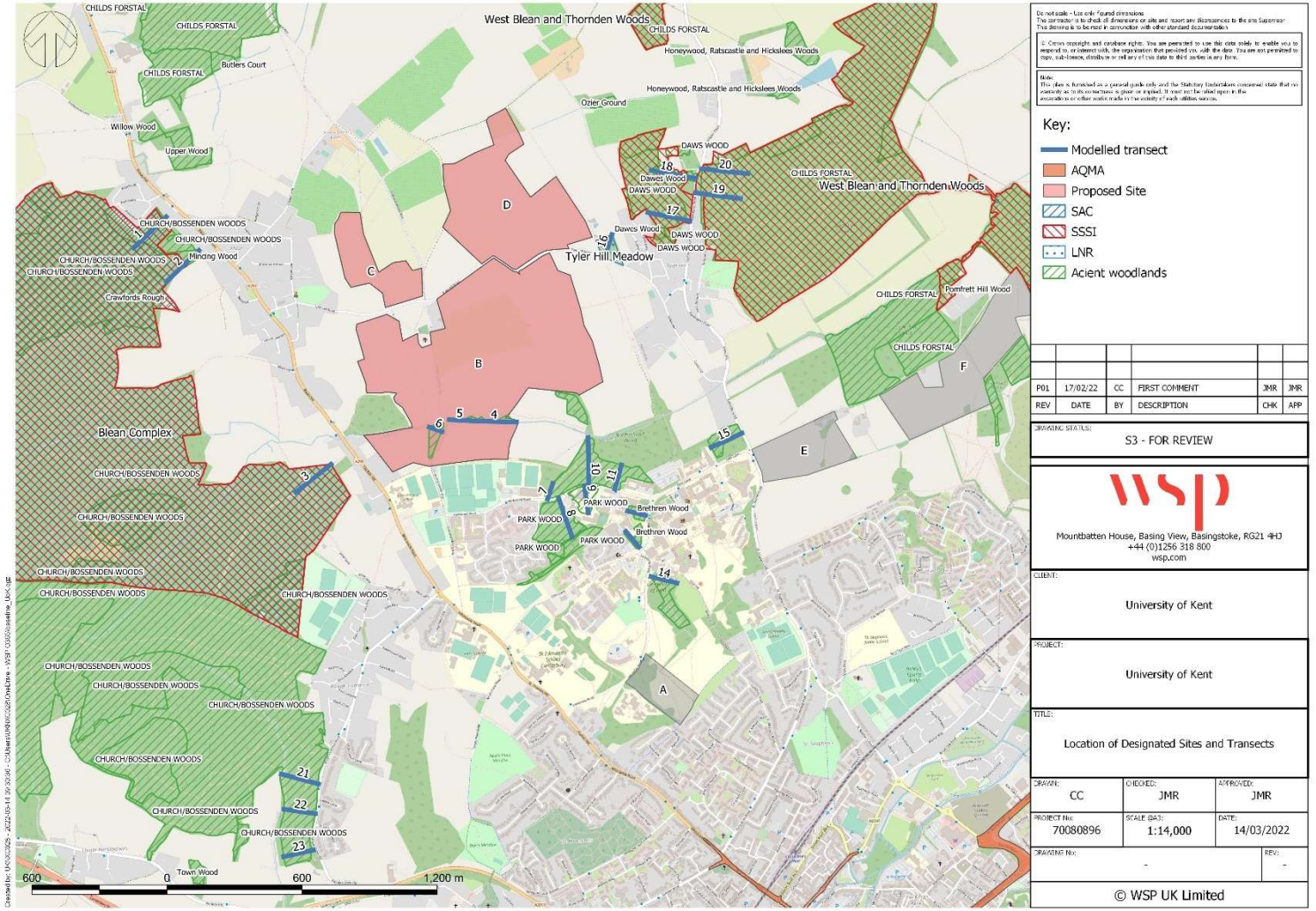
3.1.6. The above traffic data thresholds have been applied to the traffic data provided by WSP as part of their Preliminary Transport Appraisal to define the study area for the assessment (i.e. the model network for detailed dispersion modelling).

3.1.7. The following designated ecological sites fall within the study area:

- Blean Complex SAC (also designated as Church Woods SSSI),
- West Blean And Thornden Woods SSSI,
- Tyler Hill Meadow LNR; and
- Ancient Woodlands (Ancient Woodland within Site B, Park Wood Ancient Woodland, Brethren Wood Ancient Woodland, Ancient Woodlands along University Road and Canterbury Hill, and Church/Bossenden Woods Ancient Woodland).

3.1.8. The locations of the identified designated ecological sites receptors are shown in Figure 1.

Figure 1 - Location of Designated Sites and Transects



3.2. BASELINE STUDY

3.2.1. The baseline study has comprised:

- Review of CCC's latest review and assessment reports[16] and air quality data for the area surrounding the Site, including data from CCC, Defra[17], the Environment Agency (EA)[18;]
- Desk study to confirm the locations of designated ecological sites/receptors that may be sensitive to changes in local air quality; and
- Review of data from the Air Pollution Information Service (APIS)[19].

3.3. CONSTRUCTION PHASE ASSESSMENT

DUST AND PARTICULATE EMISSIONS FROM ON-SITE CONSTRUCTION ACTIVITIES

3.3.1. An assessment of the likely significant impacts on local air quality due to the generation and dispersion of dust and PM_{10} during the construction phase has been undertaken using: the relevant assessment methodology published by the IAQM; the available information for this phase of the Proposed Development provided by the Client and Project Team; and, professional judgement.

3.3.2. The IAQM methodology assesses the risk of potential dust and PM_{10} impacts from the following four sources: demolition; earthworks; general construction activities and track-out. It takes into account the nature and scale of the activities undertaken for each source and the sensitivity of the area to an increase in dust and PM_{10} levels to assign a level of risk. Risks are described in terms of there being a low, medium or high risk of dust impacts. Once the level of risk has been ascertained, then site specific mitigation proportionate to the level of risk is identified, and the significance of residual effects determined.

3.3.3. A summary of the IAQM assessment methodology is provided in Appendix C.

EXHAUST EMISSIONS FROM CONSTRUCTION TRAFFIC AND PLANT

3.3.4. In addition to impacts on local air quality due to on-site construction activities, exhaust emissions from construction vehicles and plant may also have an impact on local air quality adjacent to the routes used by these vehicles to access the Site and in the vicinity of the Site itself. At this stage (i.e. promotion of the Site as a strategic allocation through the Local Plan process) information on the number of vehicles and plant associated with the construction phase was not available. Therefore, a qualitative assessment of their impact on local air quality has been undertaken using professional judgement and by considering the following:

- The number and type of construction traffic and plant likely to be generated by this phase of the Development;

[16] Canterbury City Council (2019). 2019 Air Quality Annual Status Report

[17] Defra Local Air Quality Management (LAQM) Support Pages. Available at: http://laqm.defra.gov.uk/ Accessed on 04 Feb 2022

[18] https://data.gov.uk/dataset/cfd94301-a2f2-48a2-9915-e477ca6d8b7e/pollution-inventory Accessed on 04 Feb 2022

[19] Air Pollution Information System (APIS) http://www.apis.ac.uk/

- The number and proximity of sensitive receptors to the Application Site and along the likely routes to be used by construction vehicles; and
- The likely duration of the construction phase and the nature of the construction activities undertaken.

3.4. OPERATIONAL PHASE ASSESSMENT

MODELLING METHODOLOGY

3.4.1. Air quality dispersion modelling was carried out to determine the potential impacts on the identified ecological sites due to changes in NO_x and NH_3 concentrations and N and acid deposition due to the operation of the Proposed Development. The modelling was undertaken using industry standard software (ADMS-Roads[20]) with reference to relevant assessment guidance including:

- Defra Local Air Quality Management Review and Assessment Technical Guidance[21];
- Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations[22]; and
- The IAQM's guidance on the Assessment of Air Quality Impacts on Designated Nature Conservation Sites[23].

3.4.2. In order to determine the impacts of the Proposed Development both 'alone' and' in-combination' with other Plans and Projects (as required by the Habitats Regulations[24]), three scenarios were modelled:

- 2019 – Baseline Year/Model Verification;
- 2040 – Future Baseline without the Proposed Development (herein referred to as the do minimum (DM)'scenario); and
- 2040 – With the Proposed Development (herein referred to as the do something (DS) scenario).

3.4.3. 2019 is the most recent year for which monitoring data and meteorological data are available to enable verification of the model results, and so this year has been used as the baseline year for this assessment. 2040 is the end of the emerging Local Plan period. Traffic data from 2021 was used to inform the 2019 base year, which was not readily available for the study area.

3.4.4. The traffic flows for the 'without development' scenarios include background growth in the locality of the Site but do not include any contribution to road traffic from the Proposed Development itself. The traffic flows for the 'with development' scenarios contributions to road traffic from the Proposed

[20] Cambridge Environmental Research Consultants Limited (CERC), ADMS-Roads 5. Further information available at: https://www.cerc.co.uk/index.php

[21] DEFRA (2021) Part IV The Environment Act 1995 and Environment (Northern Ireland) Order 2002 Part III, Local Air Quality Management Technical Guidance LAQM.TG(16)

[22] Natural England, 2018, Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations

[23] Institute of Air Quality Management, 2019. A guide to the assessment of air quality impacts on designated nature conservation sites

[24] The Conservation of Habitats and Species Regulations 2017. Available at: http://www.legislation.gov.uk/uksi/2017/1012/contents/made

Development itself, and background growth. For further details regarding traffic data assumptions please refer to the WSP's Preliminary Transport Appraisal.

3.4.5. Therefore, in order to assess the impact of the Proposed Development 'alone', the following scenarios have been compared:

- 2040 DM versus 2040 DS.

3.4.6. Similarly, in order to assess the impact of the Proposed Development 'in-combination' with other Plans and Projects, the following scenarios have been compared:

- 2019 Baseline versus 2040 DS.

3.4.7. This approach allows for forecast improvements in NO_X concentrations and N deposition between 2019 and 2040 to be taken into account within the assessment of 'in-combination' effects.

Sensitive Receptors

3.4.8. To calculate pollutant concentrations within the designated ecological sites, a series of receptor points were placed within the model along a number of transects at 10m intervals up to a distance of 200m. These are shown within Figure 1 and comprise:

- Three transects within Blean Complex SAC;
- Four transects within West Blean And Thornden Woods SSSI;
- One transect within Tyler Hill Meadow LNR; and
- 15 transects within Ancient Woodland in the study area.

3.4.9. The transects all commence at the nearest part of the designated ecological site to the roads edge. In some instances this coincides with the road edge/verge whereas in others the designated ecological site (and therefore transect) is set back from the roads edge.

Vehicle Emission Factors

3.4.10. The model (ADMS Roads) requires the user to input vehicle emission rates for each of the scenarios being assessed (in this instance, 2019 and 2040, with and without the Proposed Development).

3.4.11. Vehicle emission rates of NO_X are assumed to reduce over time, taking into account advances in vehicle and exhaust technology and changes in composition of the vehicle fleet. Whereas NH_3 emissions do not occur as a result of combustion within vehicle engines, rather they are produced by the emissions controls systems that are used to reduce emissions of NO_X, which have been implemented in response to a tightening of the European type approval standards (Euro Standards) for vehicles. Therefore: *"Trends in roadside nitrogen deposition, whether they are increases or decreases, will be driven by how the UK responds to the challenges and opportunities around electrification of the vehicle fleet"* (AQC, 2020).

NO_X Vehicle Emission Rates

3.4.12. Vehicle emission factors for use in the assessment have been obtained using the Emission Factor Toolkit (EFT) version 11.0 (published in November 2021) available on the Defra website[25]. The EFT allows for the calculation of emission factors arising from road traffic for all years between 2018 and 2050. For the predictions of future year emissions, the toolkit takes into account factors such as anticipated advances in vehicle technology and changes in vehicle fleet composition, such that vehicle emissions are assumed to reduce over time.

3.4.13. 2019 emissions have been applied to the 2019 baseline scenario whilst 2030 emissions have been applied to both the 2040 scenarios (both 'without' and 'with the Proposed Development'). This is because the emission factors within the EFT for years beyond 2030 are provided in support of climate assessments and appraisals only. The EFT v11.0 User Guide[26] states *"Where emissions are to be used after 2030 to inform air quality assessments, the appropriate caveats around the limitations of the analysis must be included to accompany the assessment."*

3.4.14. In order to provide a conservative and robust assessment, 2030 NO_X emissions from the EFT have been applied to the 2040 scenarios (both 'without' and 'with the Proposed Development').

NH_3 Vehicle Emission Rates

3.4.15. NH_3 emissions data for 2035 (as a proxy for 2040) were obtained from AQC Ltd CREAM, version 1A[27]. Fleet projections are provided up to 2035 outside London (except for taxis, which are available up to 2030) and up to 2030 within London.

Model Verification

3.4.16. The ADMS Roads dispersion model has been widely validated for this type of assessment and is considered to be fit for purpose. Model validation undertaken by the software developer will not have included validation in the vicinity of the Development.

3.4.17. To determine the performance of the model at a local level, a comparison of modelled results with the results of monitoring carried out within the study area was undertaken. This process of verification aims to minimise modelling uncertainty and systematic error by correcting modelled results by an adjustment factor to gain greater confidence in the final results, and was carried out following the methodology specified in Chapter 7, Section 4, of LAQM.TG(16).

3.4.18. Details of the verification factor calculations for NO_X are presented in Appendix F. A factor of 3.83 was obtained during the verification process, which indicated that the model was under-predicting. This factor was applied to the model road-NO_x outputs prior to conversion to annual mean NO_2

[25] https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html

[26] Defra Emissions Factors Toolkit v11.0 User Guide (November 2021). Available: https://laqm.defra.gov.uk/wp-content/uploads/2021/11/EFTv11.0-user-guide-v1.0.pdf

[27] Air Quality Consultants - Air Quality Reports, Resources & Tools (aqconsultants.co.uk)

concentrations utilising the NO_x to NO_2 calculator (version 8.1, released August 2020) provided by Defra[28].

3.4.19. It has not been possible to verify ammonia emissions from road traffic as no suitable local monitoring data is available to enable this. However, the NH_3 emissions used within the modelling have been obtained from CREAM which have been verified against monitoring (and so represent on-road emissions data which minimises, as far as possible, uncertainty to be removed through model verification in line with the Defra guidance).

Background Concentrations

Background NO_X Concentrations

3.4.20. Background concentrations of NO_x for the study area have been taken from the national maps provided by Defra[54]. These maps provide estimated background concentrations for the whole of the UK at a grid resolution of 1km x 1km, for all years between 2018 and 2030.

3.4.21. Inherent within the background maps is the assumption that background concentrations will improve (i.e. reduce) over time. Similar to the emission factors, 2030 backgrounds have been applied to 2040 (i.e. the end of the emerging Local Plan period) which introduces a degree of conservatism into the modelled predictions for 2040.

3.4.22. It should be noted that for NO_X and particulate matter, the Defra background maps present both the 'total' estimated background concentrations and the individual contributions from a range of emission sources (for example, motorways, aircraft, domestic heating etc.). When detailed modelling of an individual sector is required as part of an air quality assessment, the respective contribution can be subtracted from the overall background estimate to avoid the potential for 'double-counting'.

3.4.23. Contributions from Motorways, Trunk and A roads from inside the specific grid squares have been removed from the background concentrations (for both 2019 and 2030). As some minor roads may be present within the dispersion model and in-sector minor roads have not been removed from the Defra baseline maps, there may be an element of 'double-counting' in some locations.

Background NH_3 Concentrations and N Deposition

3.4.24. The N deposition rates for the 5km grid squares containing the identified designated ecological sites have been obtained from the APIS website.

3.4.25. The deposition rates for 2017 – 2019 have been factored forward to 2030 based on the trend data provided for the Business As Usual (BAU) case within the Nitrogen Futures document[55].

3.4.26. The BAU case assumes the implementation of UK wide measures but no spatial targeting and also assumes that the National Emissions Ceilings Regulations (NECR) targets will not be met. The following factors have been applied:

- Background NH_3 concentrations: +0.08% year on year; and
- Background N deposition: -1.04% year on year.

[28] https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html#NOxNO2calc

3.4.27. The above approach is considered to represent a conservative and robust assessment of likely background NH_3 concentrations and N deposition. In addition, it does not allow for any degree of reduction that may occur between 2030 and 2040 (as there are no forecasts available).

Results Processing

3.4.28. ADMS Roads was used to predict the road-NO_x and road-NH_3 concentration at each of the receptors/transect points for all of the assessment scenarios.

Annual Mean NO_X Concentrations

3.4.29. Following the application of the verification factor (see above), the adjusted modelled road-NO_x concentrations were added to the background concentrations of NO_X obtained from DEFRA's background mapping (see above) in order to estimate total annual mean NO_X concentrations for comparison with the Critical Level.

Annual Mean NH_3 Concentrations

3.4.30. As the modelled NH_3 concentrations have not been verified, the road-NH_3 concentrations were added directly to the background NH_3 concentrations obtained from the APIS (see above) in order to estimate total annual mean NH_3 concentrations for comparison with the relevant Critical Level.

Calculation of N Deposition

Calculating Dry Deposition Flux

3.4.31. The modelled road pollutant concentrations of NO_X and NH_3 were converted to dry deposition flux(µg/m^2/s) by applying conversion factors as provided in Table 1.

Table 1 - Dry Deposition Velocities

Chemical species	Deposition velocity (m/s)	
NO_2	Grassland (low vegetation)	0.0015
	Forest (tall vegetation)	0.003
NH_3	Grassland (low vegetation)	0.02
	Forest (tall vegetation)	0.03

3.4.32. For NO_2, the modelled road-NO_x concentrations were converted to road-NO_2 concentrations using Defra's NO_x to NO_2 calculator before applying the conversion factors.

3.4.33. As the locations at Blean Complex SAC within 200m of the A290 are predominately broadleaved, mixed and yew woodland, the higher deposition velocities associated with tall vegetation have been used in the calculations.

Calculate N-deposition for dry deposition flux of NO2 and NH3

3.4.34. To convert the dry deposition flux from units of µg/m^2/s (where µg refers to µg of the chemical species) to units of kg/ha/year (where kg refers to kg of N) the dry deposition flux has been multiplied by the relevant conversion factors shown in Table 2.

Table 2 - Dry deposition flux conversion factors for nutrient nitrogen deposition

Chemical species	Conversion factor to kg/ha/year
NO_2	95.9
NH_3	259.7

3.4.35. The modelled road-contributed pollutant concentrations were added to the relevant background N deposition rate to give the total deposition rate at each ecological receptor:

Total nitrogen deposition rate (kg/ha/yr) = ($NO_{2\ \text{dry deposition flux}}$ x 95.9 + $NH_{3\ \text{dry deposition flux}}$ x 259.7) + background N-deposition.

3.4.36. The total N deposition rates were then compared to the lower value of the site-specific Critical Load range applicable to the habitat present in the designated ecological sites.

3.5. SIGNIFICANCE CRITERIA

CONSTRUCTION PHASE

3.5.1. The IAQM assessment methodology recommends that significance criteria are only assigned to the identified risk of dust impacts occurring from a construction activity with appropriate mitigation measures in place. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect will normally be negligible.

3.5.2. For the assessment of the impact of exhaust emissions from plant used on-site and construction vehicles accessing and leaving the Site on local air quality, the significance of residual effects has been determined using professional judgement, with reference to the IAQM's guidance on the Assessment of Air Quality Impacts on Designated Nature Conservation Sites.

OPERATIONAL PHASE

3.5.3. For ecological receptors, it is usually the role of a suitably qualified ecologist, rather than an air quality specialist, to determine whether predicted impacts on air quality within a designated ecological site would result in a significant effect on the habitats present within the site. However, screening criteria can be used by the air quality specialists to identify when predicted impacts are unlikely to result in significant effects, thereby not requiring further assessment or specific mitigation.

3.5.4. To distinguish between negligible impacts and those that could potentially give rise to a significant effect, an established threshold of change in pollutant concentration or deposition rate of 1 percent (%) of the relevant Critical Level or lower Critical Load was applied. Any change of 1% or less is considered negligible and highly unlikely to give rise to an adverse significant effect. However, any change greater than 1% above the Critical Level and/or lower critical load cannot be discounted as

negligible and requires careful consideration by an experienced ecologist to determine the significance of the effect[29].

3.5.5. Details of the relevant Critical Levels and Loads applied to the assessment are provided within Appendix D.

3.6. LIMITATIONS & ASSUMPTIONS

3.6.1. There are uncertainties associated with both measured and predicted concentrations. The model (ADMS Roads) used in this assessment relies on input data (including predicted traffic flows), which also have uncertainties associated with them. The model itself simplifies complex physical systems into a range of algorithms. In addition, local micro-climatic conditions may affect the concentrations of pollutants that the ADMS Roads model will not take into account.

3.6.2. In order to reduce the uncertainty associated with predicted concentrations, model verification has been carried out following guidance set out in LAQM.TG(16). As the model has been verified against local monitoring data and adjusted accordingly, there can be reasonable confidence in the predicted concentrations.

3.6.3. The traffic data screening (and therefore extent of the study area) was restricted to roads for which traffic data were available. It is recommended that the traffic data screening exercise is repeated once further traffic data modelling is available to determine whether there are any addition roads/designated ecological sites which require further consideration.

3.6.4. The default fleet projections in EFT v11.0 are based on fleet growth assumptions which were current before the Covid-19 outbreak in the UK. In consequence, default fleet outputs from the tool do not reflect short or longer term impacts on emissions in 2020 and beyond resulting from behavioural change during the national or local lockdowns.

3.6.5. Traffic data from 2021 was used to inform the 2019 base year, which was not readily available for the study area.

3.6.6. Emissions factors beyond 2030 are not used despite the future year being 2040. This is because the emission factors within the Defra's EFT for years beyond 2030 are provided in support of climate assessments and appraisals only.

[29] Note: exceeding 1% does not in itself mean that there is a significant effect

4. BASELINE CONDITIONS

4.1. LOCAL EMISSION SOURCES

4.1.1. The Site is located in an area where air quality is mainly influenced by emissions from road transport using A290 to the west and Wood Hill/Canterbury Hill to the east. There are a few roads, such as Parkwood Road, Giles Lane and University Road, that run through the campus area and the following areas of Ancient Woodland: Park Wood and Brethren Wood. However, these roads most likely experience low volumes of traffic. Similarly, in most instances, the identified designated ecological sites are located away from major roads (with the exception of Blean Complex SAC and Church Woods, Blean SSSI).

4.1.2. The baseline review (including a review of the EA's public register for industrial installations) indicates that there are no Part A1, A2 or B processes within the vicinity of the Site/identified designated ecological sites that are likely to have a significant effect on local air quality within the study area.

4.2. CCC'S REVIEW & ASSESSMENT OF AIR QUALITY

4.2.1. Currently, CCC has two AQMA's within its administrative area. Only one of these, Canterbury City Centre AQMA, is located within 1.9 km of the Site. This AQMA was first designated in 2006 (AQMA No 1) due to exceedances of the annual mean objective for NO_2 and subsequently expanded in 2011 (AQMA No 2) and 2018 (AQMA No 3) to encompass the arterial roads leading to, and around, the city centre (namely the A2, A28, A299 and A290) and locations where measured concentrations exceeded 36µg/m^3 (i.e. within 10% of the objective).

4.2.2. CCC published its Air Quality Action Plan (AQAP) in 2009 (i.e. three years after the declaration of AQMA No1). This was subsequently updated in 2018 to reflect the changing air quality constraints within the area.

4.2.3. Whilst the AQMA designation and production of the AQAP are targeted towards the protection of human health, in line with CCC's LAQM responsibilities, a number of the measures outlined within the AQAP will benefit air quality in the locality generally, including within the study area/vicinity of the identified ecological sites.

4.3. LOCAL AUTHORITY AIR QUALITY MONITORING DATA

4.3.1. CCC operates a network of 59 passive diffusion tubes in the district and two automatic monitoring stations. Most of the diffusion tubes are located in and around the City Centre AQMA (i.e. away from the Application Site and the identified ecological sites).

4.3.2. CCC's most recent Annual Status Report (ASR), published in 2020, indicates that current air quality within Canterbury is good. Whilst exceedances of the AQS objective for annual mean NO_2 concentrations were recorded at six of CCC's diffusion tube monitoring locations in 2020, none of these monitoring locations are located within the vicinity of the Site/designated ecological sites and are instead located within or close to the existing City Centre AQMA.

4.3.3. Only one diffusion tube falls within 2km of the Site. This diffusion tube (DT58) is located along St Stephens Road, to the northeast of Canterbury City Centre. Annual mean NO_2 concentrations measured at DT58 were considerably below the relevant AQS objective in both 2018 and 2019 (no

data is available prior to 2018). Monitoring data for 2020 is not available and it is considered that 2020 data is not representative due reduction of traffic in the COVID-19 lockdown.

4.3.4. There are no monitoring locations anywhere within the vicinity of the identified designated ecological sites. As discussed within paragraph 4.1.1 above, in most instances the designated ecological sites are located away from major roads (with the exception of Blean Complex SAC and Church Woods, Blean SSSI). Therefore, estimated background concentrations available from DEFRA's webpages (see below) are more likely to be reflective of likely pollutant concentrations within the vicinity of these designated ecological sites than CCC's air quality monitoring data.

4.4. BACKGROUND CONCENTRATIONS OF NO_X

4.4.1. Table 4 summarises background concentrations of NO_X that were obtained for 2019 from DEFRA's webpages for the grid squares containing the identified designated ecological sites. In 2019, the Critical Level of 30µg/m^3 was predicted to be met in all the identified grid squares.

Table 3 - Background Concentrations of NO_X (µg/m^3)

Transect Number	Site Name	Background data grid square coordinates (1 x 1km)	NO_x (µg/m^3)	Exceeds NO_x Critical Level? (µg/m^3)
1-2	Blean Complex SAC	611500, 161500	8.5	No (30)
3	Blean Complex SAC	612500, 160500	8.8	No (30)
4-5	Ancient Woodland	613500, 160500	8.9	No (30)
6	Ancient Woodland	612500, 160500	8.8	No (30)
7-8	Ancient Woodland	613500, 159500	9.8	No (30)
9-11	Ancient Woodland	613500, 160500	8.9	No (30)
12-14	Ancient Woodland	613500, 159500	9.8	No (30)
15	Ancient Woodland	614500, 160500	9.2	No (30)
16	Local Natural Reserve	613500, 161500	8.6	No (30)
17-20	West Blean And Thornden Woods SSSI	614500, 161500	8.6	No (30)
21-23	Ancient Woodland	612500, 158500	9.4	No (30)

4.5. BACKGROUND N AND ACID DEPOSITION

4.5.1. Background rates of N and acid deposition were obtained from the APIS website, where deposition rates have been mapped for the whole of the UK at a grid resolution of 5km x 5km grid squares for a three-year averaging period (2017-2019). This data is presented within Table 5 below.

Table 4 - Background N-deposition and Acid deposition at Ecological Receptors

Transect Number	Name	Background data grid square coordinates (5 x 5km)	Habitat	N-deposition (kg/ha/yr)	Exceeds N-deposition lower Critical Load? (kg/ha/yr)	Acid-deposition (keq/ha/yr)	Exceeds Acid deposition lower Critical Load? (keq/ha/yr)
1-3	Blean Complex SAC	612500, 162500	Broad-leaved, Mixed and yew woodland	24.80	Yes (15)	1.82	No (2.86)
4-6	Ancient Woodland	612500, 162500	Broad-leaved, Mixed and yew woodland	24.80	Yes (10)	1.82	No (2.263)
5	Ancient Woodland	612500, 162500	Broad-leaved, Mixed and yew woodland	24.80	Yes (10)	1.82	No (2.263)
6	Ancient Woodland	612500, 162500	Broad-leaved, Mixed and yew woodland	24.80	Yes (10)	1.82	No (2.263)
7-8	Ancient Woodland	612500, 157500	Broad-leaved, Mixed and yew woodland	29.09	Yes (10)	2.14	No (2.263)
9-11	Ancient Woodland	612500, 162500	Broad-leaved, Mixed and yew woodland	24.80	Yes (10)	1.82	No (2.263)
8	Ancient Woodland	612500, 157500	Broad-leaved, Mixed and yew woodland	29.09	Yes (10)	2.14	No (2.263)
10	Ancient Woodland	612500, 162500	Broad-leaved,	24.80	Yes (10)	1.82	No (2.263)

			Mixed and yew woodland				
11	Ancient Woodland	612500, 162500	Broad-leaved, Mixed and yew woodland	24.80	Yes (10)	1.82	No (2.263)
12	Ancient Woodland	612500, 157500	Broad-leaved, Mixed and yew woodland	29.09	Yes (10)	2.14	No (2.263)
13 - 14	Ancient Woodland	612500, 157500	Broad-leaved, Mixed and yew woodland	29.09	Yes (10)	2.14	No (2.263)
15	Ancient Woodland	612500, 162500	Broad-leaved, Mixed and yew woodland	24.80	Yes (10)	1.82	No (2.263)
16	Local Natural Reserve	612500, 162500	Neutral grassland	14.27	No (20)	1.05	No (5.071)
17 - 20	West Blean And Thornden Woods SSSI	612500, 162500	Broad-leaved, Mixed and yew woodland	24.80	Yes (10)	1.82	No (2.263)
21 - 23	Ancient Woodland	612500, 157500	Broad-leaved, Mixed and yew woodland	29.09	Yes (10)	2.14	No (2.263)

4.5.2. The information from APIS, as shown in the table above, indicates that the lower Critical Load for acid deposition is met at all of the identified designated ecological sites. However, the relevant lower Critical Load value (for Broad-leaved, Mixed and yew woodland) is exceeded at all of the identified designated ecological sites.

4.1. BACKGROUND CONCENTRATIONS OF NH_3

4.1.1. Background concentrations of NH_3 were also obtained from APIS for the identified designated ecological sites. These are provided in Table 6.

Table 5 - Background NH_3 at Ecological Receptors

Transect Number	Site Name	Background data grid square coordinates	Habitat	NH_3 (µg/m^3)	Exceeds NH_3 Critical Level? (µg/m^3)

		(5 x 5km)			
1-3	Blean Complex SAC	612500, 162500	Broad-leaved, Mixed and yew woodland	1.15	No (3)
4-6	Ancient Woodland	612500, 162500	Broad-leaved, Mixed and yew woodland	1.15	No (3)
7-8	Ancient Woodland	612500, 157500	Broad-leaved, Mixed and yew woodland	1.61	No (3)
9-11	Ancient Woodland	612500, 162500	Broad-leaved, Mixed and yew woodland	1.15	No (3)
12-14	Ancient Woodland	612500, 157500	Broad-leaved, Mixed and yew woodland	1.61	No (3)
15	Ancient Woodland	612500, 162500	Broad-leaved, Mixed and yew woodland	1.15	No (3)
16	Local Natural Reserve	612500, 162500	Neutral grassland	1.15	No (3)
17-20	West Blean And Thornden Woods SSSI	612500, 162500	Broad-leaved, Mixed and yew woodland	1.15	No (3)
21-23	Ancient Woodland	612500, 157500	Broad-leaved, Mixed and yew woodland	1.61	No (3)

4.1.2. The information from APIS, as shown in the table above, indicates that the applicable Critical Level for NH_3, based on the habitat present, is met at all of the of the identified designated ecological sites.

5. ASSESSMENT OF IMPACTS

5.1. CONSTRUCTION PHASE

DUST AND PM_{10} ARISING FROM ON-SITE ACTIVITIES

5.1.1. Activities that have the potential to generate and/or re-suspend dust and PM_{10} during the construction phased of the Proposed Development include:

- Site clearance and preparation;
- Preparation of temporary access/egress to the Site and haulage routes;
- Earthworks;
- Materials handling, storage, stockpiling, spillage and disposal;
- Movement of vehicles and construction traffic within the Site;
- Exhaust emissions from site plant, especially when used at the extremes of their capacity and during mechanical breakdown;
- Construction of buildings, roads and areas of hardstanding alongside fabrication processes;
- Internal and external finishing and refurbishment; and
- Site landscaping after completion.

5.1.2. The majority of the releases are likely to occur during the 'working week'. However, for some potential release sources (e.g. exposed soil produced from significant earthwork activities) in the absence of dust control mitigation measures, dust generation has the potential to occur 24 hours per day over the period during which such activities are to take place.

ASSESSMENT OF POTENTIAL DUST EMISSION MAGNITUDE

5.1.3. The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the following four different dust and PM_{10} sources: demolition; earthworks; construction; and, trackout. Whilst the IAQM assessment methodology considers both human and ecological receptors, the assessment presented herein has focused on likely effects on the identified designated ecological sites only. The findings of the assessment are presented below

Potential Dust Emission Magnitude

Demolition

5.1.4. No demolition activities will occur at the Site.

Earthworks

5.1.5. The total area of the Site is more than 10,000m^2, the soil type is clay and therefore potentially dusty, and the total material that will be moved is estimated to be more than 100,000 tonnes. More than 10 heavy earth moving vehicles could be active at any one time. Therefore, the potential dust emission magnitude is considered to be large.

Construction

5.1.6. The total volume of buildings to be constructed will be greater than 100,000m^3, with potentially dusty construction materials being used. On site concrete batching and sandblasting unlikely occur. Therefore, the potential dust emission magnitude is considered to be large to medium.

Trackout

5.1.7. Due to the size of the Site, it is assumed that there will be more than 10 HDVs operational at any one time and the length of unpaved roads within the Site will be greater than 100m. Therefore, the potential dust emission magnitude is considered to be large for trackout.

5.1.8. **Table 6** - provides a summary of the potential dust emission magnitude determined for each construction activity considered.

Table 6 - Potential dust emission magnitude

Activity	Dust emission magnitude
Demolition	N/A
Earthworks	Large
Construction Activities	Large / Medium
Trackout	Large

Sensitivity of the Study Area

5.1.9. A representative wind rose is provided in **Appendix F**. This shows that the prevailing wind direction is southwest. Therefore, receptors located to the northeast, north and east of the Site are the most likely to be affected by dust and particulate matter emitted and re-suspended during the construction phase.

5.1.10. Under low wind speed conditions, it is likely that the majority of dust would be deposited in the area immediately surrounding the source. The IAQM guidance suggests that consideration should be given to ecological sites where they are located:

- Within 50 m of the boundary of the Site; or
- Within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

5.1.11. On this basis, construction activities within the Site and trackout could affect the Ancient Woodlands within Site B lie which lie within 50m of the boundary of the Site. In according to the IAQM guidance, these designated ecological sites are considered of low sensitivity to dust effects.

5.1.12. Both West Blean and Thornden Wood SSSI and Blean Complex SAC fall outside of 50m of the boundary of the Site and are located more than 50m from the A290, which is a potential route used by construction traffic, and over 500m from the Site entrance. These designated ecological sites are, therefore, screened out of further consideration within the assessment with respect to the potential effect of dust during construction activities.

5.1.13. Taking the above into account and following the IAQM assessment methodology, the sensitivity of the area to changes in dust has been derived for each of the construction activities considered. The results are shown in Table 7.

Table 7 - Sensitivity of the study area

Potential impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Ecological	N/A	Low	Low	Low

Risk of Impacts

5.1.14. The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. Table 8 - below provides a summary of the risk of dust impacts for the Proposed Development. The risk category identified for each construction activity has been used to determine the level of mitigation required.

Table 8 - Summary of dust risks

Potential impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Ecological	N/A	Low risk	Low risk	Low risk

5.1.15. Mitigation measures for dust soiling are provided in Chapter 6. These measures are intended to be effective and deliverable and in-line with best practice to deal with the specific air quality problems during construction phases. It is anticipated that with the implementation of effective site-specific mitigation measures the environmental effect will not be significant in most cases.

EMISSIONS TO AIR FROM CONSTRUCTION TRAFFIC

5.1.16. The greatest impact on air quality due to emissions from vehicles and plant associated with the construction phase will be in the areas immediately adjacent to the site access. Construction traffic for the residential development would use the new access road (which goes through an area of Ancient Woodland). Prior to the building of the new access road any construction access would have to be managed through the University estate. No construction traffic would be permitted to use Tyler Hill Road.

5.1.17. Due to the size of the Site, it is considered likely that the construction traffic will be relatively low compared to the existing flows on the above roads. It is estimated that less than 10 HDVs will travel to/from the Site on any given day. Additional car and Light Duty Vehicle movements will also be generated due to daily movements of site staff, small deliveries, equipment transfer etc. Furthermore, the number of construction vehicles accessing the Site will vary from day to day depending on the activities taking place and will be temporary for the duration of the construction works. The emissions from construction vehicles will therefore not result in a long-term impact on local air quality.

5.1.18. Final details of the exact plant and equipment likely to be used on Site will be determined by the appointed contractor, it is considered likely to comprise dumper trucks, excavators, forklift and

trucks. The number of plant and their location within the Site are likely to be variable over the construction period.

5.1.19. Based on the current local air quality in the area, the proximity of the designated ecological sites to the roads likely to be used by construction vehicles, and the likely numbers of construction vehicles and plant that will be used, the impacts are therefore considered to be of negligible significance. Where possible, construction traffic should be routed to avoid bypassing the Ancient Woodland within Site B.

5.2. OPERATION PHASE

5.2.1. Full results of the dispersion modelling are presented in Appendix H and a summary is provided in Tables 10 to 13 below.

Table 9 - Indication of exceedances of 1% of the Critical Level for NO_X

Designated Site	Transect Number	Road	Exceedances of Critical Level (distance to which modelled annual mean NO_X concentrations exceed 30µg/m^3, the NO_x concentration at 0m within the site and next NO_x concentration after the last exceedance are presented in brackets)			Potential for changes > 1% of the Critical Level due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the Critical Level and exceedances of the Critical Level of 30µg/m^3 due to the Proposed Development		Requirement for further assessment based on changes in relation to the Critical Level
			2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
Blean Complex	1	A290 Blean Common	No (14.8 at 0m)	No (9.6 at 0m)	No (9.7 at 0m)	No	No	No	No	No – the CL is met in 2040 with the Proposed Development. Furthermore, there is a decrease in NO_X concentrations over time due to forecast improvements in vehicle emissions.
	2	A290 Blean Common	No (14.5 at 0m)	No (9.7 at 0m)	No (9.4 at 0m)	No	No	No	No	
	3	A290 Blean Common	No (13.9 at 0m)	No (9.5 at 0m)	No (9.7 at 0m)	No	No	No	No	
Ancient Woodland within Site B	4	Access route	No (13.0 at 0m)	No (9.2 at 0m)	No (13.2 at 0m)	Yes (13.4% at 0m)	Yes (10.5% at 0m)	No	No	No – the CL is met in 2040 with the Proposed Development. Furthermore, beyond 30m there is a decrease in NO_X concentrations over time due to forecast improvements in vehicle emissions. Up to 30m, the forecast improvements in air quality over time are offset by the increase in traffic/proposed Access Strategy.
	5	Access route	No (13.0 at 0m)	No (9.2 at 0m)	No (13.2 at 0m)	Yes (13.4% at 0m)	Yes (10.4% at 0m)	No	No	
	6	Access route	No (14.8 at 0m)	No (9.5 at 0m)	No (9.5 at 0m)	Yes (1.1% at 0m)	No	No	No	

Designated Site	Transect Number	Road	Exceedances of Critical Level (distance to which modelled annual mean NO_X concentrations exceed 30µg/m^3, the NO_x concentration at 0m within the site and next NO_x concentration after the last exceedance are presented in brackets)			Potential for changes > 1% of the Critical Level due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the Critical Level and exceedances of the Critical Level of 30µg/m^3 due to the Proposed Development		Requirement for further assessment based on changes in relation to the Critical Level
			2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
Park Wood Ancient Woodland	7	Parkwood Road	Yes (36.1 at 0m, 23.3 at 10m)	No (18.3 at 0m)	No (19.1 at 0m)	Yes (2.7% at 0m)	No	No	No	No – the CL is met in 2040 with the Proposed Development. Furthermore, there is a decrease in NO_X concentrations over time due to forecast improvements in vehicle emissions.
	8	Parkwood Road	No (25.5 at 0m)	No (14.3 at 0m)	No (14.8 at 0m)	Yes (1.5% at 0m)	No	No	No	
	9	Parkwood Road	No (29.6 at 0m)	No (15.5 at 0m)	No (16.2 at 0m)	Yes (2.0% at 0m)	No	No	No	
	10	Parkwood Road	No (26.1 at 0m)	No (14.2 at 0m)	No (14.7 at 0m)	Yes (1.7% at 0m)	No	No	No	
	11	Parkwood Road	Yes (33.5 at 0m, 21.4 at 10m)	No (17.0 at 0m)	No (17.7 at 0m)	Yes (2.4% at 0m)	No	No	No	
Brethren Wood	12	Giles Road	No (19.2 at 0m)	No (11.9 at 0m)	No (12.0 at 0m)	No	No	No	No	No – the CL is met in 2040 with the Proposed Development.

Designated Site	Transect Number	Road	Exceedances of Critical Level (distance to which modelled annual mean NO_X concentrations exceed 30µg/m^3, the NO_x concentration at 0m within the site and next NO_x concentration after the last exceedance are presented in brackets)			Potential for changes > 1% of the Critical Level due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the Critical Level and exceedances of the Critical Level of 30µg/m^3 due to the Proposed Development		Requirement for further assessment based on changes in relation to the Critical Level
			2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
Ancient Woodland	13	Giles Road	No (23.4 at 0m)	No (13.6 at 0m)	No (13.6 at 0m)	No	No	No	No	Furthermore, there is a decrease in NO_X concentrations over time due to forecast improvements in vehicle emissions.
Ancient Woodland	14	University Road	No (22.1 at 0m)	No (13.1 at 0m)	No (13.2 at 0m)	No	No	No	No	No – the CL is met in 2040 with the Proposed Development. Furthermore, there is a decrease in NO_X concentrations over time due to forecast improvements in vehicle emissions.
Ancient Woodland	15	Canterbury Hill	Yes (34.4 at 0m, 22.9 at 10m)	No (17.7 at 0m)	No (18.9 at 0m)	Yes (4.2% at 0m)	No	No	No	No – the CL is met in 2040 with the Proposed Development. Furthermore, there is a decrease in NO_X concentrations over time due to forecast improvements in vehicle emissions.
Tyler Hill Meadow LNR	16	Tyler Hill Road	No (18.2 at 0m)	No (11.1 at 0m)	No (14.1 at 0m)	Yes (10.0% at 0m)	No	No	No	No – the CL is met in 2040 with the Proposed Development. Furthermore, there is a decrease in NO_X concentrations over time due to forecast improvements in vehicle emissions.
West Blean and	17	Hackington Road	No (29.7 at 0m)	No (15.6 at 0m)	No (15.7 at 0m)	No	No	No	No	No – the CL is met in 2040 with the Proposed Development.

Designated Site	Transect Number	Road	Exceedances of Critical Level (distance to which modelled annual mean NO_X concentrations exceed 30µg/m^3, the NO_x concentration at 0m within the site and next NO_x concentration after the last exceedance are presented in brackets)			Potential for changes > 1% of the Critical Level due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the Critical Level and exceedances of the Critical Level of 30µg/m^3 due to the Proposed Development		Requirement for further assessment based on changes in relation to the Critical Level
			2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
Thornden Woods SSSI	18	Hackington Road	Yes (33.7 at 0m, 21.1 at 10m)	No (17.4 at 0m)	No (17.4 at 0m)	No	No	No	No	Furthermore, there is a decrease in NO_X concentrations over time due to forecast improvements in vehicle emissions.
	19	Hackington Road	Yes (46.2 at 0m, 24.3 at 10m)	No (22.1 at 0m)	No (22.2 at 0m)	No	No	No	No	
	20	Hackington Road	Yes (45.5 at 0m, 23.8 at 10m)	No (21.9 at 0m)	No (22.0 at 0m)	No	No	No	No	
Church//Bossenden Woods Ancient Woodland	21	Rough Common Road	Yes (39.4 at 0m, 24.5 at 10m)	No (19.6 at 0m)	No (21.4 at 0m)	Yes (6.1% at 0m)	No	No	No	No – the CL is met in 2040 with the Proposed Development. Furthermore, there is a decrease in NO_X concentrations over time due to forecast improvements in vehicle emissions.
	22	Rough Common Road	Yes (33.4 at 0m, 23.5 at 10m)	No (17.2 at 0m)	No (18.6 at 0m)	Yes (4.7% at 0m)	No	No	No	

Designated Site	Transect Number	Road	Exceedances of Critical Level (distance to which modelled annual mean NO_x concentrations exceed 30µg/m^3, the NO_x concentration at 0m within the site and next NO_x concentration after the last exceedance are presented in brackets)			Potential for changes > 1% of the Critical Level due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the Critical Level and exceedances of the Critical Level of 30µg/m^3 due to the Proposed Development		Requirement for further assessment based on changes in relation to the Critical Level
			2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
	23	Rough Common Road	No (28.4 at 0m)	No (15.2 at 0m)	No (16.3 at 0m)	Yes (3.6% at 0m)	No	No	No	

Table 10 - Indication of exceedances of 1% of the Critical Level for NH_3

Designated Site	Transect Number	Road	Exceedances of Critical Level (distance to which modelled annual mean NH_3 concentrations exceed 3µg/m^3, the NH_3 concentration at 0m within the site and next NH_3 concentration after the last exceedance are presented in brackets)			Potential for changes > 1% of the Critical Level due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the Critical Level and exceedances of the Critical Level of 30µg/m^3 due to the Proposed Development		Requirement for further assessment based on changes in relation to the CL
			2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
Blean Complex	1	A290 Blean Common	No (1.19 at 0m)	No (1.21 at 0m)	No (1.21 at 0m)	No	No	No	No	No – the CL is met in 2040 with the Proposed Development
	2	A290 Blean Common	No (1.18 at 0m)	No (1.20 at 0m)	No (1.21 at 0m)	No	No	No	No	
	3	A290 Blean Common	No (1.17 at 0m)	No (1.19 at 0m)	No (1.19 at 0m)	No	No	No	No	

Designated Site	Transect Number	Road	Exceedances of Critical Level (distance to which modelled annual mean NH_3 concentrations exceed 3µg/m^3, the NH_3 concentration at 0m within the site and next NH_3 concentration after the last exceedance are presented in brackets)			Potential for changes > 1% of the Critical Level due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the Critical Level and exceedances of the Critical Level of 30µg/m^3 due to the Proposed Development		Requirement for further assessment based on changes in relation to the CL
			2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
Ancient Woodland within Site B	4	Access route	No (1.16 at 0m)	No (1.17 at 0m)	No (1.39 at 0m)	Yes (7.3% at 0m)	Yes (7.7% at 0m)	No	No	No – whilst there are exceedances which equate to 1% (or more) of the CL, both 'alone' and 'in-combination', the CL is met in 2040 with the Proposed Development.
	5	Access route	No (1.16 at 0m)	No (1.17 at 0m)	No (1.39 at 0m)	Yes (7.1% at 0m)	Yes (7.5% at 0m)	No	No	
	6	Access route	No (1.16 at 0m)	No (1.18 at 0m)	No (1.19 at 0m)	No	No	No	No	
Park Wood Ancient Woodland	7	Parkwood Road	No (1.92 at 0m)	No (2.04 at 0m)	No (2.08 at 0m)	Yes (1.2% at 0m)	Yes (5.5% at 0m)	No	No	No – whilst there are exceedances which equate to 1% (or more) of the CL both 'alone' (Transect 7 only) and 'in-combination', the CL is met in 2040 with the Proposed Development.
	8	Parkwood Road	No (1.76 at 0m)	No (1.83 at 0m)	No (1.85 at 0m)	No	Yes (3.0% at 0m)	No	No	
	9	Parkwood Road	No (1.38 at 0m)	No (1.47 at 0m)	No (1.50 at 0m)	No	Yes (4.1% at 0m)	No	No	
	10	Parkwood Road	No (1.33 at 0m)	No (1.41 at 0m)	No (1.43 at 0m)	No	Yes (3.3% at 0m)	No	No	
	11	Parkwood Road	No (1.15 at 0m)	No (1.56 at 0m)	No (1.59 at 0m)	Yes (1.1% at 0m)	Yes (5.0% at 0m)	No	No	
	12	Giles Road	No (1.68 at 0m)	No (1.72 at 0m)	No (1.72 at 0m)	No	Yes (1.4% at 0m)	No	No	No – whilst there are exceedances

Designated Site	Transect Number	Road	Exceedances of Critical Level (distance to which modelled annual mean NH_3 concentrations exceed 3µg/m^3, the NH_3 concentration at 0m within the site and next NH_3 concentration after the last exceedance are presented in brackets)			Potential for changes > 1% of the Critical Level due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the Critical Level and exceedances of the Critical Level of 30µg/m^3 due to the Proposed Development		Requirement for further assessment based on changes in relation to the CL
			2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
Brethren Wood Ancient Woodland	13	Giles Road	No (1.74 at 0m)	No (1.80 at 0m)	No (1.80 at 0m)	No	Yes (2.1% at 0m)	No	No	which equate to 1% (or more) of the CL 'in-combination', the CL is met in 2040 with the Proposed Development.
Ancient Woodland	14	University Road	No (1.71 at 0m)	No (1.76 at 0m)	No (1.76 at 0m)	No	Yes (1.7% at 0m)	No	No	No – whilst there are exceedances which equate to 1% (or more) of the CL 'in-combination', the CL is met in 2040 with the Proposed Development.
Ancient Woodland	15	Canterbury Hill	No (1.49 at 0m)	No (1.63 at 0m)	No (1.70 at 0m)	Yes (2.3% at 0m)	Yes (6.9% at 0m)	No	No	No – whilst there are exceedances which equate to 1% (or more) of the CL, both 'alone' and 'in-combination', the CL is met in 2040 with the Proposed Development.
Tyler Hill Meadow LNR	16	Tyler Hill Road	No (1.26 at 0m)	No (1.31 at 0m)	No (1.49 at 0m)	Yes (5.9% at 0m)	Yes (7.6% at 0m)	No	No	No – whilst there are exceedances which equate to 1% (or more) of

Designated Site	Transect Number	Road	Exceedances of Critical Level (distance to which modelled annual mean NH_3 concentrations exceed 3µg/m^3, the NH_3 concentration at 0m within the site and next NH_3 concentration after the last exceedance are presented in brackets)			Potential for changes > 1% of the Critical Level due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the Critical Level and exceedances of the Critical Level of 30µg/m^3 due to the Proposed Development		Requirement for further assessment based on changes in relation to the CL
			2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
										the CL, both 'alone' and 'in-combination', the CL is met in 2040 with the Proposed Development.
West Blean and Thornden Woods SSSI	17	Hackington Road	No (1.41 at 0m)	No (1.52 at 0m)	No (1.52 at 0m)	No	Yes (3.8% at 0m)	No	No	No – whilst there are exceedances which equate to 1% (or more) of the CL 'in-combination', the CL is met in 2040 with the Proposed Development.
	18	Hackington Road	No (1.48 at 0m)	No (1.62 at 0m)	No (1.62 at 0m)	No	Yes (4.6% at 0m)	No	No	
	19	Hackington Road	No (1.7 at 0m)	No (1.92 at 0m)	No (1.91 at 0m)	No	Yes (7.2% at 0m)	No	No	
	20	Hackington Road	No (1.68 at 0m)	No (1.89 at 0m)	No (1.89 at 0m)	No	Yes (7.0% at 0m)	No	No	
Church/ Bossenden Woods Ancient Woodland	21	Rough Common Road	No (2.00 at 0m)	No (2.17 at 0m)	No (2.26 at 0m)	Yes (3.1% at 0m)	Yes (8.7% at 0m)	No	No	No – whilst there are exceedances which equate to 1% (or more) of the CL 'both 'alone' (Transects 22 and 23 only) and in-combination', the CL is met in 2040
	22	Rough Common Road	No (1.90 at 0m)	No (2.03 at 0m)	No (2.10 at 0m)	Yes (2.3% at 0m)	Yes (6.5% at 0m)	No	No	
	23	Rough Common Road	No (1.82 at 0m)	No (1.92 at 0m)	No (1.97 at 0m)	Yes (1.7% at 0m)	Yes (4.8% at 0m)	No	No	

Designated Site	Transect Number	Road	Exceedances of Critical Level (distance to which modelled annual mean NH_3 concentrations exceed 3µg/m^3, the NH_3 concentration at 0m within the site and next NH_3 concentration after the last exceedance are presented in brackets)			Potential for changes > 1% of the Critical Level due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the Critical Level and exceedances of the Critical Level of 30µg/m^3 due to the Proposed Development		Requirement for further assessment based on changes in relation to the CL
			2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
										with the Proposed Development.

Table 11 - Indication of exceedances of 1% of the Critical Load for N Deposition

Designation	Transect Number	Habitat	Relevant CL range (in kg/N/ha/yr)	Exceedances of Lower CL Value (distance to which exceedances occur, the modelled CL at 0m within the site and next modelled CL after the last exceedance are presented in brackets - kg/N/ha/yr)			Potential for changes greater than 1% of the CL due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the relevant CL and exceedances of the Lower CL value due to the Proposed Development (distance to which these occur in brackets)		Requirement for further assessment based on changes in relation to the CL
				2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
Blean Complex	1	Broadleaved Woodland	15 - 20	Yes (0m, all of the transect, 25.7 at 0m, 25.0m at 200m)	Yes (0m, all of the transect, 22.6 at 0m, 22.1 at 200m)	Yes (0m, all of the transect, 22.6 at 0m, 22.1 at 200m)	No	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 20.5% at 0m to 19.6% at 200m)	No	No	No – there is an overall decrease in N deposition in the future (based on the BAU case presented in Nitrogen Futures). The predicted increases due to the Proposed Development are small in comparison (and below 1% of the CL).
	2	Broadleaved Woodland	15 - 20	Yes (0m, all of the transect, 25.6 at	Yes (0m, all of the transect, 22.5 at	Yes (0m, all of the transect, 22.6 at 0m,	No	No – there is a modelled reduction in N deposition 'in-	No	No	

Designation	Transect Number	Habitat	Relevant CL range (in kg/N/ha/yr)	Exceedances of Lower CL Value (distance to which exceedances occur, the modelled CL at 0m within the site and next modelled CL after the last exceedance are presented in brackets - kg/N/ha/yr)			Potential for changes greater than 1% of the CL due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the relevant CL and exceedances of the Lower CL value due to the Proposed Development (distance to which these occur in brackets)		Requirement for further assessment based on changes in relation to the CL
				2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
				0m, 25.0 at 200m)	0m, 22.1 at 200m)	22.1 at 200m)		combination' (ranging from 20.3% at 0m to 19.5% at 200m)			
	3	Broadleaved Woodland	15 - 20	Yes (0m, all of the transect, 25.4 at 0m, 25.1 at 200m)	Yes (0m, all of the transect, 22.3 at 0m, 22.1 at 200m)	Yes (0m, all of the transect, 22.4 at 0m, 22.1 at 200m)	No	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 19.9% at 0m to 19.5% at 200m)	No	No	
Ancient Woodland within Site B	4	Broadleaved Woodland	10	Yes (0m, all of the transect, 25.1 at 0m, 25.1 at 200m)	Yes (0m, all of the transect, 22.1 at 0m, 22.1 at 200m)	Yes (0m, all of the transect, 24.6 at 0m, 22.2 at 200m)	Yes – up to 170m (24.4% at 0m to 1.04% at 170m).	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 5.4% at 0m to 28.8% at 200m)	Yes – up to 170m	No	The lower CL value for woodland is exceeded in 2019 Base and 2040 without the Proposed Development. However, there is an overall decrease in N deposition over time (based on the BAU case presented in Nitrogen Futures). The predicted increases due to the Proposed
	5	Broadleaved Woodland	10	Yes (0m, all of the transect, 25.1 at 0m, 25.1 at 80m)	Yes (0m, all of the transect, 22.1 at	Yes (0m, all of the transect, 24.5 at 0m,	Yes – up to 80m (23.9% at 0m to 1.82% at 80m).	No – there is a modelled reduction in N deposition 'in-combination' (ranging from	Yes – up to 80m	No	

Designation	Transect Number	Habitat	Relevant CL range (in kg/N/ha/yr)	Exceedances of Lower CL Value (distance to which exceedances occur, the modelled CL at 0m within the site and next modelled CL after the last exceedance are presented in brackets - kg/N/ha/yr)			Potential for changes greater than 1% of the CL due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the relevant CL and exceedances of the Lower CL value due to the Proposed Development (distance to which these occur in brackets)		Requirement for further assessment based on changes in relation to the CL
				2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
					0m, 22.2 at 80m)	22.3 at 80m)		5.9% at 0m to 28.0% at 80m)			Development (particularly along Transects 4 and 5) should be discussed with the Project Ecologist in the context of the overall decreases.
	6	Broadleaved Woodland	10	Yes (0m, all of the transect, 25.2 at 0m, 25.2 at 50m)	Yes (0m, all of the transect, 22.2 at 0m, 22.2 at 50m)	Yes (0m, all of the transect, 22.3 at 0m, 22.3 at 50m)	Yes – up to 40m (1.45% at 0m to 1.03% at 40m).	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 28.5% at 0m to 28.8% at 50m)	Yes – up to 40m	No	
Park Wood Ancient Woodland	7	Broadleaved Woodland	10	Yes (0m, all of the transect, 35.2 at 0m, 29.9 at 70m)	Yes (0m, all of the transect, 30.5 at 0m, 26.3 at 70m)	Yes (0m, all of the transect, 31.0 at 0m, 26.4 at 70m)	Yes – up to 40m (4.27% at 0m to 1.01% at 30m).	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 42.0% at 0m to 35.4% at 70m)	Yes – up to 40m	No	The lower CL value for woodland is exceeded in 2019 Base and 2040 without the development. However, there is an overall decrease in N deposition over time (based on the BAU case presented in Nitrogen Futures). The predicted increases due to the development are small in comparison.
	8	Broadleaved Woodland	10	Yes (0m, all of the transect, 32.3 at 0m, 29.6 at 180m)	Yes (0m, all of the transect, 28.2 at 0m, 26.1 at 180m)	Yes (0m, all of the transect, 28.4 at 0m, 26.2 at 180m)	Yes – up to 10m (2.31% at 0m to 1.29% at 10m).	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 38.8% at 0m	Yes – up to 10m	No	

Designation	Transect Number	Habitat	Relevant CL range (in kg/N/ha/yr)	Exceedances of Lower CL Value (distance to which exceedances occur, the modelled CL at 0m within the site and next modelled CL after the last exceedance are presented in brackets - kg/N/ha/yr)			Potential for changes greater than 1% of the CL due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the relevant CL and exceedances of the Lower CL value due to the Proposed Development (distance to which these occur in brackets)		Requirement for further assessment based on changes in relation to the CL
				2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
								to 34.9% at 180m)			
	9	Broadleaved Woodland	10	Yes (0m, all of the transect, 29.5 at 0m, 25.4 at 110m)	Yes (0m, all of the transect, 25.6 at 0m, 22.4 at 110m)	Yes (0m, all of the transect, 25.9 at 0m, 22.4 at 110m)	Yes – up to 20m (3.18% at 0m to 1.02% at 20m).	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 35.5% at 0m to 30.2% at 110m)	Yes – up to 10m	No	
	10	Broadleaved Woodland	10	Yes (0m, all of the transect, 28.6 at 0m, 25.2 at 200m)	Yes (0m, all of the transect, 24.9 at 0m, 22.2 at 200m)	Yes (0m, all of the transect, 25.1 at 0m, 22.3 at 200m)	Yes – up to 20m (2.6% at 0m to 1.06% at 20m).	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 34.5% at 0m to 29.6% at 200m)	Yes – up to 20m	No	
	11	Broadleaved Woodland	10	Yes (0m, all of the transect, 30.5 at 0m, 25.4 at 110m)	Yes (0m, all of the transect, 26.5 at 0m, 22.4 at 110m)	Yes (0m, all of the transect, 26.9 at 0m, 22.4 at110m)	Yes – up to 20m (3.86% at 0m to 1.14% at 20m).	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 36.7% at 0m	Yes – up to 20m	No	

Designation	Transect Number	Habitat	Relevant CL range (in kg/N/ha/yr)	Exceedances of Lower CL Value (distance to which exceedances occur, the modelled CL at 0m within the site and next modelled CL after the last exceedance are presented in brackets - kg/N/ha/yr)			Potential for changes greater than 1% of the CL due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the relevant CL and exceedances of the Lower CL value due to the Proposed Development (distance to which these occur in brackets)		Requirement for further assessment based on changes in relation to the CL
				2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
								to 30.1% at 110m)			
Brethren Wood Ancient Woodland	12	Broadleaved Woodland	10	Yes (0m, all of the transect, 30.7 at 0m, 29.9 at 70m)	Yes (0m, all of the transect, 26.9 at 0m, 26.3 at 70m)	Yes (0m, all of the transect, 27.0 at 0m, 26.3 at 70m)	No	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 37.2% at 0m to 35.6% at 70m)	No	No	No – there is an overall decrease in N deposition in the future (based on the BAU case presented in Nitrogen Futures). The predicted increases due to the Proposed Development are small (and below 1% of the CL).
	13	Broadleaved Woodland	10	Yes (0m, all of the transect, 31.8 at 0m, 29.9m at 90m)	Yes (0m, all of the transect, 27.9 at 0m, 26.3 at 90m)	Yes (0m, all of the transect, 27.9 at 0m, 26.3 at 90m)	No	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 39.4% at 0m to 35.6% at 90m)	No	No	
Ancient Woodland	14	Broadleaved Woodland	10	Yes (0m, all of the transect, 31.4 at 0m, 29.7 at 110m)	Yes (0m, all of the transect, 27.4 at 0m, 26.2 at 110m)	Yes (0m, all of the transect, 27.5 at 0m, 26.2 at 110m)	No	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 39.2% at 0m	No	No	No – there is an overall decrease in N deposition in the future (based on the BAU case presented in Nitrogen Futures). The predicted increases due to the Proposed Development are

Designation	Transect Number	Habitat	Relevant CL range (in kg/N/ha/yr)	Exceedances of Lower CL Value (distance to which exceedances occur, the modelled CL at 0m within the site and next modelled CL after the last exceedance are presented in brackets - kg/N/ha/yr)			Potential for changes greater than 1% of the CL due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the relevant CL and exceedances of the Lower CL value due to the Proposed Development (distance to which these occur in brackets)		Requirement for further assessment based on changes in relation to the CL
				2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
								to 35.3% at 110m)			small in comparison (and below 1% of the CL).
Ancient Woodland	15	Broadleaved Woodland	10	Yes (0m, all of the transect, 31.1 at 0m, 25.6 at 140m)	Yes (0m, all of the transect, 27.2 at 0m, 22.5 at 140m)	Yes (0m, all of the transect, 28.0 at 0m, 22.5 at 140m)	Yes – up to 50m (7.61% at 0m to 1.04% at 50m).	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 31.2% at 0m to 30.3% at 140m)	Yes – up to 50m	No	No – there is an overall decrease in N deposition in the future (based on the BAU case presented in Nitrogen Futures). The predicted increases due to the Proposed Development are small in comparison.
Tyler Hill Meadow LNR	16	Neutral grassland	20-30	No (15.4 at 0m)	No (13.5 at 0m)	No (14.4 at 0m)	Yes – up to 2m (4.89% at 0m to 1.13% at 20m).	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 4.8% at 0m to 8.3% at 100m)	No	No	No – there is an overall decrease in N deposition in the future (based on the BAU case presented in Nitrogen Futures). The predicted increases due to the Proposed Development are small in comparison.
West Blean and Thornden Woods SSSI	17	Broadleaved Woodland	10	Yes (0m, all of the transect, 29.9 at 0m, 25.1 at 190m)	Yes (0m, all of the transect, 26.1 at	Yes (0m, all of the transect, 26.1 at 0m,	No	No – there is a modelled reduction in N deposition 'in-combination' (ranging from	No	No	No – there is an overall decrease in N deposition in the future (based on the BAU case presented in Nitrogen Futures). The

Designation	Transect Number	Habitat	Relevant CL range (in kg/N/ha/yr)	Exceedances of Lower CL Value (distance to which exceedances occur, the modelled CL at 0m within the site and next modelled CL after the last exceedance are presented in brackets - kg/N/ha/yr)			Potential for changes greater than 1% of the CL due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the relevant CL and exceedances of the Lower CL value due to the Proposed Development (distance to which these occur in brackets)		Requirement for further assessment based on changes in relation to the CL
				2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
					0m, 22.2 at 190m)	22.2 at 190m)		37.5% at 0m to 29.3% at 190m)			predicted increases due to the Proposed Development are small in comparison (and below 1% of the CL).
	18	Broadleaved Woodland	10	Yes (0m, all of the transect, 31.0 at 0m, 25.1 at 200m)	Yes (0m, all of the transect, 27.1 at 0m, 22.1 at 200m)	Yes (0m, all of the transect, 27.1 at 0m, 22.2 at 200m)	No	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 39.6% at 0m to 29.2% at 200m)	No	No	
	19	Broadleaved Woodland	10	Yes (0m, all of the transect, 34.5 at 0m, 25.2 at 200m)	Yes (0m, all of the transect, 30.2 at 0m, 22.2 at 200m)	Yes (0m, all of the transect, 30.2 at 0m, 22.2 at 200m)	No	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 42.8% at 0m to 29.5% at 200m)	No	No	
	20	Broadleaved Woodland	10	Yes (0m, all of the transect, 34.3 at 0m, 25.1 at 200m)	Yes (0m, all of the transect, 30.0 at 0m, 22.2 at 200m)	Yes (0m, all of the transect, 30.0 at 0m, 22.2 at 200m)	No	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 42.8% at 0m	No	No	

Designation	Transect Number	Habitat	Relevant CL range (in kg/N/ha/yr)	Exceedances of Lower CL Value (distance to which exceedances occur, the modelled CL at 0m within the site and next modelled CL after the last exceedance are presented in brackets - kg/N/ha/yr)			Potential for changes greater than 1% of the CL due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the relevant CL and exceedances of the Lower CL value due to the Proposed Development (distance to which these occur in brackets)		Requirement for further assessment based on changes in relation to the CL
				2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
								to 29.4% at 200m)			
Church//Bossenden Woods Ancient Woodland	21	Broadleaved Woodland	10	Yes (0m, all of the transect, 36.5 at 0m, 29.5 at 170m)	Yes (0m, all of the transect, 31.9 at 0m, 26.0 at 170m)	Yes (0m, all of the transect, 33.0 at 0m, 26.0 at 170m)	Yes – up to 60m (10.5% at 0m to 1.02% at 60m).	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 35.3% at 0m to 34.6% at 170m)	Yes – up to 60m	No	No – there is an overall decrease in N deposition in the future (based on the BAU case presented in Nitrogen Futures). The predicted increases due to the development are relatively small in comparison.
	22	Broadleaved Woodland	10	Yes (0m, all of the transect, 34.8 at 0m, 29.6 at 140m)	Yes (0m, all of the transect, 30.4 at 0m, 26.1 at 140m)	Yes (0m, all of the transect, 31.2 at 0m, 26.1 at 140m)	Yes – up to 60m (8.0% at 0m to 1.03% at 60m).	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 35.9% at 0m to 34.8% at 140m)	Yes – up to 60m	No	
	23	Broadleaved Woodland	10	Yes (0m, all of the transect, 33.4 at 0m, 29.7 at 130m)	Yes (0m, all of the transect, 29.2 at 0m, 26.2 at 130m)	Yes (0m, all of the transect, 29.8 at 0m, 26.2 at 130m)	Yes – up to 50m (6.07% at 0m to 1.09% at 50m).	No – there is a modelled reduction in N deposition 'in-combination' (ranging from 36.2% at 0m	Yes – up to 50m	No	

Designation	Transect Number	Habitat	Relevant CL range (in kg/N/ha/yr)	Exceedances of Lower CL Value (distance to which exceedances occur, the modelled CL at 0m within the site and next modelled CL after the last exceedance are presented in brackets - kg/N/ha/yr)			Potential for changes greater than 1% of the CL due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the relevant CL and exceedances of the Lower CL value due to the Proposed Development (distance to which these occur in brackets)		Requirement for further assessment based on changes in relation to the CL
				2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
								to 35.0% at 130m)			

Table 12 - Indication of exceedances of 1% of the Critical Load for Acid Deposition

Designation	Transect Number	Habitat	Relevant CL (in keq/N/ha/yr)	Exceedances of Lower CL Value (distance to which exceedances occur, the modelled CL at 0m within the site and next modelled CL after the last exceedance are presented in brackets - keq/ha/yr)			Potential for changes greater than 1% of the CL due to the Proposed Development (distance to which these occur in brackets)		Potential for changes greater than 1% of the relevant CL and exceedances of the Lower CL value due to the Proposed Development (distance to which these occur in brackets)		Requirement for further assessment based on changes in relation to the CL
				2019 Baseline	2040 Future Baseline	2040 Do-Something	'Alone'	'In-combination'	'Alone'	'In-combination'	
Blean Complex	1	Broadleaved Woodland	2.86	No (1.89 at 0m)	No (1.66 at 0m)	No (1.66 at 0m)	No	No	No	No	No – The predicted increases due to the Proposed Development are small (and below 1% of the CL). The CL is met in 2040, with the Proposed Development.
	2	Broadleaved Woodland	2.86	No (1.88 at 0m)	No (1.65 at 0m)	No (1.65 at 0m)	No	No	No	No	
	3	Broadleaved Woodland	2.86	No (1.86 at 0m)	No (1.64 at 0m)	No (1.64 at 0m)	No	No	No	No	

Ancient Woodland within Site B	4	Broadleaved Woodland	2.263	No (1.84 at 0m)	No (1.63 at 0m)	No (1.80 at 0m)	Yes – up to 30m (6.1% at 0m to 1.1% at 30	No	No	No	Whilst there are exceedances of 1% of the CL due to the Proposed Development 'alone', the CL is met in 2040 with the Proposed Development.
	5	Broadleaved Woodland	2.263	No (1.84 at 0m)	No (1.63 at 0m)	No (1.80 at 0m)	Yes – up to 30m (6.0% at 0m to 1.1% at 30m.	No	No	No	
	6	Broadleaved Woodland	2.263	No (1.85 at 0m)	No (1.63 at 0m)	No (1.64 at 0m)	No	No	No	No	
Park Wood Ancient Woodland	7	Broadleaved Woodland	2.263	No (2.57 at 0m)	No (2.23 at 0m)	No (2.26 at 0m)	Yes – up to 0m (1.3% at 0m to 0.6% at 10m)	No	Yes – up to 0m	No	Whilst there are exceedances of 1% of the CL due to the Proposed Development 'alone', the CL is met in 2040 with the Proposed Development.
	8	Broadleaved Woodland	2.263	No (2.37 at 0m)	No (2.07 at 0m)	No (2.08 at 0m)	No	No	No	No	
	9	Broadleaved Woodland	2.263	No (2.15 at 0m)	No (1.87 at 0m)	No (1.89 at 0m)	No	No	No	No	
	10	Broadleaved Woodland	2.263	No (2.09 at 0m)	No (1.82 at 0m)	No (1.84 at 0m)	No	No	No	No	
	11	Broadleaved Woodland	2.263	No (2.23 at 0m)	No (1.94 at 0m)	No (1.96 at 0m)	No	No	No	No	
	12	Broadleaved Woodland	2.263	No (2.25 at 0m)	No (1.98 at 0m)	No (1.98 at 0m)	No	No	No	No	No – The predicted

Brethren Wood Ancient Woodland	13	Broadleaved Woodland	2.263	No (2.33 at 0m)	No (2.04 at 0m)	No (2.05 at 0m)	No	No	No	No	increases due to the development are small in comparison. The CL is met in 2040, with the Proposed Development.
Ancient Woodland	14	Broadleaved Woodland	2.263	No (2.30 at 0m)	No (2.01 at 0m)	No (2.01 at 0m)	No	No	No	No	No – The predicted increases due to the development are small in comparison. The CL is met in 2040, with the Proposed Development.
Ancient Woodland	15	Broadleaved Woodland	2.263	No (2.27 at 0m)	No (1.99 at 0m)	No (2.04 at 0m)	Yes – 0m only (2.4% at 0m)	No	No	No	No – The predicted increases due to the development are small in comparison. The CL is met in 2040, with the Proposed Development.
Tyler Hill Meadow LNR	16	Neutral grassland	5.07	No (1.13 at 0m)	No (0.99 at 0m)	No (1.06 at 0m)	Yes - 0m only (1.4% at 0m)	No	No	No	No – The predicted increases due to the development are small in comparison. The CL is met in 2040, with the Proposed Development.

West Blean and Thornden Woods SSSI	17	Broadleaved Woodland	2.263	No (2.18 at 0m)	No (1.91 at 0m)	No (1.91 at 0m)	No	No	No	No – The predicted increases due to the development are small in comparison. The CL is met in 2040, with the Proposed Development.
	18	Broadleaved Woodland	2.263	No (2.26 at 0m)	No (1.98 at 0m)	No (1.98 at 0m)	No	No	No	No
	19	Broadleaved Woodland	2.263	No (2.51 at 0m)	No (2.20 at 0m)	No (2.20 at 0m)	No	No	No	No
	20	Broadleaved Woodland	2.263	No (2.50 at 0m)	No (2.19 at 0m)	No (2.19 at 0m)	No	No	No	No
Church//Bossenden Woods Ancient Woodland	21	Broadleaved Woodland	2.263	Yes (0m, 2.67 at 0m, 2.25 at 30m)	Yes (0m, 2.33 at 0m, 2.07 at 10m)	Yes (0m, 2.41 at 0m, 2.10 at 10m)	Yes – up to 10m (3.3% at 0m and 1.3% at 10m).	No	Yes – up to 0m	No	No – The predicted increases due to the development are small in comparison.
	22	Broadleaved Woodland	2.263	Yes (0m, 2.55 at 0m, 2.25 at 30m)	No (2.22 at 0m)	Yes (0m, 2.28 at 0m, 2.08 at 10m)	Yes – up to 0m (2.5% at 0m and 1.2% at 10m).	No	Yes – up to 0m	No
	23	Broadleaved Woodland	2.263	Yes (0m, 2.45 at 0m, 2.26 at 20m)	No (2.22 at 0m)	No (2.18 at 0m)	Yes – up to 0m (1.9% at 0m and 1.0% at 10m).	No	No	No

5.3. SUMMARY OF THE AIR QUALITY MODELLING RESULTS

5.3.1. In some locations the predicted increases in NO_X and NH_3 concentrations and acid deposition due to the Proposed Development (including the proposed Access Strategy) equate to 1% (or more) of the relevant Critical Levels and Loads, respectively. However, as the relevant Critical Levels and Loads are being met in the future with the Proposed Development in place, no significant effects are anticipated.

5.3.2. The Critical Load for N Deposition is predicted to be exceeded within all of the identified designated ecological sites. At the following locations, the change in N deposition exceeds 1% of the relevant CL as result of the Proposed Development (including the proposed Access Strategy) 'alone': Transects 5 and 6 (both Ancient woodlands within Site B), 7 – 11 (all within Park Wood Ancient Woodland), 15 (Ancient Woodland), 16 (Tyler Hill Meadow LNR) and 21 - 23 (Church/Bossenden Woods Ancient Woodland).

5.3.3. Whilst the change in N deposition exceeds 1% of the relevant CL at the above locations, there is an overall reduction in N deposition between the baseline (2019) and 2040 (i.e. when considered 'in-combination') due to future improvements in vehicle emissions and background deposition rates. However, there is the potential for short-term temporary increases in N deposition in one (or more) of interim years, when compared to the baseline (2019). This is because there is a fine balance between forecast traffic growth and the amount of development traffic on the local road network and future improvements, year on year, in vehicle emissions. Without undertaking further modelling for the interim years, we cannot conclude whether, at any point, the increased traffic (background growth and development traffic) would outweigh the forecast year on year improvements in vehicle emissions (and thereby where N deposition would increase compared against the current baseline (2019)).

5.3.4. Notwithstanding the above, with the exception of Transects 4 and 5 (both within the Ancient Woodland within Site B), the Proposed Development is not anticipated to result in a significant delay to future improvements. For Transects 4 and 5 an appropriate mitigation strategy will need to be developed as they are located within the Proposed Development Site Boundary and will be impacted by the new access road. This mitigation will form an integral part of the masterplan moving forwards.

5.3.5. In addition, whilst exceedances of 1% of the CL have been identified at the above designated sites, the quality of the sites themselves and sensitivity to any changes in emissions have not been considered at this stage.

5.3.6. Furthermore, the changes within Blean Complex SAC due to the Proposed Development are small (less than 1% of the relevant CL). Therefore, in the context of Habitats Regulations Assessment (HRA) no Likely Significant Effects (LSE) are anticipated either 'alone' or 'in-combination' with other Plans and Projects.

6. MITIGATION AND RESIDUAL EFFECTS

6.1. CONSTRUCTION PHASE

6.1.1. In order to reduce the effects of emissions to air due to on-site construction activities, the mitigation measures outlined within the IAQM's guidance for 'high risk' sites should be implemented and incorporated into the Construction Environmental Management Plan (CEMP), where appropriate.

6.1.2. The IAQM's construction guidance states that *"in the case of demolition / construction it is assumed that mitigation (secured by planning conditions, legal requirements or required by regulations) will ensure that a potential significant adverse effect will not occur, so the residual effect will normally be 'not significant'."*

6.1.3. In relation to construction traffic and on-site plant it is anticipated that further assessment will be undertaken as part of the air quality assessment that will be submitted with any future planning application for the Site. Notwithstanding this, a number of best practice measures should be implemented including consulting with CCC to establish the most suitable access and haul routes for site traffic, avoiding roads where designated ecological sites are present within 200m of the road edge, where possible, and ensuring that construction vehicles are kept clean (through the use of wheel washers, etc.) and sheeted when on public highways.

6.1.4. With the application of appropriate mitigation, the residual effects of emissions to air from construction traffic and plant on designated ecological sites are likely to be temporary, short-medium term and of negligible significance.

6.2. OPERATIONAL PHASE

6.2.1. As the relevant Critical Levels and Loads for NO_X and NH_3 concentrations and acid deposition are met in 2040 with the Proposed Development operational, no mitigation is considered necessary for these pollutants and the residual effects are considered to be not significant.

6.2.2. The results for N deposition identify a number of sites where the predicted change due to the Proposed Development 'alone' exceeds 1% of the relevant Critical Load. For those located within the Site Boundary a mitigation strategy will be developed as part of any masterplan. For those sites located off-site any potential exceedances are identified as short-term and temporary and are not considered to significantly delay future improvements in N deposition. Given the preliminary nature of this assessment it is considered that further modelling through the Local Plan process along with consideration of the quality and sensitivity of the designated sites themselves will be required to determine if a significant effect would occur.

6.2.3. Notwithstanding the above, the Proposed Development should be designed to promote sustainable modes of transport including the provision of appropriate infrastructure for pedestrians and cyclists. Infrastructure for electric vehicles (EVs) should also be incorporated into the Proposed Development, taking into the account the Government's ban on the sale of petrol and diesel vehicles from 2030 and subsequent effect on the vehicle fleet. The effect of electric vehicles infrastructure within the Proposed Development should be evaluated in the next stage.

6.2.4. A Travel Plan will be prepared to accompany the submission of the planning application which will include a number of measures that are also likely to benefit general air quality within the vicinity of the Site.

6.2.5. Furthermore, CCC will be undertaking a HRA to determine the effects of their emerging Local Plan on Habitats Sites (including Blean Complex SAC). This will include the assessment of the Site as a proposed strategic allocation. Depending on the results of the study, there is the potential that strategic mitigation may be proposed to reduce the effects of the emerging Local Plan on nearby Habitats Sites.

7. SUMMARY AND CONCLUSIONS

7.1.1. An air quality assessment of the potential air quality effects at nearby designated ecological sites has been undertaken. This considered both the construction and operational phases of the Proposed Development including the effects of the proposed Access Strategy.

7.1.2. The assessment of construction phase impacts associated with fugitive dust and particulate matter emissions has been undertaken in line with the relevant IAQM guidance. This identified that there is a Low Risk of dust soiling impacts construction activities. However, through good site practice and the implementation of suitable mitigation measures, the effect of dust releases would be significantly reduced. The residual effects of the construction phase on air quality are considered to be negligible.

7.1.3. The assessment of potential air quality impacts associated with changes in traffic as a result of the operation of the Proposed Development has been completed in line with published methodologies and technical guidance. NOx and NH_3 concentrations and N and acid deposition at the identified designated ecological sites were modelled using the detailed dispersion model ADMS Roads.

7.1.4. The operational phase assessment found:

- That in some locations the predicted increases in NO_X and NH_3 concentrations and acid deposition due to the Proposed Development (including the proposed Access Strategy) exceed 1% of the relevant Critical Levels and Loads, respectively. But, as the relevant Critical Levels and Loads are being met in the future with the Proposed Development in place, no significant effects are anticipated.
- The Critical Load for N Deposition is predicted to be exceeded within all of the identified designated ecological sites.
- At the following locations, the change in N deposition exceeds 1% of the relevant CL as result of the Proposed Development (including the proposed Access Strategy) 'alone': Transects 4, 5 and 6 (Ancient Woodland within Site B), 7 – 11 (all within Park Wood Ancient Woodland), 15 (Ancient Woodland), 16 (Tyler Hill Meadow LNR) and 21 - 23 (Church/Bossenden Woods Ancient Woodland).
- Whilst the change in N deposition exceeds 1% of the relevant CL at the above locations, there is an overall reduction in N deposition between the baseline (2019) and 2040 due to future improvements in vehicle emissions and background deposition rates. With the exception of Transects 4 and 5 (both within the Ancient Woodland within Site B), the Proposed Development is not anticipated to result in a significant delay to future improvements.
- The changes within Blean Complex SAC due to the Proposed Development are small (less than 1% of the relevant CL). Therefore, in the context of Habitats Regulations Assessment (HRA) no Likely Significant Effects (LSE) are anticipated either 'alone' or 'in-combination' with other Plans and Projects.

RECOMMENDATION AND FURTHER WORK

7.1.5. For those locations within the Site Boundary where exceedances of 1% of the CL are predicted 'alone' (i.e. Transects 4, 5 and 6), a mitigation strategy will be required in any event as part of any masterplan as the proposed access strategy effectively places a road through an area of Ancient Woodland. As such, these areas, whilst an issue will need to be considered in any masterplan that comes forwards on the site.

7.1.6. For the remaining locations where exceedances of 1% of the CL are predicted 'alone' (i.e. Transects 7 – 11, 15 – 16 and 21 – 23), there is the potential for short term and temporary effects during the interim years (see Paragraph 5.3.3). However, the changes due to the Proposed Development are not considered to significantly delay future improvements in N deposition.

7.1.7. Given the preliminary nature of this assessment it is considered that further modelling through the Local Plan process along with consideration of the quality and sensitivity of the designated sites themselves to changes in N deposition will be required to determine if a significant effect would occur. Liaison with key stakeholders would also feed into this process. This further work would be undertaken through later stages of the Local Plan process and should not hold up CCC in determining the principle of the development.

Appendix A

GLOSSARY

Term	Definition
AADT Annual Average Daily Traffic	A daily total traffic flow (24 hrs), expressed as a mean daily flow across all 365 days of the year.
Adjustment	Application of a correction factor to modelled results to account for uncertainties in the model
Accuracy	A measure of how well a set of data fits the true value.
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Ambient air	Outdoor air in the troposphere, excluding workplace air.
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year.
AQMA	Air Quality Management Area.
Conservative	Tending to over-predict the impact rather than under-predict.
CL	Critical load. This is "*a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge*" (source: http://www.apis.ac.uk/critical-loads-and-critical-levels-guide-data-provided-apis#_Toc279788050)
Critical Level	Critical level. Critical levels are defined as "concentrations of pollutants in the atmosphere above which direct adverse effects on receptors, such as human beings, plants, ecosystems or materials, may occur according to present knowledge" (source: http://www.apis.ac.uk/critical-loads-and-critical-levels-guide-data-provided-apis#_Toc279788050)
CREAM	Calculator for Road Emissions of AMmonia
Data capture	The percentage of all the possible measurements for a given period that were validly measured.
Defra	Department for Environment, Food and Rural Affairs.
Dust	Dust comprises particles typically in the size range 1-75 micrometres (µm) in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials

Term	Definition
Emission rate	The quantity of a pollutant released from a source over a given period of time.
Exceedance	A period of time where the concentrations of a pollutant is greater than the appropriate air quality standard.
Fugitive emissions	Emissions arising from the passage of vehicles that do not arise from the exhaust system.
HDV/HGV	Heavy Duty Vehicle/Heavy Goods Vehicle.
LAQM	Local Air Quality Management.
Minor roads	Non A roads of Motorways.
Model adjustment	Following model verification, the process by which modelled results are amended. This corrects for systematic error.
N-deposition	Nitrogen deposition
NH_3	Ammonia
NO_2	Nitrogen dioxide.
NO_x	Nitrogen oxides.
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres.
Road link	A length of road which is considered to have the same flow of traffic along it. Usually, a link is the road from one junction to the next.
SAC	Special Area of Conservation
Trackout	The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction / demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.
$\mu g/m^3$ micrograms per cubic metre	A measure of concentration in terms of mass per unit volume. A concentration of $1ug/m^3$ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.
Uncertainty	A measure, associated with the result of a measurement, which characterizes the range of values within which the true value is expected to lie. Uncertainty is usually expressed as the range within which the true value is expected to lie with a 95% probability, where standard statistical and other procedures have been used to evaluate this figure. Uncertainty

Term	Definition
	is more clearly defined than the closely related parameter 'accuracy', and has replaced it on recent European legislation.
Validation (modelling)	Refers to the general comparison of modelled results against monitoring data carried out by model developers.
Verification (modelling)	Comparison of modelled results versus any local monitoring data at relevant locations.
Verification (modelling)	Comparison of modelled results versus any local monitoring data at relevant locations.

Appendix B

RELEVANT LEGISLATION AND PLANNING POLICY

UK AIR QUALITY STRATEGY

The Government's policy on air quality within the UK is set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS)[30]. The AQS provides a framework for reducing air pollution in the UK with the aim of meeting the requirements of European Union legislation[31].

The AQS also sets standards and objectives for nine key air pollutants to protect health, vegetation and ecosystems. These are benzene (C_6H_6), 1,3 butadiene (C_4H_6), carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), particulate matter (PM_{10} and $PM_{2.5}$), sulphur dioxide (SO_2), ozone (O_3), and polycyclic aromatic hydrocarbons (PAHs).

The air quality standards are levels recommended by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO) with regards to current scientific knowledge about the effects of each pollutant on health and the environment.

Many of the objectives in the AQS have been made statutory in England with the Air Quality (England) Regulations 2000[32] and the Air Quality (England) (Amendment) Regulations 2002[33] for the purpose of Local Air Quality Management (LAQM).

The Air Quality Standards Regulations 2010[34] transpose the European Union Ambient Air Quality Directive (2008/50/EC) into law in England.

The relevant objectives for NO_X are provided in the table below.

National air quality objectives and European Directive limit and target values for the protection of vegetation and ecosystems

Pollutant	Applies to	Objective	Measured as	Date to be achieved by (and maintained thereafter)	European Obligations	Date to be achieved by (and maintained thereafter)
Nitrogen Oxide (NO_X)	UK	30µg/m^3	Annual mean	31 December 2000	30µg/m^3	19 July 2001

[A] Measured using the European gravimetric transfer sampler or equivalent

[30] Department for Environment, Food and Rural Affairs (Defra) and the Devolved Administrations (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volumes 1 and 2)

[31] The UK formally left the EU on 31st January 2020 and new air quality legislation for the UK will be brought forward in due course. The Air Quality (Miscellaneous Amendment and Revocation of Retained Direct EU Legislation) (EU Exit) Regulations 2018 (SI 2018/1407) (see Regulation 5) makes changes to retained direct EU legislation relating to air quality, to ensure that it continues to operate effectively.

[32] The Air Quality (England) Regulations 2000 - Statutory Instrument 2000 No.928

[33] The Air Quality (England) (Amendment) Regulations 2002- Statutory Instrument 2002 No.3043

[34] The Air Quality Standards Regulations 2010 - Statutory Instrument 2010 No. 1001

CLEAN AIR STRATEGY

Defra published the Government's Clean Air Strategy in 2019[35]. This sets out measures, which aim to reduce emissions from all sources of air pollution, making air healthier to breathe, protecting nature and boosting the economy. The Strategy also proposes tough new goals to cut public exposure to airborne particulate matter, as per the recommendation made by the World Health Organisation.

Furthermore, the Strategy confirms that the Government will set new legislation to 'create a stronger and a more coherent framework for action to tackle air pollution. This will be underpinned by new England-wide powers to control major sources of air pollution, in line with the risk they pose to public health and the environment, plus new local powers to take action in areas with an air pollution problem.

NATIONAL PLANNING POLICY FRAMEWORK

The Government's overall planning policies for England are described in the National Planning Policy Framework[36]. The core underpinning principle of the Framework is the presumption in favour of sustainable development, defined as:

- *'… meeting the needs of the present without compromising the ability of future generations to meet their own needs'.*

One of the three overarching objectives of the NPPF is that the planning system should seek '*to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.*'

In relation to air quality, the following paragraphs in the document are relevant:

- Paragraph 55, which states '*Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition.*';
- Paragraph 104, which relates to the need to consider transport related issues at the earliest stages of plan making and development proposals, so that *'…c) opportunities to promote walking, cycling and public transport use are identified and pursued; d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains...*';
- Paragraph 105, which states '…*Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice*

[35] Defra (January, 2019). Clean Air Strategy 2019.

[36] Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*.

of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health….';

- Paragraph 174, which states '*Planning policies and decisions should contribute to and enhance the natural and local environment by: …e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans...'*;
- Paragraph 185, which states '*Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development….*'; and
- Paragraph 188, which states '*The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.'*

Appendix C

IAQM CONSTRUCTION IMPACT ASSESSMENT METHODOLOGY

Public

STEP 1 – SCREENING THE NEED FOR A DETAILED ASSESSMENT

An assessment will normally be required where there are:

- 'Human receptors' within 350m of the site boundary; or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s); and/or
- 'Ecological receptors' within 50m of the site boundary; or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is "negligible".

STEP 2A – DEFINE THE POTENTIAL DUST EMISSION MAGNITUDE

The following are examples of how the potential dust emission magnitude for different activities can be defined. (Note that not all the criteria need to be met for a particular class). Other criteria may be used if justified in the assessment.

Table 2A: Definitions of Dust Emission Magnitudes

Dust Emission Magnitude	Activity
Large	Demolition >50,000m^3 building demolished, dusty material (e.g. concrete), on-site crushing/screening, demolition >20m above ground level
	Earthworks >10,000m^2 site area, dusty soil type (e.g. clay), >10 earth moving vehicles active simultaneously, >8m high bunds formed, >100,000 tonnes material moved
	Construction >100,000m^3 building volume, on site concrete batching, sandblasting
	Trackout >50 HDVs out / day, dusty surface material (e.g. clay), >100m unpaved roads
Medium	Demolition 20,000 - 50,000m^3 building demolished, dusty material (e.g. concrete) 10-20m above ground level
	Earthworks 2,500 - 10,000m^2 site area, moderately dusty soil (e.g. silt), 5-10 earth moving vehicles active simultaneously, 4m - 8m high bunds, 20,000 -100,000 tonnes material moved
	Construction 25,000 - 100,000m^3 building volume, dusty material e.g. concrete, on site concrete batching

Dust Emission Magnitude	Activity
	Trackout 10 - 50 HDVs out / day, moderately dusty surface material (e.g. clay), 50 -100m unpaved roads
Small	Demolition <20,000m^3 building demolished, non-dusty material (e.g metal cladding), <10m above ground level, work during wetter months
	Earthworks <2,500m^2 site area, soil with large grain size (e.g. sand), <5 earth moving vehicles active simultaneously, <4m high bunds, <20,000 tonnes material moved, earthworks during wetter months
	Construction <25,000m^3, non-dusty material (e.g. metal cladding or timber)
	Trackout <10 HDVs out / day, non-dusty soil, < 50m unpaved roads

STEP 2B – DEFINE THE SENSITIVITY OF THE AREA

The tables below present the IAQM assessment methodology to determine the sensitivity of the area to dust soiling, human health and ecological impacts respectively. The IAQM guidance provides guidance to allow the sensitivity of individual receptors to dust soiling and health effects to assist in the assessment of the overall sensitivity of the study area.

Table 2Ba: Sensitivity of the Area to Dust Soiling Effects

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 2Bb: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration ($\mu g/m^3$)	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Table 2Bc: Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from the Sources (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

STEP 2C – DEFINE THE RISK OF IMPACTS

The dust emissions magnitude determined at Step 2A should be combined with the sensitivity of the area determined at Step 2B to determine the risk of impacts without mitigation applied. For those cases where the risk category is 'negligible' no mitigation measures beyond those required by legislation will be required.

Table 2C: Risk of Dust Impacts

Sensitivity of surrounding area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks and Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

STEP 3 –SITE SPECIFIC MITIGATION

Having determined the risk categories for each of the four activities it is possible to determine the site-specific measures to be adopted. These measures will be related to whether the site is considered to be a low, medium or high risk site. The IAQM guidance details the mitigation measures required for high, medium and low risk sites as determined in Step 2C.

STEP 4 – DETERMINE SIGNIFICANT EFFECTS

Once the risk of dust impacts has been determined in Step 2C and the appropriate dust mitigation measures identified in Step 3, the final step is to determine whether there are significant effects arising from the construction phase. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect will normally be negligible.

Appendix D

CRITICAL LEVELS AND CRITICAL LOADS

Public

Critical Levels and Critical Loads for Designated Sites

The Blean Complex SAC site interest feature that is sensitive to changes in NO_x, NH_3 and N-deposition is given by APIS as 'Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli* (H9160)'. The relevant lower Critical Load for N-deposition is 15kg/ha/yr.

The West Blean And Thornden Woods SSSI site interest feature that is sensitive to changes in NO_x, NH_3 and N-deposition is given by APIS as 'Acidophilous Quercus-dominated woodland'. The relevant lower Critical Load for N-deposition is 10kg/ha/yr.

For Tyler Hill Meadow LNR, the main habitat is neutral grassland, and the relevant lower Critical Load for N-deposition is 20 - 30 Kg N/ha/year (Low and medium altitude hay meadows).

The Critical Load for woodland habitats in the UK has been defined to be within a wide range of 5–20kg N/ha/yr, depending on woodland vegetation types. There are more specific Critical Load ranges where information is available to assign vegetation types (e.g. acidic oak-birch woods, beech or native pine woods). Where information is unavailable to determine woodland vegetation types, the default value for woodland habitats is considered to be 10kg N/ha/yr[37].

Details of site relevant Critical Levels and Critical Loads for ecological receptors are listed in the table below.

Critical Levels and Critical Loads for Ecological Receptors

Name	Habitat	NOx Critical Level	NH_3 Critical Level	N-deposition Lower Critical (kg/ha/yr)	Acid deposition Lower Critical Load? (keq/ha/yr)
Blean Complex SAC	Broad-leaved, Mixed and yew woodland	30	3 (Higher plans including heathland, grassland and forest ground flora)	15 (Meso- and eutrophic Quercus woodland)	2.86
West Blean And Thornden Woods SSSI	Broad-leaved, Mixed and yew woodland	30	3 (Higher plans including heathland, grassland and forest ground flora)	10 (Woodland)	2.263
Tyler Hill Meadow LNR	Broad-leaved, Mixed and yew woodland	30	3 (Higher plans including heathland, grassland and forest ground flora)	20-30 (neutral grassland)	5.071

[37] https://www.woodlandtrust.org.uk/media/1687/ammonia-impacts-on-ancient-woodland.pdf

Name	Habitat	NOx Critical Level	NH_3 Critical Level	N-deposition Lower Critical (kg/ha/yr)	Acid deposition Lower Critical Load? (keq/ha/yr)
Ancient Woodland	Broad-leaved, Mixed and yew woodland	30	3 (Higher plans including heathland, grassland and forest ground flora)	10 (Woodland)	2.263

Appendix E

TRAFFIC DATA

2019 BASELINE

Road Link	Road Name	AADT	% HDV	Speed (kph)	NOx Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_1	Canterbury Hill south of Giles Lane	9368	0.9	48	0.0283	0.0026
Link_2	roundabout	10319	3.7	20	0.0494	0.0031
Link_3	roundabout	14885	3.8	20	0.0715	0.0045
Link_4	roundabout	22582	3.1	20	0.1050	0.0067
Link_5	roundabout	17397	3.2	20	0.0813	0.0052
Link_6	Development access road (onto Whitstable Road)	0	0.0	48	0.0000	0.0000
Link_7	Development access road (onto Tyler Hill Road at Tyler Hill Road Junc. West)	0	0.0	0	0.0000	0.0000
Link_8	Development access road (onto Tyler Hill Road at Tyler Hill Road Junc. East)	0	0.0	0	0.0000	0.0000
Link_9	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from North)	0	0.0	0	0.0000	0.0000
Link_10	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from South)	0	0.0	0	0.0000	0.0000
Link_11	A290 Whitstable Road (north of Tyler Hill Road)	8901	6.1	48	0.0306	0.0029
Link_12	Park Wood Road west of Giles Lane	4178	1.4	32	0.0149	0.0012
Link_13	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	8969	3.0	48	0.0286	0.0027

Road Link	Road Name	AADT	% HDV	Speed (kph)	NOx Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_14	A290 Whitstable Road (Between Rough Common Road and access junction)	10132	2.5	48	0.0319	0.0030
Link_15	A290 St Dunstan's Street (between London Road and Forty Acres Road)	8892	4.0	48	0.0290	0.0027
Link_16	London Road (west of Whitstable Road)	8585	4.0	32	0.0337	0.0026
Link_17	Rough Common Road (west of Whitstable Road)	9013	0.9	48	0.0272	0.0025
Link_87	Rough Common Road (west of Whitstable Road)	9013	0.9	48	0.0272	0.0025
Link_19	A2050 west of Palmers Cross Hill	17414	3.5	80	0.0519	0.0053
Link_20	A2050 east of Palmers Cross Hill	15949	3.6	80	0.0476	0.0048
Link_21	Giles Lane east of Whitstable Road	3916	0.4	48	0.0117	0.0011
Link_22	University Road south of Giles Lane	3770	3.5	32	0.0148	0.0011
Link_23	University Road north of Whitstable Road	4743	5.8	48	0.0162	0.0015
Link_24	Calais Hill west of Canterbury Hill	1177	0.9	64	0.0033	0.0003
Link_25	St. Stephen's Hill north of Beaconsfield Road	8717	1.2	48	0.0265	0.0025
Link_26	Beaconsfield Road south of St Stephen's Hill	5618	0.9	48	0.0170	0.0016

Road Link	Road Name	AADT	% HDV	Speed (kph)	NOx Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_27	St Stephen's Road west of St Stephen's Roundabout	13190	0.5	48	0.0394	0.0036
Link_28	St Stephen's Road north of St Stephen's Roundabout	8084	1.1	48	0.0245	0.0023
Link_29	Kingsmead Road south of St Stephen's Roundabout	13887	2.5	48	0.0437	0.0041
Link_30	A2050	26547	3.8	64	0.0788	0.0081
Link_31	A290	38634	3.3	64	0.1137	0.0116
Link_32	A290	16032	2.0	32	0.0585	0.0046
Link_33	roundabout	12619	3.8	20	0.0606	0.0038
Link_34	roundabout	20547	3.2	20	0.0960	0.0061
Link_35	A2050 west of Palmers Cross Hill	17414	3.5	80	0.0519	0.0053
Link_36	A2050 east of Palmers Cross Hill	15949	3.6	80	0.0476	0.0048
Link_37	A2050 east of Palmers Cross Hill	15949	3.6	80	0.0476	0.0048
Link_38	A2050	26547	3.8	64	0.0788	0.0081
Link_39	A2050	26547	3.8	64	0.0788	0.0081
Link_40	London Road (west of Whitstable Road)	8585	4.0	32	0.0337	0.0026
Link_41	London Road (west of Whitstable Road)	8585	4.0	32	0.0337	0.0026
Link_42	Palmers Cross Hill	8537	0.7	48	0.0256	0.0024

Road Link	Road Name	AADT	% HDV	Speed (kph)	NOx Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_43	Rough Common Road (west of Whitstable Road)	9013	0.9	48	0.0272	0.0025
Link_44	A290	38634	3.3	64	0.1137	0.0116
Link_45	A290	16032	2.0	32	0.0585	0.0046
Link_46	A290 St Thomas Hill (between University Road and Forty Acres Road)	9028	4.7	48	0.0300	0.0028
Link_47	University Road north of Whitstable Road	4743	5.8	48	0.0162	0.0015
Link_48	University Road south of Giles Lane	3770	3.5	32	0.0145	0.0011
Link_49	Giles Lane east of Whitstable Road	3916	0.4	48	0.0117	0.0011
Link_50	Giles Lane east of Whitstable Road	3916	0.4	48	0.0117	0.0011
Link_51	Park Wood Road west of Giles Lane	4178	1.4	32	0.0149	0.0012
Link_52	Park Wood Road west of Giles Lane	4178	1.4	32	0.0149	0.0012
Link_53	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	8969	3.0	48	0.0286	0.0027
Link_54	St. Stephen's Hill north of Beaconsfield Road	8717	1.2	48	0.0265	0.0025
Link_55	St Stephen's Road north of St Stephen's Roundabout	8084	1.1	48	0.0245	0.0023
Link_56	Beaconsfield Road south of St Stephen's Hill	5618	0.9	48	0.0170	0.0016

Road Link	Road Name	AADT	% HDV	Speed (kph)	NOx Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_57	St Stephen's Road north of St Stephen's Roundabout	8084	1.1	48	0.0245	0.0023
Link_58	St Stephen's Road west of St Stephen's Roundabout	13190	0.5	48	0.0394	0.0036
Link_59	Kingsmead Road south of St Stephen's Roundabout	13887	2.5	48	0.0437	0.0041
Link_60	Canterbury Hill south of Giles Lane	9368	0.9	48	0.0283	0.0026
Link_61	Canterbury Hill north of Giles Lane	8678	0.7	64	0.0243	0.0024
Link_62	Tyler Hill Road (east of A290 Whitstable Road)	1415	1.1	48	0.0043	0.0004
Link_63	Calais Hill west of Canterbury Hill	1177	0.9	64	0.0033	0.0003
Link_64	Development access road (onto Whitstable Road)	0	0.0	48	0.0000	0.0000
Link_65	Development access road (onto Tyler Hill Road at Tyler Hill Road Junc. West)	0	0.0	0	0.0000	0.0000
Link_66	Development access road (onto Tyler Hill Road at Tyler Hill Road Junc. East)	0	0.0	0	0.0000	0.0000
Link_67	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from South)	0	0.0	0	0.0000	0.0000
Link_68	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from South)	0	0.0	0	0.0000	0.0000

Road Link	Road Name	AADT	% HDV	Speed (kph)	NOx Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_69	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from North)	0	0.0	0	0.0000	0.0000
Link_70	A290 Whitstable Road (between access junction and Giles Lane)	9835	2.1	48	0.0306	0.0029
Link_71	A290 Whitstable Road (between Giles Lane and University Road)	7257	2.6	48	0.0229	0.0021
Link_72	A290 St Thomas Hill (between University Road and Forty Acres Road)	9028	4.7	48	0.0300	0.0028
Link_73	A290 St Dunstan's Street (between London Road and Forty Acres Road)	8892	4.0	48	0.0290	0.0027
Link_74	Tyler Hill Road (east of A290 Whitstable Road)	1415	1.1	48	0.0043	0.0004
Link_90	Wood Hill north of Calais Hill	7578	0.9	48	0.0230	0.0021
Link_76	Canterbury Hill north of Giles Lane	8678	0.7	64	0.0243	0.0024
Link_77	Kingsmead Road south of St Stephen's Roundabout	13887	2.5	48	0.0437	0.0041
Link_78	St Stephen's Road west of St Stephen's Roundabout	13190	0.5	48	0.0394	0.0036
Link_79	A2050 west of Palmers Cross Hill	17414	3.5	80	0.0519	0.0053
Link_80	A2050 east of Palmers Cross Hill	15949	3.6	80	0.0476	0.0048
Link_81	A2050 east of Palmers Cross Hill	15949	3.6	80	0.0476	0.0048

Road Link	Road Name	AADT	% HDV	Speed (kph)	NOx Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_82	A2050 east of Palmers Cross Hill	15949	3.6	80	0.0476	0.0048
Link_83	A290	16032	2.0	32	0.0585	0.0046
Link_84	A290	16032	2.0	32	0.0585	0.0046
Link_85	A290 St Thomas Hill (between University Road and Forty Acres Road)	9028	4.7	48	0.0300	0.0028
Link_89	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	8969	3.0	48	0.0293	0.0027
Link_18	Palmers Cross Hill	8537	0.7	48	0.0256	0.0024
Link_88	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	8969	3.0	48	0.0294	0.0027
Link_86	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	8969	3.0	48	0.0286	0.0027
Link_75	Wood Hill north of Calais Hill	7578	0.9	48	0.0229	0.0021
Link_91	Giles Lane east of Whitstable Road	3916	0.4	48	0.0117	0.0011
Link_92	Giles Lane east of Whitstable Road	3916	0.4	48	0.0117	0.0011

2040 BASELINE

Road Link	Road Name	AADT	% HDV	Speed (kph)	NO_x Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_1	Canterbury Hill south of Giles Lane	10896	0.9	48	0.01293	0.0036
Link_2	roundabout	12001	3.7	20	0.02214	0.0043
Link_3	roundabout	17311	3.8	20	0.03207	0.0062
Link_4	roundabout	26263	3.1	20	0.04727	0.0092
Link_5	roundabout	20233	3.2	20	0.03657	0.0071
Link_6	Development access road (onto Whitstable Road)	0	0.0	48	-	-
Link_7	Development access road (onto Tyler Hill Road at Tyler Hill Road Junc. West)	0	0.0	0	-	-
Link_8	Development access road (onto Tyler Hill Road at Tyler Hill Road Junc. East)	0	0.0	0	-	-
/Link_9	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from North)	0	0.0	0	-	-
Link_10	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from South)	0	0.0	0	-	-
Link_11	A290 Whitstable Road (north of Tyler Hill Road)	10353	6.1	48	0.01346	0.0039
Link_12	Park Wood Road west of Giles Lane	4859	1.4	32	0.00680	0.0016
Link_13	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	10432	3.0	48	0.01286	0.0036

Road Link	Road Name	AADT	% HDV	Speed (kph)	NO_x Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_14	A290 Whitstable Road (Between Rough Common Road and access junction)	11784	2.5	48	0.01440	0.0041
Link_15	A290 St Dunstan's Street (between London Road and Forty Acres Road)	10341	4.0	48	0.01296	0.0037
Link_16	London Road (west of Whitstable Road)	9985	4.0	32	0.01506	0.0036
Link_17	Rough Common Road (west of Whitstable Road)	10483	0.9	48	0.01244	0.0035
Link_87	Rough Common Road (west of Whitstable Road)	10483	0.9	48	0.01244	0.0035
Link_19	A2050 west of Palmers Cross Hill	20252	3.5	80	0.02274	0.0071
Link_20	A2050 east of Palmers Cross Hill	18550	3.6	80	0.02083	0.0066
Link_21	Giles Lane east of Whitstable Road	4554	0.4	48	0.00536	0.0015
Link_22	University Road south of Giles Lane	4384	3.5	32	0.00710	0.0016
Link_23	University Road north of Whitstable Road	5516	5.8	48	0.00714	0.0021
Link_24	Calais Hill west of Canterbury Hill	1369	0.9	64	0.00151	0.0005
Link_25	St. Stephen's Hill north of Beaconsfield Road	10138	1.2	48	0.01209	0.0034
Link_26	Beaconsfield Road south of St Stephen's Hill	6534	0.9	48	0.00776	0.0022

Road Link	Road Name	AADT	% HDV	Speed (kph)	NO_x Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_27	St Stephen's Road west of St Stephen's Roundabout	15341	0.5	48	0.01808	0.0050
Link_28	St Stephen's Road north of St Stephen's Roundabout	9402	1.1	48	0.01119	0.0031
Link_29	Kingsmead Road south of St Stephen's Roundabout	16151	2.5	48	0.01973	0.0056
Link_30	A2050	30875	3.8	64	0.03502	0.0110
Link_31	A290	44932	3.3	64	0.05076	0.0158
Link_32	A290	18646	2.0	32	0.02652	0.0063
Link_33	roundabout	14677	3.8	20	0.02719	0.0052
Link_34	roundabout	23896	3.2	20	0.04319	0.0084
Link_35	A2050 west of Palmers Cross Hill	20252	3.5	80	0.02274	0.0071
Link_36	A2050 east of Palmers Cross Hill	18550	3.6	80	0.02083	0.0066
Link_37	A2050 east of Palmers Cross Hill	18550	3.6	80	0.02083	0.0066
Link_38	A2050	30875	3.8	64	0.03502	0.0110
Link_39	A2050	30875	3.8	64	0.03502	0.0110
Link_40	London Road (west of Whitstable Road)	9985	4.0	32	0.01506	0.0036
Link_41	London Road (west of Whitstable Road)	9985	4.0	32	0.01506	0.0036
Link_42	Palmers Cross Hill	9928	0.7	48	0.01174	0.0032

Road Link	Road Name	AADT	% HDV	Speed (kph)	NO_x Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_43	Rough Common Road (west of Whitstable Road)	10483	0.9	48	0.01244	0.0035
Link_44	A290	44932	3.3	64	0.05076	0.0158
Link_45	A290	18646	2.0	32	0.02652	0.0063
Link_46	A290 St Thomas Hill (between University Road and Forty Acres Road)	10500	4.7	48	0.01332	0.0038
Link_47	University Road north of Whitstable Road	5516	5.8	48	0.00714	0.0021
Link_48	University Road south of Giles Lane	4384	3.5	32	0.00652	0.0016
Link_49	Giles Lane east of Whitstable Road	4554	0.4	48	0.00536	0.0015
Link_50	Giles Lane east of Whitstable Road	4554	0.4	48	0.00536	0.0015
Link_51	Park Wood Road west of Giles Lane	4859	1.4	32	0.00680	0.0016
Link_52	Park Wood Road west of Giles Lane	4859	1.4	32	0.00680	0.0016
Link_53	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	10432	3.0	48	0.01286	0.0036
Link_54	St. Stephen's Hill north of Beaconsfield Road	10138	1.2	48	0.01209	0.0034
Link_55	St Stephen's Road north of St Stephen's Roundabout	9402	1.1	48	0.01119	0.0031
Link_56	Beaconsfield Road south of St Stephen's Hill	6534	0.9	48	0.00776	0.0022

Road Link	Road Name	AADT	% HDV	Speed (kph)	NO_x Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_57	St Stephen's Road north of St Stephen's Roundabout	9402	1.1	48	0.01119	0.0031
Link_58	St Stephen's Road west of St Stephen's Roundabout	15341	0.5	48	0.01808	0.0050
Link_59	Kingsmead Road south of St Stephen's Roundabout	16151	2.5	48	0.01973	0.0056
Link_60	Canterbury Hill south of Giles Lane	10896	0.9	48	0.01293	0.0036
Link_61	Canterbury Hill north of Giles Lane	10092	0.7	64	0.01111	0.0033
Link_62	Tyler Hill Road (east of A290 Whitstable Road)	1646	1.1	48	0.00197	0.0005
Link_63	Calais Hill west of Canterbury Hill	1369	0.9	64	0.00151	0.0005
Link_64	Development access road (onto Whitstable Road)	0	0.0	48	-	-
Link_65	Development access road (onto Tyler Hill Road at Tyler Hill Road Junc. West)	0	0.0	0	-	-
Link_66	Development access road (onto Tyler Hill Road at Tyler Hill Road Junc. East)	0	0.0	0	-	-
Link_67	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from South)	0	0.0	0	-	-
Link_68	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from South)	0	0.0	0	-	-

Road Link	Road Name	AADT	% HDV	Speed (kph)	NO_x Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_69	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from North)	0	0.0	0	-	-
Link_70	A290 Whitstable Road (between access junction and Giles Lane)	11439	2.1	48	0.01388	0.0039
Link_71	A290 Whitstable Road (between Giles Lane and University Road)	8440	2.6	48	0.01034	0.0029
Link_72	A290 St Thomas Hill (between University Road and Forty Acres Road)	10500	4.7	48	0.01332	0.0038
Link_73	A290 St Dunstan's Street (between London Road and Forty Acres Road)	10341	4.0	48	0.01296	0.0037
Link_74	Tyler Hill Road (east of A290 Whitstable Road)	1646	1.1	48	0.00197	0.0005
Link_90	Wood Hill north of Calais Hill	8814	0.9	48	0.01069	0.0029
Link_76	Canterbury Hill north of Giles Lane	10092	0.7	64	0.01111	0.0033
Link_77	Kingsmead Road south of St Stephen's Roundabout	16151	2.5	48	0.01973	0.0056
Link_78	St Stephen's Road west of St Stephen's Roundabout	15341	0.5	48	0.01808	0.0050
Link_79	A2050 west of Palmers Cross Hill	20252	3.5	80	0.02274	0.0071
Link_80	A2050 east of Palmers Cross Hill	18550	3.6	80	0.02083	0.0066
Link_81	A2050 east of Palmers Cross Hill	18550	3.6	80	0.02083	0.0066

Road Link	Road Name	AADT	% HDV	Speed (kph)	NO_x Emission Factors (g/km/s)	NH_3 Emission Factors (g/km/s)
Link_82	A2050 east of Palmers Cross Hill	18550	3.6	80	0.02083	0.0066
Link_83	A290	18646	2.0	32	0.02652	0.0063
Link_84	A290	18646	2.0	32	0.02652	0.0063
Link_85	A290 St Thomas Hill (between University Road and Forty Acres Road)	10500	4.7	48	0.01332	0.0038
Link_89	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	10432	3.0	48	0.01379	0.0036
Link_18	Palmers Cross Hill	9928	0.7	48	0.01174	0.0032
Link_88	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	10432	3.0	48	0.01370	0.0036
Link_86	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	10432	3.0	48	0.01286	0.0036
Link_75	Wood Hill north of Calais Hill	8814	0.9	48	0.01046	0.0029
Link_91	Giles Lane east of Whitstable Road	4554	0.4	48	0.00536	0.0015
Link_92	Giles Lane east of Whitstable Road	4554	0.4	48	0.00536	0.0015

2040 WITH DEVELOPMENT

Road Link	Road Name	AADT	% HDV	Speed (kph)	2030 NO_x Emission Factors (g/km/s)	2035 NH_3 Emission Factors (g/km/s)
Link_1	Canterbury Hill south of Giles Lane	12439	0.8	48	0.01474	0.0041
Link_2	roundabout	12147	3.7	20	0.02241	0.0043
Link_3	roundabout	17335	3.8	20	0.03211	0.0062
Link_4	roundabout	26263	3.1	20	0.04727	0.0092
Link_5	roundabout	20233	3.2	20	0.03657	0.0071
Link_6	Development access road (onto Whitstable Road)	3374	0.0	48	0.00394	0.0011
Link_7	Development access road (onto Tyler Hill Road at Tyler Hill Road Junc. West)	1413	0.0	48	0.00165	0.0005
Link_8	Development access road (onto Tyler Hill Road at Tyler Hill Road Junc. East)	1316	0.0	48	0.00154	0.0004
Link_9	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from North)	2139	0.0	48	0.00250	0.0007
Link_10	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from South)	855	0.0	48	0.00100	0.0003
Link_11	A290 Whitstable Road (north of Tyler Hill Road)	11658	5.4	48	0.01498	0.0043
Link_12	Park Wood Road west of Giles Lane	5277	1.3	32	0.00736	0.0018
Link_13	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	11852	2.7	48	0.01452	0.0041

Road Link	Road Name	AADT	% HDV	Speed (kph)	2030 NO_x Emission Factors (g/km/s)	2035 NH_3 Emission Factors (g/km/s)
Link_14	A290 Whitstable Road (Between Rough Common Road and access junction)	14443	2.1	48	0.01751	0.0049
Link_15	A290 St Dunstan's Street (between London Road and Forty Acres Road)	12570	3.3	48	0.01556	0.0044
Link_16	London Road (west of Whitstable Road)	9985	4.0	32	0.01506	0.0036
Link_17	Rough Common Road (west of Whitstable Road)	12372	0.8	48	0.01465	0.0041
Link_87	Rough Common Road (west of Whitstable Road)	12372	0.8	48	0.01465	0.0041
Link_19	A2050 west of Palmers Cross Hill	21755	3.2	80	0.02440	0.0076
Link_20	A2050 east of Palmers Cross Hill	18936	3.5	80	0.02126	0.0067
Link_21	Giles Lane east of Whitstable Road	4554	0.4	48	0.00536	0.0015
Link_22	University Road south of Giles Lane	4384	3.5	32	0.00710	0.0016
Link_23	University Road north of Whitstable Road	5516	5.8	48	0.00714	0.0021
Link_24	Calais Hill west of Canterbury Hill	2912	0.4	64	0.00320	0.0009
Link_25	St. Stephen's Hill north of Beaconsfield Road	11755	1.0	48	0.01398	0.0039
Link_26	Beaconsfield Road south of St Stephen's Hill	6789	0.9	48	0.00806	0.0022
Link_27	St Stephen's Road west of St Stephen's Roundabout	15886	0.5	48	0.01872	0.0052

Road Link	Road Name	AADT	% HDV	Speed (kph)	2030 NO_x Emission Factors (g/km/s)	2035 NH_3 Emission Factors (g/km/s)
Link_28	St Stephen's Road north of St Stephen's Roundabout	11008	0.9	48	0.01307	0.0036
Link_29	Kingsmead Road south of St Stephen's Roundabout	17322	2.3	48	0.02110	0.0059
Link_30	A2050	30875	3.8	64	0.03502	0.0110
Link_31	A290	44932	3.3	64	0.05076	0.0158
Link_32	A290	18646	2.0	32	0.02652	0.0063
Link_33	roundabout	14798	3.7	20	0.02730	0.0053
Link_34	roundabout	23896	3.2	20	0.04319	0.0084
Link_35	A2050 west of Palmers Cross Hill	21755	3.2	80	0.02440	0.0076
Link_36	A2050 east of Palmers Cross Hill	18936	3.5	80	0.02126	0.0067
Link_37	A2050 east of Palmers Cross Hill	18936	3.5	80	0.02126	0.0067
Link_38	A2050	30875	3.8	64	0.03502	0.0110
Link_39	A2050	30875	3.8	64	0.03502	0.0110
Link_40	London Road (west of Whitstable Road)	9985	4.0	32	0.01506	0.0036
Link_41	London Road (west of Whitstable Road)	9985	4.0	32	0.01506	0.0036
Link_42	Palmers Cross Hill	11818	0.6	48	0.01394	0.0039
Link_43	Rough Common Road (west of Whitstable Road)	12372	0.8	48	0.01465	0.0041
Link_44	A290	44932	3.3	64	0.05076	0.0158

Road Link	Road Name	AADT	% HDV	Speed (kph)	2030 NO_x Emission Factors (g/km/s)	2035 NH_3 Emission Factors (g/km/s)
Link_45	A290	18646	2.0	32	0.02652	0.0063
Link_46	A290 St Thomas Hill (between University Road and Forty Acres Road)	12782	3.8	48	0.01599	0.0046
Link_47	University Road north of Whitstable Road	5516	5.8	48	0.00714	0.0021
Link_48	University Road south of Giles Lane	4384	3.5	32	0.00652	0.0016
Link_49	Giles Lane east of Whitstable Road	4554	0.4	48	0.00536	0.0015
Link_50	Giles Lane east of Whitstable Road	4554	0.4	48	0.00536	0.0015
Link_51	Park Wood Road west of Giles Lane	5277	1.3	32	0.00736	0.0018
Link_52	Park Wood Road west of Giles Lane	5277	1.3	32	0.00736	0.0018
Link_53	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	11852	2.7	48	0.01452	0.0041
Link_54	St. Stephen's Hill north of Beaconsfield Road	11755	1.0	48	0.01398	0.0039
Link_55	St Stephen's Road north of St Stephen's Roundabout	11008	0.9	48	0.01307	0.0036
Link_56	Beaconsfield Road south of St Stephen's Hill	6789	0.9	48	0.00806	0.0022
Link_57	St Stephen's Road north of St Stephen's Roundabout	11008	0.9	48	0.01307	0.0036
Link_58	St Stephen's Road west of St Stephen's Roundabout	15886	0.5	48	0.01872	0.0052

Road Link	Road Name	AADT	% HDV	Speed (kph)	2030 NO_x Emission Factors (g/km/s)	2035 NH_3 Emission Factors (g/km/s)
Link_59	Kingsmead Road south of St Stephen's Roundabout	17322	2.3	48	0.02110	0.0059
Link_60	Canterbury Hill south of Giles Lane	12439	0.8	48	0.01474	0.0041
Link_61	Canterbury Hill north of Giles Lane	11636	0.6	64	0.01280	0.0038
Link_62	Tyler Hill Road (east of A290 Whitstable Road)	3750	0.5	48	0.00443	0.0012
Link_63	Calais Hill west of Canterbury Hill	2912	0.4	64	0.00320	0.0009
Link_64	Development access road (onto Whitstable Road)	3374	0.0	48	0.00394	0.0011
Link_65	Development access road (onto Tyler Hill Road at Tyler Hill Road Junc. West)	1413	0.0	48	0.00165	0.0005
Link_66	Development access road (onto Tyler Hill Road at Tyler Hill Road Junc. East)	1316	0.0	48	0.00154	0.0004
Link_67	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from South)	855	0.0	48	0.00100	0.0003
Link_68	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from South)	855	0.0	48	0.00100	0.0003
Link_69	Development access road (onto Tyler Hill Road at Site B / Tyler Hill Road / Site D junction - from North)	2139	0.0	48	0.00250	0.0007
Link_70	A290 Whitstable Road (between access junction and Giles Lane)	13721	1.8	48	0.01654	0.0046

Road Link	Road Name	AADT	% HDV	Speed (kph)	2030 NO_x Emission Factors (g/km/s)	2035 NH_3 Emission Factors (g/km/s)
Link_71	A290 Whitstable Road (between Giles Lane and University Road)	10723	2.1	48	0.01300	0.0036
Link_72	A290 St Thomas Hill (between University Road and Forty Acres Road)	12782	3.8	48	0.01599	0.0046
Link_73	A290 St Dunstan's Street (between London Road and Forty Acres Road)	12570	3.3	48	0.01556	0.0044
Link_74	Tyler Hill Road (east of A290 Whitstable Road)	3750	0.5	48	0.00443	0.0012
Link_90	Wood Hill north of Calais Hill	8814	0.9	48	0.01069	0.0029
Link_76	Canterbury Hill north of Giles Lane	11636	0.6	64	0.01280	0.0038
Link_77	Kingsmead Road south of St Stephen's Roundabout	17322	2.3	48	0.02110	0.0059
Link_78	St Stephen's Road west of St Stephen's Roundabout	15886	0.5	48	0.01872	0.0052
Link_79	A2050 west of Palmers Cross Hill	21755	3.2	80	0.02440	0.0076
Link_80	A2050 east of Palmers Cross Hill	18936	3.5	80	0.02126	0.0067
Link_81	A2050 east of Palmers Cross Hill	18936	3.5	80	0.02126	0.0067
Link_82	A2050 east of Palmers Cross Hill	18936	3.5	80	0.02126	0.0067
Link_83	A290	18646	2.0	32	0.02652	0.0063
Link_84	A290	18646	2.0	32	0.02652	0.0063

Road Link	Road Name	AADT	% HDV	Speed (kph)	2030 NO_x Emission Factors (g/km/s)	2035 NH_3 Emission Factors (g/km/s)
Link_85	A290 St Thomas Hill (between University Road and Forty Acres Road)	12782	3.8	48	0.01599	0.0046
Link_89	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	11852	2.7	48	0.01545	0.0041
Link_18	Palmers Cross Hill	11818	0.6	48	0.01394	0.0039
Link_88	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	11852	2.7	48	0.01536	0.0041
Link_86	A290 Whitstable Road (Between Rough Common Road and Tyler Hill Road)	11852	2.7	48	0.01452	0.0041
Link_75	Wood Hill north of Calais Hill	8814	0.9	48	0.01046	0.0029
Link_91	Giles Lane east of Whitstable Road	4554	0.4	48	0.00536	0.0015
Link_92	Giles Lane east of Whitstable Road	4554	0.4	48	0.00536	0.0015

Appendix F

MODEL VERIFICATION

The comparison of modelled concentrations with local monitored concentrations is a process termed 'verification'. Model verification investigates the discrepancies between modelled and measured concentrations, which can arise due to the presence of inaccuracies and/or uncertainties in model input data, modelling and monitoring data assumptions. The following are examples of potential causes of such discrepancy:

a) Estimates of background pollutant concentrations;

b) Meteorological data uncertainties;

c) Traffic data uncertainties;

d) Model input parameters, such as 'roughness length'; and

e) Overall limitations of the dispersion model.

NITROGEN DIOXIDE

Most nitrogen dioxide is produced in the atmosphere by the reaction of nitric oxide (NO) with ozone. It is therefore most appropriate to verify the model in terms of the primary pollutant emissions of nitrogen oxides (NO_x = NO + NO_2), in line with the guidance provided within LAQM.TG(16).

The model has been run to predict the 2019 annual mean road-NO_x contribution at five roadside diffusion tubes within the modelled road network. The model outputs of road-NO_x have been compared with the 'measured' road-NO_x, which was determined from the NO_2 concentrations measured using diffusion tubes at the monitoring locations, utilising the NO_x from NO_2 calculator provided by Defra and the NO_2 background concentration (from the Defra background map). As discussed in the methodology section, the most recent suitable data available for model verification purposes is 2019 data.

A number of diffusion tubes were not considered suitable for the purpose of model verification as they were not reflective of the likely conditions (and therefore performance) of the model within the vicinity of the designated ecological sites.

The table below (E1) presents the monitoring data **excluded** in the verification along with justification/the rationale for this decision.

Table E1 – Data excluded in model verification

Monitoring Site	Measured Annual Mean NO_2 Concentration ($\mu g/m^3$)	Data Capture	Justification
DT7	25.2	83.3	Not representative of modelled sites (street canyon) and incomplete network
DT3	32.6	100.0	Incomplete local roads data
DT19	38.8	100.0	Incomplete local roads data
DT20	30.6	66.7	Incomplete local roads data & low data capture

DT21	25.7	91.7	Incomplete local roads data
DT23	44.1	100.0	Incomplete local roads data
DT32	28.1	91.7	Kerbside with one sided canyon on one side. Not representative of modelled sites
DT34	30.7	100.0	Incomplete local roads data
DT36	27.6	83.3	Incomplete local roads data
DT57	30.1	100	Air distribution block with other fixtures on the lamppost

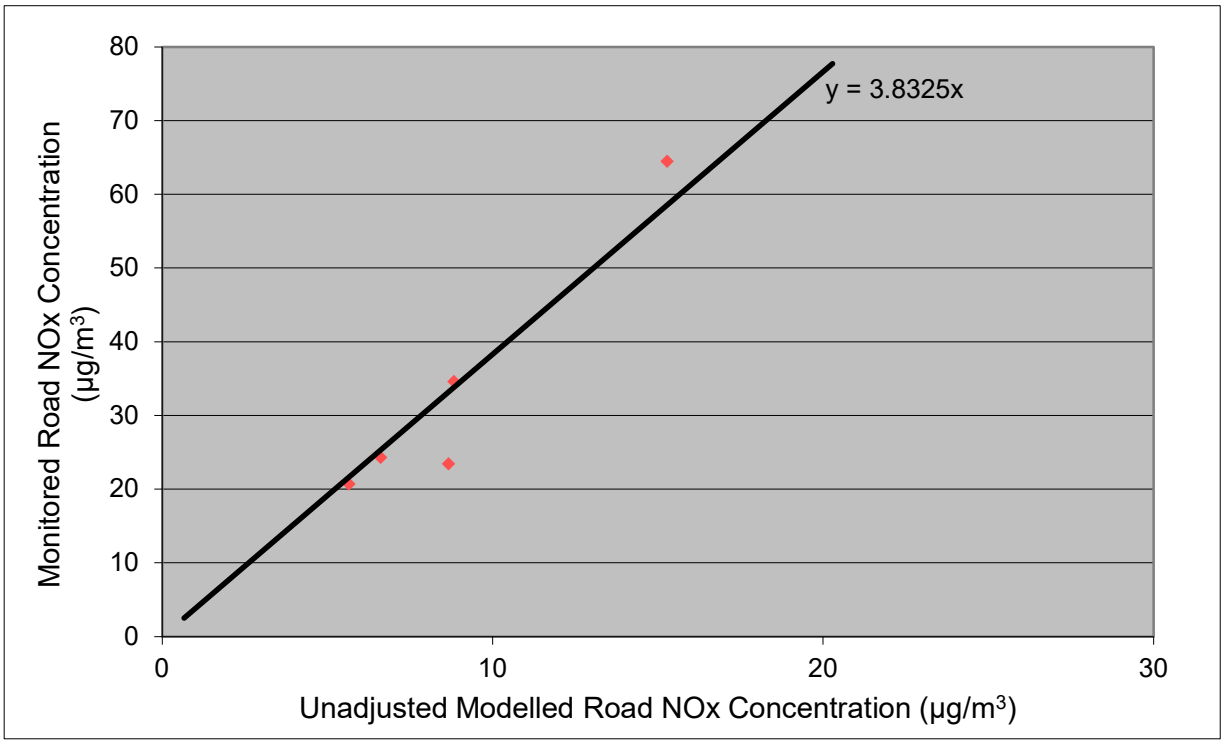
Table E2 presents the monitoring locations utilised within model verification.

Table E2 – Data used in model verification

Monitoring Site	Measured Annual Mean NO_2 Concentration ($\mu g/m^3$)	Background NO_2 ($\mu g/m^3$)	Measured Road-NO_x ($\mu g/m^3$) (from NO_x:NO_2 calculator)	Modelled Road-NO_x ($\mu g/m^3$)	Ratio
DT5	29.6	11.9	34.6	8.8	3.9
DT4	44.6	13.8	64.5	15.3	4.2
DT10	25.8	13.6	23.4	8.7	2.7
DT37	23.1	10.3	24.3	6.6	3.7
DT58	22.8	11.9	20.7	5.7	3.7

The road-NO_x adjustment factor was determined as the slope of the best fit line between the 'measured' road contribution and the model derived road contribution, forced through zero (Figure E1). This factor was then applied to the modelled road-NO_x concentration for each monitoring site to provide adjusted modelled road-NO_x concentrations. The total nitrogen dioxide concentrations were then determined by inputting the adjusted modelled road-NO_x concentrations and the background NO_2 concentration into the NO_x to NO_2 calculator.

Figure E1: Comparison of Measured Road-NO_x with Unadjusted Modelled Road-NO_x



MODEL UNCERTAINTY

An evaluation of model performance has been undertaken to establish confidence in model results. LAQM.TG(16) identifies a number of statistical procedures that are appropriate to evaluate model performance and assess the uncertainty. These include:

a) Root mean square error (RMSE);

b) Fractional bias (FB); and

c) Correlation coefficient (CC).

These parameters estimate how the model results agree or diverge from the observations. These calculations can be carried out prior to, and after adjustment, or based on different options for adjustment, and can provide useful information on model improvement. A brief for explanation of each statistic is provided in Table E2, and further details can be found in Box 7.17 of LAQM.TG(16).

Table E2 – Methods for describing model uncertainty

Statistical Parameter	Comments	Ideal value
RMSE	RMSE is used to define the average error or uncertainty of the model. The units of RMSE are the same as the quantities compared. If the RMSE values are higher than 25% of the objective being assessed, it is recommended that the	0.01

	model inputs and verification should be revisited in order to make improvements. For example, if the model predictions are for the annual mean NO_2 objective of 40 µg/m^3, if an RMSE of 10µg/m^3 or above is determined for a model it is advised to revisit the model parameters and model verification. Ideally an RMSE within 10% of the air quality objective would be derived, which equates to 4µg/m^3 for the annual mean NO_2 objective.	
Fractional Bias	It is used to identify if the model shows a systematic tendency to over or under predict. FB values vary between +2 and -2 and has an ideal value of zero. Negative values suggest a model over-prediction and positive values suggest a model under-prediction.	0.00
Correlation Coefficient	It is used to measure the linear relationship between predicted and observed data. A value of zero means no relationship and a value of 1 means absolute relationship. This statistic can be particularly useful when comparing a large number of model and observed data points.	1.00

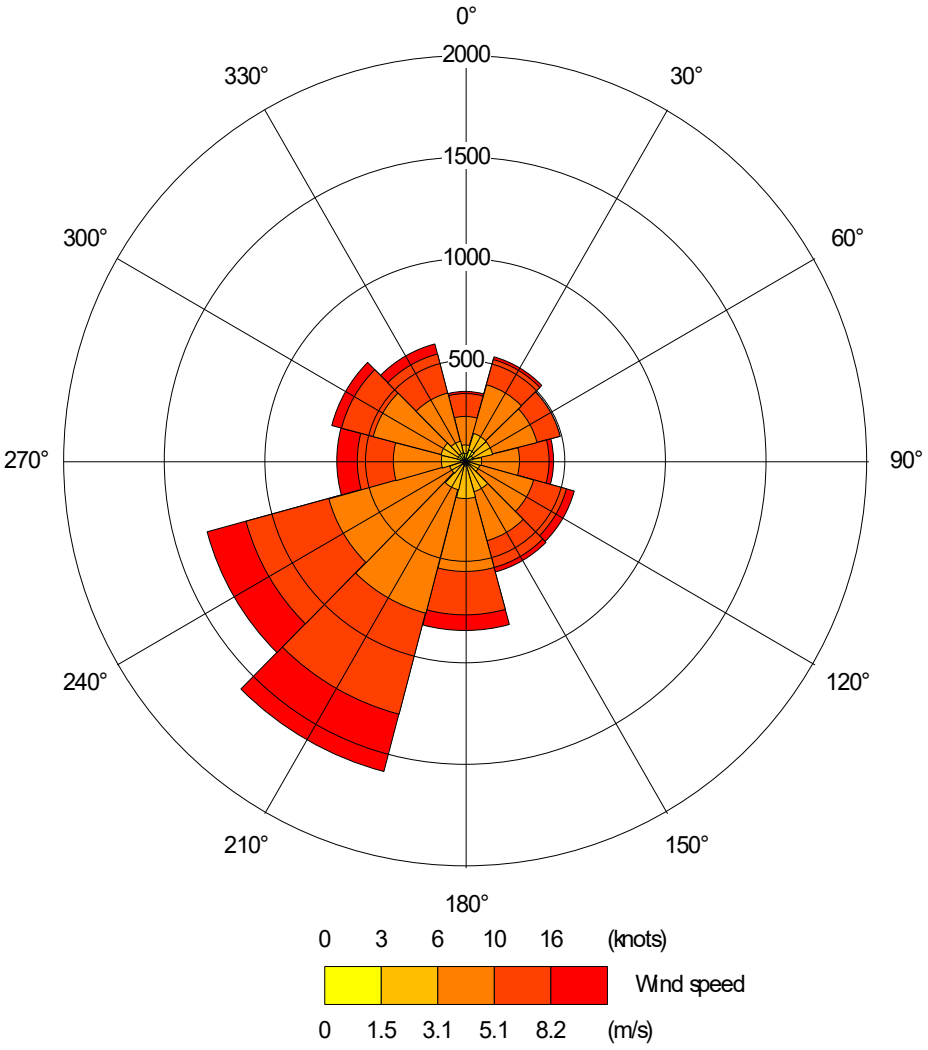
To assess the uncertainty of a model, the RMSE is the simplest parameter to calculate providing an estimate of the average error of the model in the same units as the modelled predictions. It is also often easier to interpret the RMSE than the other statistical parameters and therefore it has been calculated in this assessment to understand the model uncertainty.

The RMSE value calculated after verification was 2.4 and therefore the final predictions are considered to be robust.

Appendix G

WIND ROSE

WIND ROSE FOR MANSTON 2019



Appendix H

MODEL RESULTS

ANNUAL MEAN NO_X CONCENTRATIONS ($\mu g/m^3$)

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T1_0	611758,161210	14.76	9.59	9.75	0.16	0.53%	-7.40%	No	No
T1_10	611751,161203	14.26	9.42	9.55	0.14	0.47%	-6.37%	No	No
T1_20	611744,161197	13.88	9.28	9.41	0.12	0.40%	-5.60%	No	No
T1_30	611737,161190	13.58	9.18	9.29	0.11	0.37%	-5.00%	No	No
T1_40	611729,161183	13.35	9.10	9.20	0.10	0.33%	-4.53%	No	No
T1_50	611722,161176	13.15	9.03	9.12	0.09	0.30%	-4.13%	No	No
T1_60	611715,161169	12.99	8.97	9.06	0.09	0.30%	-3.80%	No	No
T1_70	611708,161162	12.85	8.93	9.01	0.08	0.27%	-3.53%	No	No
T1_80	611700,161155	12.74	8.88	8.96	0.08	0.27%	-3.30%	No	No
T1_90	611693,161148	12.64	8.85	8.92	0.07	0.23%	-3.07%	No	No
T1_100	611686,161141	12.55	8.82	8.89	0.07	0.23%	-2.90%	No	No
T1_110	611679,161134	12.47	8.79	8.86	0.07	0.23%	-2.73%	No	No
T1_120	611672,161127	12.40	8.77	8.83	0.06	0.20%	-2.60%	No	No
T1_130	611664,161120	12.34	8.74	8.81	0.06	0.20%	-2.47%	No	No
T1_140	611657,161113	12.28	8.73	8.78	0.06	0.20%	-2.37%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations (µg/m^3)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (µg/m^3)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T1_150	611650,161107	12.23	8.71	8.76	0.06	0.20%	-2.27%	No	No
T1_160	611643,161100	12.19	8.69	8.75	0.05	0.17%	-2.17%	No	No
T1_170	611636,161093	12.15	8.68	8.73	0.05	0.17%	-2.10%	No	No
T1_180	611628,161086	12.11	8.66	8.72	0.05	0.17%	-2.00%	No	No
T1_190	611621,161079	12.07	8.65	8.70	0.05	0.17%	-1.93%	No	No
T1_200	611614,161072	12.04	8.64	8.69	0.05	0.17%	-1.87%	No	No
T2_0	611903,161061	14.51	9.51	9.66	0.15	0.50%	-6.87%	No	No
T2_10	611896,161054	14.10	9.36	9.50	0.14	0.47%	-6.03%	No	No
T2_20	611889,161047	13.78	9.25	9.38	0.12	0.40%	-5.40%	No	No
T2_30	611881,161040	13.53	9.17	9.28	0.11	0.37%	-4.87%	No	No
T2_40	611874,161033	13.33	9.09	9.20	0.11	0.37%	-4.47%	No	No
T2_50	611867,161026	13.15	9.03	9.13	0.10	0.33%	-4.10%	No	No
T2_60	611860,161019	13.01	8.98	9.08	0.09	0.30%	-3.80%	No	No
T2_70	611853,161012	12.88	8.94	9.03	0.09	0.30%	-3.57%	No	No
T2_80	611845,161005	12.78	8.90	8.98	0.08	0.27%	-3.33%	No	No
T2_90	611838,160998	12.66	8.83	8.91	0.08	0.27%	-3.17%	No	No
T2_100	611831,160991	12.58	8.80	8.87	0.08	0.27%	-3.00%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T2_110	611824,160984	12.50	8.77	8.84	0.07	0.23%	-2.83%	No	No
T2_120	611817,160977	12.44	8.75	8.82	0.07	0.23%	-2.70%	No	No
T2_130	611810,160971	12.38	8.73	8.79	0.07	0.23%	-2.57%	No	No
T2_140	611802,160964	12.32	8.71	8.77	0.07	0.23%	-2.47%	No	No
T2_150	611795,160957	12.28	8.69	8.75	0.06	0.20%	-2.37%	No	No
T2_160	611788,160950	12.23	8.67	8.74	0.06	0.20%	-2.27%	No	No
T2_170	611781,160943	12.19	8.66	8.72	0.06	0.20%	-2.20%	No	No
T2_180	611774,160936	12.15	8.65	8.70	0.06	0.20%	-2.13%	No	No
T2_190	611766,160929	12.12	8.63	8.69	0.06	0.20%	-2.07%	No	No
T2_200	611759,160922	12.09	8.62	8.68	0.05	0.17%	-2.00%	No	No
T3_0	612490,160110	13.91	9.52	9.67	0.15	0.50%	-4.50%	No	No
T3_10	612483,160104	13.76	9.46	9.61	0.14	0.47%	-4.20%	No	No
T3_20	612475,160098	13.63	9.42	9.55	0.14	0.47%	-3.97%	No	No
T3_30	612467,160092	13.52	9.37	9.50	0.13	0.43%	-3.73%	No	No
T3_40	612459,160086	13.42	9.34	9.46	0.12	0.40%	-3.57%	No	No
T3_50	612451,160079	13.34	9.31	9.43	0.12	0.40%	-3.40%	No	No
T3_60	612443,160073	13.26	9.28	9.39	0.12	0.40%	-3.27%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations (µg/m^3)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (µg/m^3)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T3_70	612436,160067	13.19	9.25	9.36	0.11	0.37%	-3.13%	No	No
T3_80	612428,160061	13.13	9.23	9.33	0.11	0.37%	-3.00%	No	No
T3_90	612420,160055	13.08	9.20	9.31	0.11	0.37%	-2.90%	No	No
T3_100	612412,160048	13.02	9.19	9.29	0.10	0.33%	-2.80%	No	No
T3_110	612404,160042	12.98	9.17	9.27	0.10	0.33%	-2.73%	No	No
T3_120	612396,160036	12.94	9.15	9.25	0.10	0.33%	-2.63%	No	No
T3_130	612388,160030	12.90	9.14	9.23	0.09	0.30%	-2.57%	No	No
T3_140	612381,160024	12.86	9.12	9.22	0.09	0.30%	-2.50%	No	No
T3_150	612373,160017	12.83	9.11	9.20	0.09	0.30%	-2.43%	No	No
T3_160	612365,160011	12.79	9.10	9.19	0.09	0.30%	-2.40%	No	No
T3_170	612357,160005	12.76	9.09	9.17	0.09	0.30%	-2.33%	No	No
T3_180	612349,159999	13.34	9.39	9.48	0.09	0.30%	-2.27%	No	No
T3_190	612341,159993	13.31	9.38	9.47	0.08	0.27%	-2.23%	No	No
T3_200	612334,159986	13.29	9.38	9.46	0.08	0.27%	-2.20%	No	No
T4_0	613114,160304	13.02	9.22	13.25	4.03	13.43%	10.47%	No	No
T4_10	613124,160303	13.01	9.22	10.91	1.69	5.63%	2.67%	No	No
T4_20	613134,160303	13.01	9.22	10.32	1.10	3.67%	0.70%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T4_30	613144,160303	13.01	9.22	10.04	0.82	2.73%	-0.20%	No	No
T4_40	613154,160302	13.01	9.22	9.88	0.66	2.20%	-0.73%	No	No
T4_50	613164,160302	13.01	9.22	9.78	0.56	1.87%	-1.07%	No	No
T4_60	613174,160302	13.01	9.22	9.71	0.49	1.63%	-1.30%	No	No
T4_70	613184,160302	13.01	9.22	9.65	0.44	1.47%	-1.50%	No	No
T4_80	613194,160301	13.01	9.22	9.61	0.39	1.30%	-1.63%	No	No
T4_90	613204,160301	13.01	9.22	9.58	0.36	1.20%	-1.73%	No	No
T4_100	613214,160301	13.01	9.22	9.55	0.33	1.10%	-1.83%	No	No
T4_110	613224,160300	13.01	9.22	9.53	0.31	1.03%	-1.90%	No	No
T4_120	613234,160300	13.01	9.22	9.51	0.29	0.97%	-1.97%	No	No
T4_130	613244,160300	13.01	9.22	9.50	0.28	0.93%	-2.03%	No	No
T4_140	613254,160299	13.02	9.22	9.48	0.26	0.87%	-2.07%	No	No
T4_150	613264,160299	13.02	9.22	9.47	0.25	0.83%	-2.13%	No	No
T4_160	613274,160299	13.02	9.22	9.46	0.24	0.80%	-2.17%	No	No
T4_170	613284,160299	13.02	9.22	9.45	0.23	0.77%	-2.20%	No	No
T4_180	613294,160298	13.02	9.22	9.44	0.22	0.73%	-2.23%	No	No
T4_190	613304,160298	13.03	9.22	9.44	0.21	0.70%	-2.27%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T4_200	613314,160298	13.03	9.23	9.43	0.20	0.67%	-2.30%	No	No
T5_0	613105,160304	13.02	9.22	13.23	4.01	13.37%	10.40%	No	No
T5_10	613095,160305	13.02	9.22	10.96	1.74	5.80%	2.83%	No	No
T5_20	613085,160305	13.02	9.22	10.36	1.14	3.80%	0.83%	No	No
T5_30	613075,160306	13.03	9.22	10.08	0.85	2.83%	-0.13%	No	No
T5_40	613065,160306	13.03	9.23	9.91	0.69	2.30%	-0.70%	No	No
T5_50	613055,160307	13.04	9.23	9.81	0.58	1.93%	-1.07%	No	No
T5_60	613045,160307	13.04	9.23	9.73	0.50	1.67%	-1.33%	No	No
T5_70	613035,160308	13.05	9.23	9.68	0.44	1.47%	-1.53%	No	No
T5_80	613025,160308	13.05	9.23	9.63	0.40	1.33%	-1.70%	No	No
T6_0	612983,160256	13.08	9.20	9.53	0.33	1.10%	-2.20%	No	No
T6_10	612973,160259	13.08	9.21	9.51	0.30	1.00%	-2.27%	No	No
T6_20	612964,160263	13.09	9.21	9.49	0.29	0.97%	-2.37%	No	No
T6_30	612954,160266	13.10	9.21	9.48	0.27	0.90%	-2.40%	No	No
T6_40	612945,160269	13.10	9.21	9.47	0.26	0.87%	-2.47%	No	No
T6_50	612936,160273	13.11	9.21	9.46	0.24	0.80%	-2.53%	No	No
T16_0	613705,161028	18.24	11.10	14.11	3.00	10.00%	-4.60%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations (µg/m^3)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (µg/m^3)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T16_10	613708,161038	14.54	9.69	10.92	1.23	4.10%	-2.90%	No	No
T16_20	613711,161047	13.62	9.33	10.13	0.79	2.63%	-2.47%	No	No
T16_30	613714,161057	13.21	9.18	9.77	0.59	1.97%	-2.27%	No	No
T16_40	613717,161066	12.97	9.09	9.57	0.48	1.60%	-2.17%	No	No
T16_50	613720,161076	12.82	9.03	9.44	0.41	1.37%	-2.10%	No	No
T16_60	613723,161085	12.72	8.99	9.35	0.36	1.20%	-2.07%	No	No
T16_70	613726,161095	12.64	8.96	9.28	0.32	1.07%	-2.03%	No	No
T16_80	613729,161105	12.58	8.94	9.23	0.29	0.97%	-2.00%	No	No
T16_90	613732,161114	12.53	8.92	9.18	0.27	0.90%	-1.97%	No	No
T16_100	613735,161124	12.49	8.90	9.15	0.25	0.83%	-1.97%	No	No
T10_0	613635,160025	26.07	14.17	14.67	0.50	1.67%	-28.30%	No	No
T10_10	613635,160035	19.56	11.70	12.00	0.30	1.00%	-15.53%	No	No
T10_20	613635,160045	17.34	10.86	11.09	0.23	0.77%	-11.17%	No	No
T10_30	613635,160055	16.22	10.43	10.63	0.19	0.63%	-8.93%	No	No
T10_40	613635,160065	15.54	10.18	10.35	0.17	0.57%	-7.60%	No	No
T10_50	613635,160075	15.08	10.00	10.16	0.16	0.53%	-6.70%	No	No
T10_60	613634,160085	14.75	9.88	10.03	0.15	0.50%	-6.03%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations (µg/m^3)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (µg/m^3)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T10_70	613634,160095	14.50	9.78	9.93	0.14	0.47%	-5.57%	No	No
T10_80	613634,160105	14.31	9.71	9.85	0.14	0.47%	-5.17%	No	No
T10_90	613634,160115	14.15	9.65	9.79	0.13	0.43%	-4.87%	No	No
T10_100	613634,160125	14.02	9.60	9.73	0.13	0.43%	-4.60%	No	No
T10_110	613634,160135	13.91	9.56	9.69	0.13	0.43%	-4.37%	No	No
T10_120	613634,160145	13.82	9.53	9.65	0.13	0.43%	-4.20%	No	No
T10_130	613633,160155	13.74	9.50	9.62	0.12	0.40%	-4.03%	No	No
T10_140	613633,160165	13.67	9.47	9.59	0.12	0.40%	-3.90%	No	No
T10_150	613633,160175	13.61	9.45	9.57	0.12	0.40%	-3.77%	No	No
T10_160	613633,160185	13.55	9.42	9.54	0.12	0.40%	-3.67%	No	No
T10_170	613633,160195	13.50	9.40	9.52	0.12	0.40%	-3.53%	No	No
T10_180	613633,160205	13.45	9.39	9.51	0.12	0.40%	-3.47%	No	No
T10_190	613633,160215	13.41	9.37	9.49	0.12	0.40%	-3.37%	No	No
T10_200	613632,160225	13.37	9.36	9.47	0.12	0.40%	-3.30%	No	No
T9_0	613615,160013	29.55	15.55	16.16	0.61	2.03%	-34.97%	No	No
T9_10	613617,160003	19.64	11.74	12.04	0.30	1.00%	-15.63%	No	No
T9_20	613618,159993	18.53	11.66	11.89	0.23	0.77%	-11.00%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations (µg/m^3)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (µg/m^3)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T9_30	613620,159983	17.45	11.25	11.44	0.19	0.63%	-8.90%	No	No
T9_40	613621,159973	16.84	11.01	11.19	0.17	0.57%	-7.70%	No	No
T9_50	613623,159964	16.44	10.86	11.02	0.16	0.53%	-6.90%	No	No
T9_60	613624,159954	16.17	10.76	10.91	0.15	0.50%	-6.37%	No	No
T9_70	613626,159944	15.97	10.68	10.82	0.14	0.47%	-5.97%	No	No
T9_80	613627,159934	15.82	10.63	10.76	0.14	0.47%	-5.70%	No	No
T9_90	613628,159924	15.70	10.58	10.71	0.13	0.43%	-5.47%	No	No
T9_100	613630,159914	15.61	10.55	10.68	0.13	0.43%	-5.30%	No	No
T9_110	613631,159904	15.54	10.52	10.65	0.12	0.40%	-5.13%	No	No
T8_0	613501,159960	25.49	14.33	14.79	0.46	1.53%	-24.50%	No	No
T8_10	613505,159950	19.70	12.11	12.39	0.28	0.93%	-13.20%	No	No
T8_20	613508,159941	17.85	11.40	11.62	0.22	0.73%	-9.60%	No	No
T8_30	613511,159931	16.95	11.06	11.25	0.19	0.63%	-7.87%	No	No
T8_40	613515,159922	16.43	10.86	11.03	0.17	0.57%	-6.83%	No	No
T8_50	613518,159912	16.09	10.73	10.89	0.16	0.53%	-6.17%	No	No
T8_60	613521,159903	15.86	10.64	10.79	0.15	0.50%	-5.73%	No	No
T8_70	613524,159894	15.70	10.58	10.72	0.14	0.47%	-5.40%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T8_80	613528,159884	15.57	10.53	10.67	0.14	0.47%	-5.17%	No	No
T8_90	613531,159875	15.48	10.50	10.63	0.14	0.47%	-5.00%	No	No
T8_100	613534,159865	15.41	10.47	10.60	0.13	0.43%	-4.87%	No	No
T8_110	613537,159856	15.36	10.45	10.58	0.13	0.43%	-4.77%	No	No
T8_120	613541,159846	15.32	10.44	10.56	0.13	0.43%	-4.70%	No	No
T8_130	613544,159837	15.29	10.43	10.55	0.12	0.40%	-4.63%	No	No
T8_140	613547,159827	15.27	10.42	10.54	0.12	0.40%	-4.60%	No	No
T8_150	613550,159818	15.26	10.42	10.54	0.12	0.40%	-4.60%	No	No
T8_160	613554,159808	15.26	10.41	10.53	0.12	0.40%	-4.57%	No	No
T8_170	613557,159799	15.26	10.42	10.53	0.12	0.40%	-4.60%	No	No
T8_180	613560,159790	15.27	10.42	10.53	0.12	0.40%	-4.60%	No	No
T12_0	613885,159884	19.20	11.95	12.05	0.10	0.33%	-12.67%	No	No
T12_10	613875,159886	17.98	11.47	11.58	0.10	0.33%	-10.20%	No	No
T12_20	613866,159889	17.36	11.23	11.33	0.11	0.37%	-8.93%	No	No
T12_30	613856,159891	16.98	11.08	11.19	0.11	0.37%	-8.13%	No	No
T12_40	613846,159894	16.73	10.98	11.09	0.11	0.37%	-7.63%	No	No
T12_50	613836,159896	16.55	10.91	11.02	0.11	0.37%	-7.27%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T12_60	613827,159898	16.41	10.86	10.97	0.11	0.37%	-6.97%	No	No
T12_70	613817,159901	16.31	10.82	10.93	0.11	0.37%	-6.77%	No	No
T13_0	613859,159743	23.41	13.55	13.64	0.09	0.30%	-21.40%	No	No
T13_10	613852,159750	20.27	12.34	12.43	0.09	0.30%	-14.97%	No	No
T13_20	613846,159758	18.80	11.78	11.87	0.09	0.30%	-11.93%	No	No
T13_30	613839,159766	17.95	11.45	11.54	0.09	0.30%	-10.20%	No	No
T13_40	613833,159773	17.40	11.24	11.33	0.09	0.30%	-9.07%	No	No
T13_50	613826,159781	17.01	11.09	11.18	0.09	0.30%	-8.27%	No	No
T13_60	613820,159788	16.73	10.98	11.07	0.09	0.30%	-7.67%	No	No
T13_70	613813,159796	16.50	10.90	10.99	0.09	0.30%	-7.23%	No	No
T13_80	613807,159804	16.33	10.83	10.92	0.09	0.30%	-6.87%	No	No
T13_90	613800,159811	16.19	10.78	10.87	0.09	0.30%	-6.57%	No	No
T14_0	613912,159611	22.11	13.11	13.19	0.08	0.27%	-18.60%	No	No
T14_10	613921,159609	19.45	12.06	12.14	0.08	0.27%	-13.20%	No	No
T14_20	613931,159607	18.18	11.56	11.64	0.08	0.27%	-10.63%	No	No
T14_30	613941,159604	17.43	11.27	11.35	0.08	0.27%	-9.13%	No	No
T14_40	613950,159602	16.94	11.07	11.15	0.08	0.27%	-8.13%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations (µg/m^3)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (µg/m^3)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T14_50	613960,159599	16.58	10.93	11.01	0.08	0.27%	-7.40%	No	No
T14_60	613970,159597	16.32	10.83	10.91	0.08	0.27%	-6.87%	No	No
T14_70	613980,159595	16.11	10.75	10.83	0.08	0.27%	-6.43%	No	No
T14_80	613989,159592	15.94	10.68	10.76	0.08	0.27%	-6.10%	No	No
T14_90	613999,159590	15.81	10.63	10.71	0.08	0.27%	-5.83%	No	No
T14_100	614009,159588	17.82	12.41	12.49	0.08	0.27%	-5.60%	No	No
T14_110	614018,159585	17.72	12.38	12.46	0.08	0.27%	-5.40%	No	No
T15_0	614315,160248	34.37	17.69	18.95	1.25	4.17%	-41.57%	No	No
T15_10	614306,160244	22.93	13.24	13.82	0.58	1.93%	-20.50%	No	No
T15_20	614297,160240	19.77	12.02	12.41	0.39	1.30%	-14.67%	No	No
T15_30	614288,160236	18.27	11.44	11.75	0.31	1.03%	-11.90%	No	No
T15_40	614279,160232	17.41	11.11	11.36	0.25	0.83%	-10.30%	No	No
T15_50	614270,160228	16.85	10.89	11.11	0.22	0.73%	-9.27%	No	No
T15_60	614260,160224	16.45	10.74	10.94	0.20	0.67%	-8.53%	No	No
T15_70	614251,160219	16.16	10.63	10.81	0.18	0.60%	-8.00%	No	No
T15_80	614242,160215	15.94	10.55	10.71	0.16	0.53%	-7.57%	No	No
T15_90	614233,160211	15.76	10.48	10.63	0.15	0.50%	-7.27%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T15_100	614224,160207	15.62	10.42	10.57	0.14	0.47%	-6.97%	No	No
T15_110	614215,160203	15.50	10.38	10.52	0.14	0.47%	-6.77%	No	No
T15_120	614206,160199	15.39	10.34	10.47	0.13	0.43%	-6.57%	No	No
T15_130	614197,160194	15.31	10.31	10.43	0.13	0.43%	-6.40%	No	No
T15_140	614188,160190	15.23	10.28	10.40	0.12	0.40%	-6.27%	No	No
T18_0	614110,161381	33.67	17.36	17.42	0.06	0.20%	-45.10%	No	No
T18_10	614100,161383	21.07	12.33	12.40	0.07	0.23%	-19.90%	No	No
T18_20	614090,161385	17.64	10.97	11.04	0.07	0.23%	-13.00%	No	No
T18_30	614080,161387	16.03	10.34	10.40	0.07	0.23%	-9.73%	No	No
T18_40	614070,161388	15.10	9.97	10.03	0.07	0.23%	-7.83%	No	No
T18_50	614060,161390	14.49	9.73	9.80	0.07	0.23%	-6.60%	No	No
T18_60	614051,161392	14.06	9.56	9.63	0.07	0.23%	-5.73%	No	No
T18_70	614041,161394	13.75	9.44	9.51	0.07	0.23%	-5.10%	No	No
T18_80	614031,161396	13.50	9.34	9.41	0.07	0.23%	-4.60%	No	No
T18_90	614021,161397	13.30	9.27	9.34	0.07	0.23%	-4.20%	No	No
T18_100	614011,161399	13.15	9.21	9.28	0.07	0.23%	-3.87%	No	No
T18_110	614001,161401	13.01	9.16	9.23	0.07	0.23%	-3.57%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T18_120	613992,161403	12.89	9.06	9.13	0.07	0.23%	-3.33%	No	No
T18_130	613982,161405	12.80	9.02	9.10	0.07	0.23%	-3.17%	No	No
T18_140	613972,161406	12.71	8.99	9.07	0.07	0.23%	-2.97%	No	No
T18_150	613962,161408	12.64	8.96	9.04	0.07	0.23%	-2.83%	No	No
T18_160	613952,161410	12.58	8.94	9.02	0.08	0.27%	-2.70%	No	No
T18_170	613942,161412	12.52	8.92	8.99	0.08	0.27%	-2.57%	No	No
T18_180	613933,161414	12.47	8.90	8.97	0.08	0.27%	-2.47%	No	No
T18_190	613923,161415	12.42	8.88	8.96	0.08	0.27%	-2.37%	No	No
T18_200	613913,161417	12.38	8.86	8.94	0.08	0.27%	-2.27%	No	No
T20_0	614136,161424	45.51	21.93	21.99	0.06	0.20%	-69.37%	No	No
T20_10	614145,161423	23.81	13.37	13.43	0.06	0.20%	-25.57%	No	No
T20_20	614155,161421	19.15	11.54	11.60	0.06	0.20%	-16.10%	No	No
T20_30	614165,161420	17.07	10.73	10.79	0.06	0.20%	-11.90%	No	No
T20_40	614175,161419	15.89	10.28	10.33	0.06	0.20%	-9.50%	No	No
T20_50	614185,161418	15.14	9.98	10.04	0.06	0.20%	-7.97%	No	No
T20_60	614195,161417	14.61	9.78	9.83	0.06	0.20%	-6.90%	No	No
T20_70	614205,161416	14.22	9.63	9.68	0.06	0.20%	-6.10%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T20_80	614215,161415	13.92	9.51	9.57	0.06	0.20%	-5.50%	No	No
T20_90	614225,161414	13.69	9.42	9.47	0.05	0.17%	-5.00%	No	No
T20_100	614235,161413	13.49	9.34	9.40	0.05	0.17%	-4.63%	No	No
T20_110	614245,161412	13.33	9.28	9.33	0.05	0.17%	-4.30%	No	No
T20_120	614255,161411	13.20	9.23	9.28	0.05	0.17%	-4.00%	No	No
T20_130	614265,161410	13.08	9.18	9.24	0.05	0.17%	-3.77%	No	No
T20_140	614275,161409	12.98	9.14	9.20	0.05	0.17%	-3.57%	No	No
T20_150	614285,161408	12.89	9.11	9.16	0.05	0.17%	-3.40%	No	No
T20_160	614295,161407	12.81	9.08	9.13	0.05	0.17%	-3.23%	No	No
T20_170	614305,161406	12.74	9.05	9.10	0.05	0.17%	-3.10%	No	No
T20_180	614315,161405	12.68	9.03	9.08	0.05	0.17%	-2.97%	No	No
T20_190	614324,161404	12.62	9.01	9.06	0.05	0.17%	-2.87%	No	No
T20_200	614334,161403	12.57	8.99	9.04	0.05	0.17%	-2.77%	No	No
T19_0	614109,161317	46.20	22.13	22.20	0.07	0.23%	-70.97%	No	No
T19_10	614118,161315	24.29	13.52	13.59	0.07	0.23%	-26.63%	No	No
T19_20	614128,161314	19.46	11.65	11.71	0.07	0.23%	-16.80%	No	No
T19_30	614138,161313	17.32	10.81	10.88	0.07	0.23%	-12.43%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T19_40	614148,161312	16.11	10.35	10.41	0.07	0.23%	-9.97%	No	No
T19_50	614158,161310	15.32	10.04	10.11	0.07	0.23%	-8.33%	No	No
T19_60	614168,161309	14.77	9.83	9.90	0.06	0.20%	-7.23%	No	No
T19_70	614178,161308	14.37	9.68	9.74	0.06	0.20%	-6.40%	No	No
T19_80	614188,161306	14.06	9.56	9.62	0.06	0.20%	-5.77%	No	No
T19_90	614198,161305	13.81	9.46	9.52	0.06	0.20%	-5.27%	No	No
T19_100	614208,161304	13.61	9.38	9.45	0.06	0.20%	-4.83%	No	No
T19_110	614218,161303	13.44	9.32	9.38	0.06	0.20%	-4.50%	No	No
T19_120	614228,161301	13.30	9.27	9.33	0.06	0.20%	-4.23%	No	No
T19_130	614237,161300	13.18	9.22	9.28	0.06	0.20%	-3.97%	No	No
T19_140	614247,161299	13.08	9.18	9.24	0.06	0.20%	-3.77%	No	No
T19_150	614257,161298	12.98	9.14	9.20	0.06	0.20%	-3.57%	No	No
T19_160	614267,161296	12.90	9.11	9.17	0.06	0.20%	-3.40%	No	No
T19_170	614277,161295	12.83	9.09	9.14	0.06	0.20%	-3.27%	No	No
T19_180	614287,161294	12.77	9.06	9.12	0.06	0.20%	-3.13%	No	No
T19_190	614297,161292	12.71	9.04	9.09	0.06	0.20%	-3.00%	No	No
T19_200	614307,161291	12.65	9.02	9.07	0.05	0.17%	-2.90%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T7_0	613452,159956	36.13	18.33	19.13	0.80	2.67%	-45.50%	No	No
T7_10	613455,159965	23.28	13.45	13.85	0.40	1.33%	-20.27%	No	No
T7_20	613458,159975	20.02	12.21	12.51	0.30	1.00%	-13.87%	No	No
T7_30	613462,159984	18.50	11.64	11.89	0.25	0.83%	-10.87%	No	No
T7_40	613465,159994	17.63	11.31	11.53	0.22	0.73%	-9.17%	No	No
T7_50	613468,160003	15.79	10.27	10.47	0.20	0.67%	-8.03%	No	No
T7_60	613471,160013	15.38	10.11	10.30	0.19	0.63%	-7.20%	No	No
T7_70	613474,160022	15.07	10.00	10.18	0.18	0.60%	-6.60%	No	No
T23_0	612412,158396	28.42	15.22	16.31	1.08	3.60%	-29.50%	No	No
T23_10	612403,158394	21.82	12.66	13.27	0.61	2.03%	-17.60%	No	No
T23_20	612393,158392	19.33	11.70	12.13	0.43	1.43%	-13.10%	No	No
T23_30	612383,158390	18.03	11.20	11.54	0.33	1.10%	-10.77%	No	No
T23_40	612373,158388	17.23	10.89	11.17	0.28	0.93%	-9.30%	No	No
T23_50	612364,158385	16.68	10.68	10.92	0.24	0.80%	-8.30%	No	No
T23_60	612354,158383	16.27	10.53	10.73	0.21	0.70%	-7.57%	No	No
T23_70	612344,158381	15.96	10.41	10.59	0.19	0.63%	-6.97%	No	No
T23_80	612334,158379	15.71	10.31	10.48	0.17	0.57%	-6.53%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations (µg/m^3)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (µg/m^3)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T23_90	612324,158377	15.50	10.23	10.39	0.16	0.53%	-6.13%	No	No
T23_100	612315,158375	15.33	10.17	10.31	0.15	0.50%	-5.83%	No	No
T23_110	612305,158372	15.18	10.11	10.25	0.14	0.47%	-5.53%	No	No
T23_120	612295,158370	15.05	10.06	10.19	0.13	0.43%	-5.30%	No	No
T23_130	612285,158368	14.93	10.01	10.14	0.12	0.40%	-5.07%	No	No
T22_0	612421,158558	33.44	17.22	18.63	1.40	4.67%	-38.47%	No	No
T22_10	612411,158560	23.53	13.35	14.08	0.73	2.43%	-20.60%	No	No
T22_20	612401,158561	20.20	12.06	12.56	0.50	1.67%	-14.57%	No	No
T22_30	612391,158562	18.50	11.40	11.79	0.39	1.30%	-11.50%	No	No
T22_40	612381,158564	17.48	11.00	11.32	0.32	1.07%	-9.63%	No	No
T22_50	612371,158565	16.78	10.73	11.00	0.27	0.90%	-8.33%	No	No
T22_60	612361,158567	16.26	10.54	10.77	0.23	0.77%	-7.40%	No	No
T22_70	612352,158568	15.87	10.39	10.60	0.21	0.70%	-6.70%	No	No
T22_80	612342,158569	15.56	10.27	10.46	0.19	0.63%	-6.13%	No	No
T22_90	612332,158571	15.31	10.17	10.34	0.17	0.57%	-5.67%	No	No
T22_100	612322,158572	15.10	10.09	10.25	0.16	0.53%	-5.27%	No	No
T22_110	612312,158574	14.92	10.02	10.17	0.15	0.50%	-4.93%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations (µg/m^3)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (µg/m^3)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T22_120	612302,158575	14.77	9.96	10.10	0.14	0.47%	-4.63%	No	No
T22_130	612292,158576	14.63	9.91	10.04	0.13	0.43%	-4.40%	No	No
T22_140	612282,158578	14.51	9.87	9.99	0.12	0.40%	-4.17%	No	No
T21_0	612435,158690	39.41	19.58	21.40	1.82	6.07%	-49.17%	No	No
T21_10	612425,158693	24.48	13.73	14.53	0.80	2.67%	-22.27%	No	No
T21_20	612415,158695	20.41	12.15	12.67	0.52	1.73%	-14.90%	No	No
T21_30	612406,158698	18.50	11.40	11.80	0.39	1.30%	-11.47%	No	No
T21_40	612396,158700	17.39	10.97	11.29	0.32	1.07%	-9.43%	No	No
T21_50	612386,158703	16.65	10.69	10.95	0.27	0.90%	-8.07%	No	No
T21_60	612377,158706	16.12	10.48	10.72	0.23	0.77%	-7.10%	No	No
T21_70	612367,158708	15.73	10.33	10.54	0.21	0.70%	-6.40%	No	No
T21_80	612357,158711	15.41	10.21	10.40	0.19	0.63%	-5.83%	No	No
T21_90	612348,158713	15.16	10.12	10.29	0.17	0.57%	-5.37%	No	No
T21_100	612338,158716	14.96	10.04	10.19	0.16	0.53%	-4.97%	No	No
T21_110	612328,158718	14.78	9.97	10.12	0.14	0.47%	-4.63%	No	No
T21_120	612319,158721	14.63	9.92	10.05	0.13	0.43%	-4.37%	No	No
T21_130	612309,158723	14.50	9.87	9.99	0.13	0.43%	-4.13%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T21_140	612299,158726	14.39	9.82	9.94	0.12	0.40%	-3.93%	No	No
T21_150	612290,158729	14.29	9.78	9.90	0.11	0.37%	-3.73%	No	No
T21_160	612280,158731	14.20	9.75	9.86	0.11	0.37%	-3.57%	No	No
T21_170	612270,158734	14.12	9.72	9.82	0.10	0.33%	-3.40%	No	No
T11_0	613751,160001	33.52	17.01	17.73	0.72	2.40%	-42.93%	No	No
T11_10	613753,160011	21.35	12.38	12.72	0.34	1.13%	-19.10%	No	No
T11_20	613756,160021	18.26	11.21	11.45	0.24	0.80%	-13.00%	No	No
T11_30	613759,160030	16.84	10.67	10.87	0.20	0.67%	-10.23%	No	No
T11_40	613761,160040	16.04	10.37	10.54	0.17	0.57%	-8.63%	No	No
T11_50	613764,160050	15.51	10.17	10.32	0.16	0.53%	-7.57%	No	No
T11_60	613767,160059	15.13	10.02	10.17	0.15	0.50%	-6.83%	No	No
T11_70	613769,160069	14.85	9.92	10.06	0.14	0.47%	-6.30%	No	No
T11_80	613772,160078	14.63	9.83	9.97	0.13	0.43%	-5.87%	No	No
T11_90	613775,160088	14.46	9.77	9.89	0.13	0.43%	-5.50%	No	No
T11_100	613777,160098	14.31	9.71	9.84	0.12	0.40%	-5.23%	No	No
T11_110	613780,160107	14.19	9.67	9.79	0.12	0.40%	-4.97%	No	No
T17_0	614085,161192	29.71	15.64	15.73	0.09	0.30%	-37.57%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T17_10	614075,161194	20.54	12.06	12.15	0.09	0.30%	-18.93%	No	No
T17_20	614065,161196	17.59	10.92	11.01	0.09	0.30%	-12.93%	No	No
T17_30	614055,161198	16.13	10.35	10.44	0.09	0.30%	-9.93%	No	No
T17_40	614045,161200	15.26	10.02	10.11	0.09	0.30%	-8.13%	No	No
T17_50	614036,161202	14.68	9.79	9.88	0.09	0.30%	-6.97%	No	No
T17_60	614026,161204	14.26	9.63	9.73	0.09	0.30%	-6.10%	No	No
T17_70	614016,161206	13.95	9.51	9.61	0.10	0.33%	-5.43%	No	No
T17_80	614006,161208	13.71	9.42	9.52	0.10	0.33%	-4.93%	No	No
T17_90	613996,161210	13.50	9.29	9.39	0.10	0.33%	-4.53%	No	No
T17_100	613987,161212	13.34	9.23	9.33	0.10	0.33%	-4.20%	No	No
T17_110	613977,161214	13.21	9.18	9.28	0.10	0.33%	-3.90%	No	No
T17_120	613967,161215	13.10	9.14	9.24	0.10	0.33%	-3.67%	No	No
T17_130	613957,161217	13.00	9.10	9.20	0.10	0.33%	-3.47%	No	No
T17_140	613947,161219	12.92	9.07	9.17	0.11	0.37%	-3.30%	No	No
T17_150	613938,161221	12.84	9.04	9.15	0.11	0.37%	-3.13%	No	No
T17_160	613928,161223	12.78	9.01	9.12	0.11	0.37%	-3.00%	No	No
T17_170	613918,161225	12.72	8.99	9.10	0.11	0.37%	-2.87%	No	No

Receptor ID	Receptor Location	Annual Mean NO_x Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T17_180	613908,161227	12.66	8.97	9.08	0.11	0.37%	-2.77%	No	No
T17_190	613898,161229	12.62	8.95	9.07	0.11	0.37%	-2.63%	No	No

ANNUAL MEAN NH_3 CONCENTRATIONS ($\mu g/m^3$)

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T1_0	611758,161210	1.19	1.21	1.21	0.01	0.17%	0.91%	No	No
T1_10	611751,161203	1.18	1.20	1.20	0.00	0.15%	0.82%	No	No
T1_20	611744,161197	1.18	1.19	1.20	0.00	0.13%	0.75%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T1_30	611737,161190	1.17	1.19	1.19	0.00	0.11%	0.70%	No	No
T1_40	611729,161183	1.17	1.19	1.19	0.00	0.10%	0.66%	No	No
T1_50	611722,161176	1.17	1.18	1.19	0.00	0.09%	0.63%	No	No
T1_60	611715,161169	1.17	1.18	1.18	0.00	0.08%	0.60%	No	No
T1_70	611708,161162	1.16	1.18	1.18	0.00	0.07%	0.58%	No	No
T1_80	611700,161155	1.16	1.18	1.18	0.00	0.07%	0.56%	No	No
T1_90	611693,161148	1.16	1.18	1.18	0.00	0.06%	0.54%	No	No
T1_100	611686,161141	1.16	1.18	1.18	0.00	0.06%	0.53%	No	No
T1_110	611679,161134	1.16	1.17	1.18	0.00	0.06%	0.52%	No	No
T1_120	611672,161127	1.16	1.17	1.18	0.00	0.05%	0.51%	No	No
T1_130	611664,161120	1.16	1.17	1.17	0.00	0.05%	0.50%	No	No
T1_140	611657,161113	1.16	1.17	1.17	0.00	0.05%	0.49%	No	No
T1_150	611650,161107	1.16	1.17	1.17	0.00	0.05%	0.48%	No	No
T1_160	611643,161100	1.16	1.17	1.17	0.00	0.04%	0.48%	No	No
T1_170	611636,161093	1.16	1.17	1.17	0.00	0.04%	0.47%	No	No
T1_180	611628,161086	1.16	1.17	1.17	0.00	0.04%	0.46%	No	No
T1_190	611621,161079	1.16	1.17	1.17	0.00	0.04%	0.46%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T1_200	611614,161072	1.16	1.17	1.17	0.00	0.04%	0.45%	No	No
T2_0	611903,161061	1.18	1.20	1.21	0.00	0.16%	0.86%	No	No
T2_10	611896,161054	1.18	1.20	1.20	0.00	0.14%	0.79%	No	No
T2_20	611889,161047	1.17	1.19	1.20	0.00	0.12%	0.73%	No	No
T2_30	611881,161040	1.17	1.19	1.19	0.00	0.11%	0.69%	No	No
T2_40	611874,161033	1.17	1.19	1.19	0.00	0.10%	0.65%	No	No
T2_50	611867,161026	1.17	1.18	1.19	0.00	0.09%	0.63%	No	No
T2_60	611860,161019	1.17	1.18	1.18	0.00	0.08%	0.60%	No	No
T2_70	611853,161012	1.16	1.18	1.18	0.00	0.08%	0.58%	No	No
T2_80	611845,161005	1.16	1.18	1.18	0.00	0.07%	0.56%	No	No
T2_90	611838,160998	1.16	1.18	1.18	0.00	0.07%	0.55%	No	No
T2_100	611831,160991	1.16	1.18	1.18	0.00	0.07%	0.54%	No	No
T2_110	611824,160984	1.16	1.18	1.18	0.00	0.06%	0.53%	No	No
T2_120	611817,160977	1.16	1.17	1.18	0.00	0.06%	0.52%	No	No
T2_130	611810,160971	1.16	1.17	1.18	0.00	0.06%	0.51%	No	No
T2_140	611802,160964	1.16	1.17	1.17	0.00	0.05%	0.50%	No	No
T2_150	611795,160957	1.16	1.17	1.17	0.00	0.05%	0.49%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T2_160	611788,160950	1.16	1.17	1.17	0.00	0.05%	0.49%	No	No
T2_170	611781,160943	1.16	1.17	1.17	0.00	0.05%	0.48%	No	No
T2_180	611774,160936	1.16	1.17	1.17	0.00	0.05%	0.47%	No	No
T2_190	611766,160929	1.16	1.17	1.17	0.00	0.04%	0.47%	No	No
T2_200	611759,160922	1.16	1.17	1.17	0.00	0.04%	0.46%	No	No
T3_0	612490,160110	1.17	1.19	1.19	0.00	0.13%	0.70%	No	No
T3_10	612483,160104	1.17	1.18	1.19	0.00	0.12%	0.67%	No	No
T3_20	612475,160098	1.17	1.18	1.19	0.00	0.11%	0.65%	No	No
T3_30	612467,160092	1.17	1.18	1.18	0.00	0.11%	0.63%	No	No
T3_40	612459,160086	1.16	1.18	1.18	0.00	0.10%	0.61%	No	No
T3_50	612451,160079	1.16	1.18	1.18	0.00	0.10%	0.60%	No	No
T3_60	612443,160073	1.16	1.18	1.18	0.00	0.09%	0.58%	No	No
T3_70	612436,160067	1.16	1.18	1.18	0.00	0.09%	0.57%	No	No
T3_80	612428,160061	1.16	1.18	1.18	0.00	0.09%	0.56%	No	No
T3_90	612420,160055	1.16	1.18	1.18	0.00	0.08%	0.55%	No	No
T3_100	612412,160048	1.16	1.18	1.18	0.00	0.08%	0.55%	No	No
T3_110	612404,160042	1.16	1.17	1.18	0.00	0.08%	0.54%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T3_120	612396,160036	1.16	1.17	1.18	0.00	0.07%	0.53%	No	No
T3_130	612388,160030	1.16	1.17	1.18	0.00	0.07%	0.52%	No	No
T3_140	612381,160024	1.16	1.17	1.18	0.00	0.07%	0.52%	No	No
T3_150	612373,160017	1.16	1.17	1.17	0.00	0.07%	0.51%	No	No
T3_160	612365,160011	1.16	1.17	1.17	0.00	0.07%	0.51%	No	No
T3_170	612357,160005	1.16	1.17	1.17	0.00	0.06%	0.50%	No	No
T3_180	612349,159999	1.16	1.17	1.17	0.00	0.06%	0.50%	No	No
T3_190	612341,159993	1.16	1.17	1.17	0.00	0.06%	0.50%	No	No
T3_200	612334,159986	1.16	1.17	1.17	0.00	0.06%	0.49%	No	No
T4_0	613114,160304	1.16	1.17	1.39	0.22	7.26%	7.72%	No	No
T4_10	613124,160303	1.16	1.17	1.25	0.08	2.67%	3.14%	No	No
T4_20	613134,160303	1.16	1.17	1.22	0.05	1.60%	2.07%	No	No
T4_30	613144,160303	1.16	1.17	1.21	0.03	1.14%	1.60%	No	No
T4_40	613154,160302	1.16	1.17	1.20	0.03	0.88%	1.34%	No	No
T4_50	613164,160302	1.16	1.17	1.20	0.02	0.72%	1.18%	No	No
T4_60	613174,160302	1.16	1.17	1.19	0.02	0.61%	1.07%	No	No
T4_70	613184,160302	1.16	1.17	1.19	0.02	0.53%	0.99%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T4_80	613194,160301	1.16	1.17	1.19	0.01	0.47%	0.93%	No	No
T4_90	613204,160301	1.16	1.17	1.19	0.01	0.42%	0.88%	No	No
T4_100	613214,160301	1.16	1.17	1.19	0.01	0.38%	0.85%	No	No
T4_110	613224,160300	1.16	1.17	1.19	0.01	0.35%	0.81%	No	No
T4_120	613234,160300	1.16	1.17	1.18	0.01	0.32%	0.79%	No	No
T4_130	613244,160300	1.16	1.17	1.18	0.01	0.30%	0.77%	No	No
T4_140	613254,160299	1.16	1.17	1.18	0.01	0.28%	0.75%	No	No
T4_150	613264,160299	1.16	1.17	1.18	0.01	0.27%	0.73%	No	No
T4_160	613274,160299	1.16	1.17	1.18	0.01	0.25%	0.72%	No	No
T4_170	613284,160299	1.16	1.17	1.18	0.01	0.24%	0.70%	No	No
T4_180	613294,160298	1.16	1.17	1.18	0.01	0.23%	0.69%	No	No
T4_190	613304,160298	1.16	1.17	1.18	0.01	0.22%	0.68%	No	No
T4_200	613314,160298	1.16	1.17	1.18	0.01	0.21%	0.67%	No	No
T5_0	613105,160304	1.16	1.17	1.39	0.21	7.05%	7.51%	No	No
T5_10	613095,160305	1.16	1.17	1.25	0.08	2.62%	3.09%	No	No
T5_20	613085,160305	1.16	1.17	1.22	0.05	1.56%	2.03%	No	No
T5_30	613075,160306	1.16	1.18	1.21	0.03	1.10%	1.57%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T5_40	613065,160306	1.16	1.18	1.20	0.03	0.84%	1.31%	No	No
T5_50	613055,160307	1.16	1.18	1.20	0.02	0.68%	1.14%	No	No
T5_60	613045,160307	1.16	1.18	1.19	0.02	0.57%	1.03%	No	No
T5_70	613035,160308	1.16	1.18	1.19	0.01	0.49%	0.95%	No	No
T5_80	613025,160308	1.16	1.18	1.19	0.01	0.43%	0.90%	No	No
T6_0	612983,160256	1.16	1.18	1.19	0.01	0.33%	0.81%	No	No
T6_10	612973,160259	1.16	1.18	1.19	0.01	0.30%	0.79%	No	No
T6_20	612964,160263	1.16	1.18	1.19	0.01	0.28%	0.76%	No	No
T6_30	612954,160266	1.16	1.18	1.19	0.01	0.26%	0.75%	No	No
T6_40	612945,160269	1.16	1.18	1.18	0.01	0.24%	0.73%	No	No
T6_50	612936,160273	1.16	1.18	1.18	0.01	0.23%	0.72%	No	No
T16_0	613705,161028	1.26	1.31	1.49	0.18	5.88%	7.58%	No	No
T16_10	613708,161038	1.20	1.22	1.29	0.07	2.20%	3.11%	No	No
T16_20	613711,161047	1.18	1.20	1.24	0.04	1.34%	2.05%	No	No
T16_30	613714,161057	1.17	1.19	1.22	0.03	0.96%	1.59%	No	No
T16_40	613717,161066	1.17	1.19	1.21	0.02	0.76%	1.34%	No	No
T16_50	613720,161076	1.17	1.19	1.20	0.02	0.63%	1.18%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T16_60	613723,161085	1.17	1.18	1.20	0.02	0.54%	1.08%	No	No
T16_70	613726,161095	1.17	1.18	1.20	0.01	0.47%	1.00%	No	No
T16_80	613729,161105	1.16	1.18	1.19	0.01	0.42%	0.94%	No	No
T16_90	613732,161114	1.16	1.18	1.19	0.01	0.38%	0.89%	No	No
T16_100	613735,161124	1.16	1.18	1.19	0.01	0.35%	0.85%	No	No
T10_0	613635,160025	1.33	1.41	1.43	0.02	0.72%	3.27%	No	No
T10_10	613635,160035	1.24	1.28	1.29	0.01	0.37%	1.79%	No	No
T10_20	613635,160045	1.21	1.24	1.25	0.01	0.27%	1.32%	No	No
T10_30	613635,160055	1.20	1.22	1.23	0.01	0.21%	1.10%	No	No
T10_40	613635,160065	1.19	1.21	1.22	0.01	0.18%	0.97%	No	No
T10_50	613635,160075	1.18	1.20	1.21	0.00	0.16%	0.89%	No	No
T10_60	613634,160085	1.18	1.20	1.20	0.00	0.15%	0.83%	No	No
T10_70	613634,160095	1.18	1.19	1.20	0.00	0.14%	0.79%	No	No
T10_80	613634,160105	1.17	1.19	1.20	0.00	0.13%	0.75%	No	No
T10_90	613634,160115	1.17	1.19	1.19	0.00	0.13%	0.73%	No	No
T10_100	613634,160125	1.17	1.19	1.19	0.00	0.12%	0.71%	No	No
T10_110	613634,160135	1.17	1.19	1.19	0.00	0.12%	0.69%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations (µg/m^3)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (µg/m^3)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T10_120	613634,160145	1.17	1.18	1.19	0.00	0.12%	0.67%	No	No
T10_130	613633,160155	1.17	1.18	1.19	0.00	0.12%	0.66%	No	No
T10_140	613633,160165	1.17	1.18	1.19	0.00	0.11%	0.65%	No	No
T10_150	613633,160175	1.17	1.18	1.19	0.00	0.11%	0.64%	No	No
T10_160	613633,160185	1.17	1.18	1.18	0.00	0.11%	0.63%	No	No
T10_170	613633,160195	1.17	1.18	1.18	0.00	0.11%	0.63%	No	No
T10_180	613633,160205	1.16	1.18	1.18	0.00	0.11%	0.62%	No	No
T10_190	613633,160215	1.16	1.18	1.18	0.00	0.11%	0.61%	No	No
T10_200	613632,160225	1.16	1.18	1.18	0.00	0.11%	0.61%	No	No
T9_0	613615,160013	1.38	1.47	1.50	0.03	0.90%	4.09%	No	No
T9_10	613617,160003	1.23	1.28	1.29	0.01	0.36%	1.74%	No	No
T9_20	613618,159993	1.20	1.23	1.24	0.01	0.25%	1.24%	No	No
T9_30	613620,159983	1.19	1.22	1.22	0.01	0.20%	1.03%	No	No
T9_40	613621,159973	1.18	1.21	1.21	0.01	0.17%	0.92%	No	No
T9_50	613623,159964	1.18	1.20	1.21	0.00	0.15%	0.85%	No	No
T9_60	613624,159954	1.18	1.20	1.20	0.00	0.14%	0.80%	No	No
T9_70	613626,159944	1.18	1.19	1.20	0.00	0.13%	0.77%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T9_80	613627,159934	1.17	1.19	1.20	0.00	0.12%	0.74%	No	No
T9_90	613628,159924	1.17	1.19	1.19	0.00	0.12%	0.73%	No	No
T9_100	613630,159914	1.17	1.19	1.19	0.00	0.11%	0.71%	No	No
T9_110	613631,159904	1.17	1.19	1.19	0.00	0.11%	0.70%	No	No
T8_0	613501,159960	1.76	1.83	1.85	0.02	0.62%	2.95%	No	No
T8_10	613505,159950	1.68	1.72	1.73	0.01	0.32%	1.63%	No	No
T8_20	613508,159941	1.66	1.69	1.69	0.01	0.23%	1.26%	No	No
T8_30	613511,159931	1.65	1.67	1.68	0.01	0.19%	1.09%	No	No
T8_40	613515,159922	1.64	1.67	1.67	0.01	0.17%	1.00%	No	No
T8_50	613518,159912	1.64	1.66	1.67	0.00	0.15%	0.94%	No	No
T8_60	613521,159903	1.63	1.66	1.66	0.00	0.14%	0.91%	No	No
T8_70	613524,159894	1.63	1.66	1.66	0.00	0.13%	0.88%	No	No
T8_80	613528,159884	1.63	1.65	1.66	0.00	0.13%	0.86%	No	No
T8_90	613531,159875	1.63	1.65	1.66	0.00	0.12%	0.85%	No	No
T8_100	613534,159865	1.63	1.65	1.66	0.00	0.12%	0.83%	No	No
T8_110	613537,159856	1.63	1.65	1.65	0.00	0.12%	0.83%	No	No
T8_120	613541,159846	1.63	1.65	1.65	0.00	0.12%	0.82%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T8_130	613544,159837	1.63	1.65	1.65	0.00	0.11%	0.81%	No	No
T8_140	613547,159827	1.63	1.65	1.65	0.00	0.11%	0.81%	No	No
T8_150	613550,159818	1.63	1.65	1.65	0.00	0.11%	0.81%	No	No
T8_160	613554,159808	1.63	1.65	1.65	0.00	0.11%	0.81%	No	No
T8_170	613557,159799	1.63	1.65	1.65	0.00	0.11%	0.81%	No	No
T8_180	613560,159790	1.63	1.65	1.65	0.00	0.10%	0.81%	No	No
T12_0	613885,159884	1.68	1.72	1.72	0.00	0.09%	1.39%	No	No
T12_10	613875,159886	1.66	1.69	1.70	0.00	0.09%	1.17%	No	No
T12_20	613866,159889	1.65	1.68	1.68	0.00	0.09%	1.07%	No	No
T12_30	613856,159891	1.65	1.67	1.68	0.00	0.09%	1.01%	No	No
T12_40	613846,159894	1.64	1.67	1.67	0.00	0.10%	0.98%	No	No
T12_50	613836,159896	1.64	1.67	1.67	0.00	0.10%	0.95%	No	No
T12_60	613827,159898	1.64	1.67	1.67	0.00	0.10%	0.93%	No	No
T12_70	613817,159901	1.64	1.66	1.67	0.00	0.10%	0.92%	No	No
T13_0	613859,159743	1.74	1.80	1.80	0.00	0.07%	2.11%	No	No
T13_10	613852,159750	1.69	1.74	1.74	0.00	0.07%	1.54%	No	No
T13_20	613846,159758	1.67	1.71	1.71	0.00	0.07%	1.29%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T13_30	613839,159766	1.66	1.69	1.69	0.00	0.07%	1.16%	No	No
T13_40	613833,159773	1.65	1.68	1.69	0.00	0.08%	1.07%	No	No
T13_50	613826,159781	1.65	1.68	1.68	0.00	0.08%	1.01%	No	No
T13_60	613820,159788	1.65	1.67	1.67	0.00	0.08%	0.97%	No	No
T13_70	613813,159796	1.64	1.67	1.67	0.00	0.08%	0.94%	No	No
T13_80	613807,159804	1.64	1.67	1.67	0.00	0.08%	0.92%	No	No
T13_90	613800,159811	1.64	1.66	1.67	0.00	0.08%	0.90%	No	No
T14_0	613912,159611	1.71	1.76	1.76	0.00	0.07%	1.71%	No	No
T14_10	613921,159609	1.68	1.71	1.71	0.00	0.07%	1.32%	No	No
T14_20	613931,159607	1.66	1.69	1.69	0.00	0.07%	1.14%	No	No
T14_30	613941,159604	1.65	1.68	1.68	0.00	0.07%	1.04%	No	No
T14_40	613950,159602	1.65	1.67	1.68	0.00	0.07%	0.97%	No	No
T14_50	613960,159599	1.64	1.67	1.67	0.00	0.07%	0.93%	No	No
T14_60	613970,159597	1.64	1.66	1.67	0.00	0.07%	0.90%	No	No
T14_70	613980,159595	1.64	1.66	1.66	0.00	0.07%	0.87%	No	No
T14_80	613989,159592	1.64	1.66	1.66	0.00	0.07%	0.85%	No	No
T14_90	613999,159590	1.63	1.66	1.66	0.00	0.07%	0.83%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T14_100	614009,159588	1.63	1.66	1.66	0.00	0.07%	0.82%	No	No
T14_110	614018,159585	1.63	1.66	1.66	0.00	0.07%	0.81%	No	No
T15_0	614315,160248	1.49	1.63	1.70	0.07	2.28%	6.91%	No	No
T15_10	614306,160244	1.29	1.35	1.38	0.03	0.89%	2.94%	No	No
T15_20	614297,160240	1.24	1.28	1.30	0.02	0.54%	1.97%	No	No
T15_30	614288,160236	1.22	1.25	1.27	0.01	0.39%	1.55%	No	No
T15_40	614279,160232	1.21	1.24	1.25	0.01	0.30%	1.33%	No	No
T15_50	614270,160228	1.20	1.23	1.24	0.01	0.25%	1.19%	No	No
T15_60	614260,160224	1.19	1.22	1.23	0.01	0.21%	1.09%	No	No
T15_70	614251,160219	1.19	1.22	1.22	0.01	0.19%	1.02%	No	No
T15_80	614242,160215	1.19	1.21	1.22	0.01	0.17%	0.97%	No	No
T15_90	614233,160211	1.19	1.21	1.21	0.00	0.16%	0.93%	No	No
T15_100	614224,160207	1.18	1.21	1.21	0.00	0.14%	0.90%	No	No
T15_110	614215,160203	1.18	1.21	1.21	0.00	0.13%	0.87%	No	No
T15_120	614206,160199	1.18	1.20	1.21	0.00	0.13%	0.85%	No	No
T15_130	614197,160194	1.18	1.20	1.21	0.00	0.12%	0.83%	No	No
T15_140	614188,160190	1.18	1.20	1.20	0.00	0.11%	0.81%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T18_0	614110,161381	1.48	1.61	1.62	0.00	0.07%	4.60%	No	No
T18_10	614100,161383	1.27	1.33	1.33	0.00	0.07%	1.92%	No	No
T18_20	614090,161385	1.22	1.26	1.26	0.00	0.07%	1.29%	No	No
T18_30	614080,161387	1.20	1.23	1.23	0.00	0.07%	1.03%	No	No
T18_40	614070,161388	1.19	1.21	1.22	0.00	0.07%	0.88%	No	No
T18_50	614060,161390	1.18	1.20	1.21	0.00	0.07%	0.79%	No	No
T18_60	614051,161392	1.18	1.20	1.20	0.00	0.07%	0.73%	No	No
T18_70	614041,161394	1.17	1.19	1.19	0.00	0.07%	0.69%	No	No
T18_80	614031,161396	1.17	1.19	1.19	0.00	0.07%	0.66%	No	No
T18_90	614021,161397	1.17	1.19	1.19	0.00	0.07%	0.64%	No	No
T18_100	614011,161399	1.17	1.18	1.19	0.00	0.07%	0.62%	No	No
T18_110	614001,161401	1.17	1.18	1.18	0.00	0.08%	0.60%	No	No
T18_120	613992,161403	1.16	1.18	1.18	0.00	0.08%	0.59%	No	No
T18_130	613982,161405	1.16	1.18	1.18	0.00	0.08%	0.58%	No	No
T18_140	613972,161406	1.16	1.18	1.18	0.00	0.08%	0.57%	No	No
T18_150	613962,161408	1.16	1.18	1.18	0.00	0.08%	0.56%	No	No
T18_160	613952,161410	1.16	1.18	1.18	0.00	0.08%	0.55%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T18_170	613942,161412	1.16	1.18	1.18	0.00	0.08%	0.55%	No	No
T18_180	613933,161414	1.16	1.17	1.18	0.00	0.08%	0.54%	No	No
T18_190	613923,161415	1.16	1.17	1.18	0.00	0.08%	0.54%	No	No
T18_200	613913,161417	1.16	1.17	1.18	0.00	0.08%	0.54%	No	No
T20_0	614136,161424	1.68	1.89	1.89	0.00	0.06%	7.02%	No	No
T20_10	614145,161423	1.32	1.40	1.40	0.00	0.06%	2.49%	No	No
T20_20	614155,161421	1.25	1.30	1.30	0.00	0.06%	1.61%	No	No
T20_30	614165,161420	1.22	1.26	1.26	0.00	0.06%	1.24%	No	No
T20_40	614175,161419	1.20	1.23	1.24	0.00	0.06%	1.05%	No	No
T20_50	614185,161418	1.19	1.22	1.22	0.00	0.06%	0.93%	No	No
T20_60	614195,161417	1.19	1.21	1.21	0.00	0.06%	0.84%	No	No
T20_70	614205,161416	1.18	1.20	1.21	0.00	0.06%	0.78%	No	No
T20_80	614215,161415	1.18	1.20	1.20	0.00	0.06%	0.74%	No	No
T20_90	614225,161414	1.18	1.20	1.20	0.00	0.05%	0.70%	No	No
T20_100	614235,161413	1.17	1.19	1.19	0.00	0.05%	0.68%	No	No
T20_110	614245,161412	1.17	1.19	1.19	0.00	0.05%	0.65%	No	No
T20_120	614255,161411	1.17	1.19	1.19	0.00	0.05%	0.63%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations (µg/m^3)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (µg/m^3)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T20_130	614265,161410	1.17	1.19	1.19	0.00	0.05%	0.62%	No	No
T20_140	614275,161409	1.17	1.18	1.19	0.00	0.05%	0.60%	No	No
T20_150	614285,161408	1.17	1.18	1.18	0.00	0.05%	0.59%	No	No
T20_160	614295,161407	1.17	1.18	1.18	0.00	0.05%	0.58%	No	No
T20_170	614305,161406	1.17	1.18	1.18	0.00	0.05%	0.57%	No	No
T20_180	614315,161405	1.16	1.18	1.18	0.00	0.05%	0.56%	No	No
T20_190	614324,161404	1.16	1.18	1.18	0.00	0.05%	0.55%	No	No
T20_200	614334,161403	1.16	1.18	1.18	0.00	0.05%	0.54%	No	No
T19_0	614109,161317	1.70	1.91	1.91	0.00	0.07%	7.21%	No	No
T19_10	614118,161315	1.33	1.41	1.41	0.00	0.07%	2.61%	No	No
T19_20	614128,161314	1.26	1.30	1.31	0.00	0.07%	1.68%	No	No
T19_30	614138,161313	1.22	1.26	1.26	0.00	0.07%	1.30%	No	No
T19_40	614148,161312	1.21	1.24	1.24	0.00	0.07%	1.09%	No	No
T19_50	614158,161310	1.20	1.22	1.23	0.00	0.07%	0.97%	No	No
T19_60	614168,161309	1.19	1.21	1.22	0.00	0.07%	0.88%	No	No
T19_70	614178,161308	1.18	1.21	1.21	0.00	0.07%	0.81%	No	No
T19_80	614188,161306	1.18	1.20	1.20	0.00	0.06%	0.77%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T19_90	614198,161305	1.18	1.20	1.20	0.00	0.06%	0.73%	No	No
T19_100	614208,161304	1.17	1.19	1.20	0.00	0.06%	0.70%	No	No
T19_110	614218,161303	1.17	1.19	1.19	0.00	0.06%	0.67%	No	No
T19_120	614228,161301	1.17	1.19	1.19	0.00	0.06%	0.65%	No	No
T19_130	614237,161300	1.17	1.19	1.19	0.00	0.06%	0.64%	No	No
T19_140	614247,161299	1.17	1.19	1.19	0.00	0.06%	0.62%	No	No
T19_150	614257,161298	1.17	1.18	1.19	0.00	0.06%	0.61%	No	No
T19_160	614267,161296	1.17	1.18	1.18	0.00	0.06%	0.59%	No	No
T19_170	614277,161295	1.17	1.18	1.18	0.00	0.06%	0.58%	No	No
T19_180	614287,161294	1.17	1.18	1.18	0.00	0.06%	0.57%	No	No
T19_190	614297,161292	1.16	1.18	1.18	0.00	0.06%	0.57%	No	No
T19_200	614307,161291	1.16	1.18	1.18	0.00	0.05%	0.56%	No	No
T7_0	613452,159956	1.92	2.04	2.08	0.04	1.22%	5.45%	No	No
T7_10	613455,159965	1.73	1.79	1.81	0.02	0.53%	2.47%	No	No
T7_20	613458,159975	1.69	1.73	1.74	0.01	0.36%	1.76%	No	No
T7_30	613462,159984	1.67	1.70	1.71	0.01	0.29%	1.45%	No	No
T7_40	613465,159994	1.66	1.69	1.70	0.01	0.24%	1.28%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations (µg/m^3)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (µg/m^3)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T7_50	613468,160003	1.65	1.68	1.69	0.01	0.22%	1.17%	No	No
T7_60	613471,160013	1.65	1.67	1.68	0.01	0.20%	1.10%	No	No
T7_70	613474,160022	1.64	1.67	1.67	0.01	0.19%	1.04%	No	No
T23_0	612412,158396	1.82	1.92	1.97	0.05	1.72%	4.82%	No	No
T23_10	612403,158394	1.72	1.77	1.80	0.03	0.84%	2.65%	No	No
T23_20	612393,158392	1.69	1.73	1.74	0.02	0.54%	1.92%	No	No
T23_30	612383,158390	1.67	1.70	1.71	0.01	0.39%	1.56%	No	No
T23_40	612373,158388	1.66	1.69	1.70	0.01	0.31%	1.36%	No	No
T23_50	612364,158385	1.65	1.68	1.69	0.01	0.26%	1.22%	No	No
T23_60	612354,158383	1.65	1.67	1.68	0.01	0.22%	1.13%	No	No
T23_70	612344,158381	1.64	1.67	1.68	0.01	0.19%	1.06%	No	No
T23_80	612334,158379	1.64	1.67	1.67	0.01	0.17%	1.01%	No	No
T23_90	612324,158377	1.64	1.66	1.67	0.00	0.15%	0.96%	No	No
T23_100	612315,158375	1.64	1.66	1.66	0.00	0.14%	0.93%	No	No
T23_110	612305,158372	1.64	1.66	1.66	0.00	0.13%	0.90%	No	No
T23_120	612295,158370	1.63	1.66	1.66	0.00	0.12%	0.87%	No	No
T23_130	612285,158368	1.63	1.65	1.66	0.00	0.11%	0.85%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T22_0	612421,158558	1.90	2.03	2.10	0.07	2.31%	6.48%	No	No
T22_10	612411,158560	1.74	1.81	1.84	0.03	1.04%	3.16%	No	No
T22_20	612401,158561	1.70	1.74	1.76	0.02	0.65%	2.17%	No	No
T22_30	612391,158562	1.67	1.71	1.73	0.01	0.47%	1.71%	No	No
T22_40	612381,158564	1.66	1.69	1.70	0.01	0.36%	1.44%	No	No
T22_50	612371,158565	1.65	1.68	1.69	0.01	0.29%	1.27%	No	No
T22_60	612361,158567	1.65	1.67	1.68	0.01	0.25%	1.15%	No	No
T22_70	612352,158568	1.64	1.67	1.67	0.01	0.21%	1.06%	No	No
T22_80	612342,158569	1.64	1.66	1.67	0.01	0.19%	1.00%	No	No
T22_90	612332,158571	1.64	1.66	1.66	0.00	0.16%	0.94%	No	No
T22_100	612322,158572	1.63	1.66	1.66	0.00	0.15%	0.90%	No	No
T22_110	612312,158574	1.63	1.65	1.66	0.00	0.13%	0.86%	No	No
T22_120	612302,158575	1.63	1.65	1.66	0.00	0.12%	0.83%	No	No
T22_130	612292,158576	1.63	1.65	1.65	0.00	0.11%	0.81%	No	No
T22_140	612282,158578	1.63	1.65	1.65	0.00	0.10%	0.79%	No	No
T21_0	612435,158690	2.00	2.17	2.26	0.09	3.13%	8.63%	No	No
T21_10	612425,158693	1.76	1.83	1.86	0.03	1.16%	3.48%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T21_20	612415,158695	1.70	1.75	1.77	0.02	0.68%	2.24%	No	No
T21_30	612406,158698	1.67	1.71	1.73	0.01	0.48%	1.72%	No	No
T21_40	612396,158700	1.66	1.69	1.70	0.01	0.36%	1.43%	No	No
T21_50	612386,158703	1.65	1.68	1.69	0.01	0.29%	1.25%	No	No
T21_60	612377,158706	1.64	1.67	1.68	0.01	0.24%	1.13%	No	No
T21_70	612367,158708	1.64	1.67	1.67	0.01	0.21%	1.04%	No	No
T21_80	612357,158711	1.64	1.66	1.67	0.01	0.18%	0.97%	No	No
T21_90	612348,158713	1.63	1.66	1.66	0.00	0.16%	0.92%	No	No
T21_100	612338,158716	1.63	1.65	1.66	0.00	0.14%	0.88%	No	No
T21_110	612328,158718	1.63	1.65	1.66	0.00	0.13%	0.84%	No	No
T21_120	612319,158721	1.63	1.65	1.65	0.00	0.12%	0.81%	No	No
T21_130	612309,158723	1.63	1.65	1.65	0.00	0.11%	0.79%	No	No
T21_140	612299,158726	1.63	1.65	1.65	0.00	0.10%	0.77%	No	No
T21_150	612290,158729	1.63	1.65	1.65	0.00	0.09%	0.75%	No	No
T21_160	612280,158731	1.62	1.64	1.65	0.00	0.09%	0.73%	No	No
T21_170	612270,158734	1.62	1.64	1.65	0.00	0.08%	0.72%	No	No
T11_0	613751,160001	1.44	1.55	1.59	0.03	1.11%	5.00%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T11_10	613753,160011	1.26	1.31	1.33	0.01	0.45%	2.15%	No	No
T11_20	613756,160021	1.22	1.26	1.26	0.01	0.29%	1.48%	No	No
T11_30	613759,160030	1.20	1.23	1.24	0.01	0.22%	1.19%	No	No
T11_40	613761,160040	1.19	1.22	1.22	0.01	0.19%	1.04%	No	No
T11_50	613764,160050	1.19	1.21	1.21	0.00	0.16%	0.94%	No	No
T11_60	613767,160059	1.18	1.20	1.21	0.00	0.15%	0.87%	No	No
T11_70	613769,160069	1.18	1.20	1.20	0.00	0.14%	0.83%	No	No
T11_80	613772,160078	1.18	1.20	1.20	0.00	0.13%	0.79%	No	No
T11_90	613775,160088	1.17	1.19	1.20	0.00	0.12%	0.76%	No	No
T11_100	613777,160098	1.17	1.19	1.20	0.00	0.12%	0.73%	No	No
T11_110	613780,160107	1.17	1.19	1.19	0.00	0.11%	0.71%	No	No
T17_0	614085,161192	1.41	1.52	1.52	0.00	0.09%	3.73%	No	No
T17_10	614075,161194	1.26	1.32	1.32	0.00	0.09%	1.84%	No	No
T17_20	614065,161196	1.22	1.26	1.26	0.00	0.09%	1.30%	No	No
T17_30	614055,161198	1.20	1.23	1.23	0.00	0.10%	1.06%	No	No
T17_40	614045,161200	1.19	1.22	1.22	0.00	0.10%	0.93%	No	No
T17_50	614036,161202	1.18	1.21	1.21	0.00	0.10%	0.84%	No	No

Receptor ID	Receptor Location	Annual Mean NH_3 Concentrations ($\mu g/m^3$)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change ($\mu g/m^3$)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T17_60	614026,161204	1.18	1.20	1.20	0.00	0.10%	0.78%	No	No
T17_70	614016,161206	1.18	1.19	1.20	0.00	0.10%	0.74%	No	No
T17_80	614006,161208	1.17	1.19	1.19	0.00	0.10%	0.71%	No	No
T17_90	613996,161210	1.17	1.19	1.19	0.00	0.11%	0.69%	No	No
T17_100	613987,161212	1.17	1.19	1.19	0.00	0.11%	0.67%	No	No
T17_110	613977,161214	1.17	1.18	1.19	0.00	0.11%	0.66%	No	No
T17_120	613967,161215	1.17	1.18	1.19	0.00	0.11%	0.64%	No	No
T17_130	613957,161217	1.17	1.18	1.18	0.00	0.11%	0.63%	No	No
T17_140	613947,161219	1.16	1.18	1.18	0.00	0.12%	0.63%	No	No
T17_150	613938,161221	1.16	1.18	1.18	0.00	0.12%	0.62%	No	No
T17_160	613928,161223	1.16	1.18	1.18	0.00	0.12%	0.61%	No	No
T17_170	613918,161225	1.16	1.18	1.18	0.00	0.12%	0.61%	No	No
T17_180	613908,161227	1.16	1.18	1.18	0.00	0.12%	0.60%	No	No
T17_190	613898,161229	1.16	1.18	1.18	0.00	0.12%	0.60%	No	No

N DEPOSITION

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T1_0	611758,161210	25.70	22.56	22.63	0.07	0.49%	-20.47%	No	No
T1_10	611751,161203	25.58	22.46	22.53	0.06	0.43%	-20.33%	No	No
T1_20	611744,161197	25.47	22.39	22.45	0.06	0.37%	-20.17%	No	No
T1_30	611737,161190	25.40	22.34	22.39	0.05	0.34%	-20.06%	No	No
T1_40	611729,161183	25.34	22.30	22.34	0.04	0.29%	-20.03%	No	No
T1_50	611722,161176	25.29	22.26	22.30	0.04	0.27%	-19.96%	No	No
T1_60	611715,161169	25.25	22.23	22.27	0.04	0.25%	-19.86%	No	No
T1_70	611708,161162	25.22	22.21	22.24	0.04	0.24%	-19.84%	No	No
T1_80	611700,161155	25.18	22.19	22.22	0.03	0.21%	-19.72%	No	No
T1_90	611693,161148	25.15	22.17	22.20	0.03	0.20%	-19.69%	No	No
T1_100	611686,161141	25.14	22.16	22.18	0.03	0.17%	-19.75%	No	No
T1_110	611679,161134	25.12	22.14	22.17	0.03	0.19%	-19.68%	No	No
T1_120	611672,161127	25.10	22.13	22.15	0.02	0.16%	-19.62%	No	No
T1_130	611664,161120	25.09	22.12	22.14	0.02	0.15%	-19.66%	No	No
T1_140	611657,161113	25.07	22.11	22.13	0.03	0.17%	-19.60%	No	No
T1_150	611650,161107	25.05	22.10	22.12	0.02	0.15%	-19.52%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T1_160	611643,161100	25.05	22.09	22.12	0.02	0.15%	-19.55%	No	No
T1_170	611636,161093	25.04	22.09	22.11	0.02	0.14%	-19.57%	No	No
T1_180	611628,161086	25.03	22.08	22.10	0.02	0.13%	-19.51%	No	No
T1_190	611621,161079	25.02	22.07	22.09	0.02	0.13%	-19.54%	No	No
T1_200	611614,161072	25.02	22.07	22.09	0.02	0.11%	-19.57%	No	No
T2_0	611903,161061	25.63	22.51	22.58	0.07	0.47%	-20.34%	No	No
T2_10	611896,161054	25.52	22.43	22.49	0.06	0.42%	-20.23%	No	No
T2_20	611889,161047	25.44	22.37	22.42	0.05	0.37%	-20.13%	No	No
T2_30	611881,161040	25.37	22.33	22.37	0.05	0.33%	-19.98%	No	No
T2_40	611874,161033	25.32	22.29	22.33	0.04	0.29%	-19.93%	No	No
T2_50	611867,161026	25.29	22.26	22.30	0.04	0.29%	-19.94%	No	No
T2_60	611860,161019	25.25	22.23	22.27	0.04	0.26%	-19.83%	No	No
T2_70	611853,161012	25.22	22.21	22.25	0.04	0.25%	-19.81%	No	No
T2_80	611845,161005	25.19	22.19	22.23	0.04	0.23%	-19.79%	No	No
T2_90	611838,160998	25.17	22.17	22.21	0.03	0.23%	-19.74%	No	No
T2_100	611831,160991	25.15	22.16	22.19	0.03	0.20%	-19.70%	No	No
T2_110	611824,160984	25.12	22.15	22.18	0.03	0.20%	-19.64%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T2_120	611817,160977	25.12	22.14	22.16	0.03	0.19%	-19.69%	No	No
T2_130	611810,160971	25.10	22.13	22.15	0.03	0.19%	-19.61%	No	No
T2_140	611802,160964	25.09	22.12	22.14	0.02	0.17%	-19.65%	No	No
T2_150	611795,160957	25.07	22.11	22.13	0.02	0.16%	-19.59%	No	No
T2_160	611788,160950	25.07	22.10	22.12	0.02	0.15%	-19.63%	No	No
T2_170	611781,160943	25.05	22.09	22.12	0.02	0.15%	-19.54%	No	No
T2_180	611774,160936	25.04	22.09	22.11	0.02	0.17%	-19.55%	No	No
T2_190	611766,160929	25.04	22.08	22.11	0.02	0.15%	-19.58%	No	No
T2_200	611759,160922	25.03	22.08	22.10	0.02	0.14%	-19.51%	No	No
T3_0	612490,160110	25.36	22.31	22.38	0.06	0.41%	-19.88%	No	No
T3_10	612483,160104	25.33	22.29	22.35	0.06	0.39%	-19.89%	No	No
T3_20	612475,160098	25.29	22.26	22.32	0.05	0.35%	-19.80%	No	No
T3_30	612467,160092	25.26	22.24	22.30	0.05	0.34%	-19.76%	No	No
T3_40	612459,160086	25.24	22.23	22.28	0.05	0.33%	-19.73%	No	No
T3_50	612451,160079	25.21	22.21	22.26	0.05	0.33%	-19.68%	No	No
T3_60	612443,160073	25.21	22.20	22.24	0.05	0.31%	-19.74%	No	No
T3_70	612436,160067	25.19	22.19	22.23	0.04	0.29%	-19.71%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T3_80	612428,160061	25.16	22.18	22.22	0.04	0.29%	-19.63%	No	No
T3_90	612420,160055	25.16	22.17	22.21	0.04	0.26%	-19.68%	No	No
T3_100	612412,160048	25.14	22.16	22.20	0.04	0.25%	-19.61%	No	No
T3_110	612404,160042	25.13	22.15	22.19	0.04	0.25%	-19.63%	No	No
T3_120	612396,160036	25.12	22.14	22.18	0.04	0.24%	-19.57%	No	No
T3_130	612388,160030	25.11	22.14	22.17	0.04	0.24%	-19.60%	No	No
T3_140	612381,160024	25.11	22.13	22.16	0.04	0.23%	-19.63%	No	No
T3_150	612373,160017	25.09	22.12	22.16	0.03	0.23%	-19.55%	No	No
T3_160	612365,160011	25.09	22.12	22.15	0.03	0.23%	-19.56%	No	No
T3_170	612357,160005	25.08	22.11	22.15	0.03	0.23%	-19.58%	No	No
T3_180	612349,159999	25.07	22.11	22.14	0.03	0.21%	-19.52%	No	No
T3_190	612341,159993	25.07	22.11	22.14	0.03	0.21%	-19.53%	No	No
T3_200	612334,159986	25.06	22.10	22.13	0.03	0.21%	-19.55%	No	No
T4_0	613114,160304	25.12	22.15	24.58	2.44	24.35%	-5.38%	Yes	No
T4_10	613124,160303	25.12	22.15	23.10	0.95	9.53%	-20.20%	Yes	No
T4_20	613134,160303	25.12	22.15	22.74	0.59	5.93%	-23.80%	Yes	No
T4_30	613144,160303	25.12	22.15	22.58	0.43	4.31%	-25.42%	Yes	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T4_40	613154,160302	25.12	22.15	22.49	0.34	3.39%	-26.34%	Yes	No
T4_50	613164,160302	25.12	22.15	22.43	0.28	2.83%	-26.91%	Yes	No
T4_60	613174,160302	25.12	22.15	22.39	0.24	2.43%	-27.31%	Yes	No
T4_70	613184,160302	25.12	22.15	22.36	0.21	2.13%	-27.61%	Yes	No
T4_80	613194,160301	25.12	22.15	22.34	0.19	1.91%	-27.83%	Yes	No
T4_90	613204,160301	25.12	22.15	22.32	0.17	1.73%	-28.01%	Yes	No
T4_100	613214,160301	25.12	22.15	22.30	0.16	1.57%	-28.17%	Yes	No
T4_110	613224,160300	25.12	22.15	22.29	0.15	1.46%	-28.28%	Yes	No
T4_120	613234,160300	25.12	22.15	22.28	0.14	1.36%	-28.38%	Yes	No
T4_130	613244,160300	25.12	22.15	22.27	0.13	1.27%	-28.46%	Yes	No
T4_140	613254,160299	25.12	22.15	22.27	0.12	1.19%	-28.54%	Yes	No
T4_150	613264,160299	25.12	22.15	22.26	0.11	1.14%	-28.59%	Yes	No
T4_160	613274,160299	25.12	22.15	22.25	0.11	1.08%	-28.65%	Yes	No
T4_170	613284,160299	25.12	22.15	22.25	0.10	1.04%	-28.69%	Yes	No
T4_180	613294,160298	25.12	22.15	22.25	0.10	0.99%	-28.74%	No	No
T4_190	613304,160298	25.12	22.15	22.24	0.10	0.95%	-28.78%	No	No
T4_200	613314,160298	25.12	22.15	22.24	0.09	0.93%	-28.80%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T5_0	613105,160304	25.12	22.15	24.53	2.39	23.85%	-5.88%	Yes	No
T5_10	613095,160305	25.12	22.15	23.10	0.95	9.54%	-20.19%	Yes	No
T5_20	613085,160305	25.12	22.15	22.74	0.59	5.92%	-23.80%	Yes	No
T5_30	613075,160306	25.12	22.15	22.58	0.43	4.31%	-25.42%	Yes	No
T5_40	613065,160306	25.12	22.15	22.49	0.34	3.37%	-26.35%	Yes	No
T5_50	613055,160307	25.12	22.15	22.43	0.27	2.75%	-26.95%	Yes	No
T5_60	613045,160307	25.12	22.15	22.39	0.23	2.34%	-27.35%	Yes	No
T5_70	613035,160308	25.12	22.15	22.36	0.20	2.04%	-27.65%	Yes	No
T5_80	613025,160308	25.14	22.15	22.34	0.18	1.82%	-28.02%	Yes	No
T6_0	612983,160256	25.17	22.18	22.32	0.15	1.45%	-28.46%	Yes	No
T6_10	612973,160259	25.17	22.18	22.31	0.13	1.31%	-28.56%	Yes	No
T6_20	612964,160263	25.17	22.18	22.30	0.12	1.21%	-28.66%	Yes	No
T6_30	612954,160266	25.17	22.18	22.30	0.12	1.17%	-28.71%	Yes	No
T6_40	612945,160269	25.17	22.18	22.29	0.11	1.10%	-28.77%	Yes	No
T6_50	612936,160273	25.17	22.18	22.29	0.10	1.03%	-28.84%	Yes	No
T16_0	613705,161028	15.41	13.46	14.44	0.98	4.89%	-4.83%	No	No
T16_10	613708,161038	14.78	12.97	13.34	0.37	1.84%	-7.20%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T16_20	613711,161047	14.63	12.85	13.08	0.23	1.13%	-7.74%	No	No
T16_30	613714,161057	14.56	12.80	12.97	0.16	0.81%	-7.98%	No	No
T16_40	613717,161066	14.52	12.78	12.90	0.13	0.64%	-8.07%	No	No
T16_50	613720,161076	14.50	12.76	12.86	0.11	0.53%	-8.17%	No	No
T16_60	613723,161085	14.48	12.75	12.84	0.09	0.45%	-8.22%	No	No
T16_70	613726,161095	14.47	12.74	12.82	0.08	0.40%	-8.25%	No	No
T16_80	613729,161105	14.46	12.73	12.80	0.07	0.35%	-8.27%	No	No
T16_90	613732,161114	14.45	12.73	12.79	0.06	0.32%	-8.31%	No	No
T16_100	613735,161124	14.44	12.72	12.78	0.06	0.30%	-8.29%	No	No
T10_0	613635,160025	28.57	24.85	25.12	0.26	2.62%	-34.54%	Yes	No
T10_10	613635,160035	26.82	23.44	23.59	0.15	1.45%	-32.36%	Yes	No
T10_20	613635,160045	26.22	22.98	23.09	0.11	1.06%	-31.33%	Yes	No
T10_30	613635,160055	25.93	22.75	22.84	0.09	0.90%	-30.89%	No	No
T10_40	613635,160065	25.75	22.61	22.69	0.08	0.79%	-30.56%	No	No
T10_50	613635,160075	25.64	22.53	22.60	0.07	0.71%	-30.43%	No	No
T10_60	613634,160085	25.56	22.46	22.53	0.07	0.65%	-30.32%	No	No
T10_70	613634,160095	25.49	22.42	22.48	0.06	0.62%	-30.12%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T10_80	613634,160105	25.44	22.38	22.44	0.06	0.61%	-30.00%	No	No
T10_90	613634,160115	25.41	22.35	22.41	0.06	0.56%	-30.01%	No	No
T10_100	613634,160125	25.36	22.33	22.38	0.05	0.55%	-29.84%	No	No
T10_110	613634,160135	25.34	22.31	22.36	0.05	0.54%	-29.80%	No	No
T10_120	613634,160145	25.31	22.29	22.34	0.05	0.53%	-29.73%	No	No
T10_130	613633,160155	25.29	22.27	22.33	0.05	0.53%	-29.67%	No	No
T10_140	613633,160165	25.29	22.26	22.31	0.05	0.49%	-29.76%	No	No
T10_150	613633,160175	25.26	22.25	22.30	0.05	0.52%	-29.64%	No	No
T10_160	613633,160185	25.26	22.24	22.29	0.05	0.51%	-29.69%	No	No
T10_170	613633,160195	25.24	22.23	22.28	0.05	0.51%	-29.59%	No	No
T10_180	613633,160205	25.24	22.22	22.27	0.05	0.50%	-29.64%	No	No
T10_190	613633,160215	25.21	22.21	22.26	0.05	0.50%	-29.51%	No	No
T10_200	613632,160225	25.21	22.21	22.26	0.05	0.48%	-29.55%	No	No
T9_0	613615,160013	29.46	25.59	25.91	0.32	3.18%	-35.53%	Yes	No
T9_10	613617,160003	26.80	23.42	23.56	0.14	1.42%	-32.36%	Yes	No
T9_20	613618,159993	26.18	22.92	23.03	0.10	1.02%	-31.53%	Yes	No
T9_30	613620,159983	25.90	22.71	22.79	0.08	0.83%	-31.04%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T9_40	613621,159973	25.74	22.59	22.66	0.07	0.73%	-30.81%	No	No
T9_50	613623,159964	25.64	22.52	22.58	0.07	0.66%	-30.62%	No	No
T9_60	613624,159954	25.57	22.46	22.53	0.06	0.63%	-30.43%	No	No
T9_70	613626,159944	25.52	22.43	22.49	0.06	0.60%	-30.32%	No	No
T9_80	613627,159934	25.49	22.40	22.46	0.06	0.56%	-30.35%	No	No
T9_90	613628,159924	25.45	22.38	22.44	0.06	0.57%	-30.14%	No	No
T9_100	613630,159914	25.43	22.37	22.42	0.05	0.52%	-30.08%	No	No
T9_110	613631,159904	25.42	22.35	22.40	0.05	0.52%	-30.16%	No	No
T8_0	613501,159960	32.31	28.21	28.44	0.23	2.31%	-38.76%	Yes	No
T8_10	613505,159950	30.77	26.96	27.09	0.13	1.29%	-36.80%	Yes	No
T8_20	613508,159941	30.29	26.58	26.68	0.10	0.97%	-36.12%	No	No
T8_30	613511,159931	30.06	26.41	26.49	0.08	0.81%	-35.74%	No	No
T8_40	613515,159922	29.94	26.31	26.38	0.07	0.75%	-35.52%	No	No
T8_50	613518,159912	29.84	26.25	26.32	0.07	0.68%	-35.27%	No	No
T8_60	613521,159903	29.79	26.21	26.27	0.06	0.63%	-35.20%	No	No
T8_70	613524,159894	29.74	26.18	26.24	0.06	0.61%	-35.07%	No	No
T8_80	613528,159884	29.72	26.16	26.21	0.06	0.57%	-35.04%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T8_90	613531,159875	29.70	26.14	26.20	0.06	0.56%	-34.99%	No	No
T8_100	613534,159865	29.69	26.13	26.18	0.06	0.57%	-35.05%	No	No
T8_110	613537,159856	29.67	26.12	26.17	0.05	0.54%	-34.96%	No	No
T8_120	613541,159846	29.67	26.11	26.16	0.05	0.50%	-35.01%	No	No
T8_130	613544,159837	29.65	26.11	26.16	0.05	0.52%	-34.87%	No	No
T8_140	613547,159827	29.65	26.11	26.16	0.05	0.49%	-34.91%	No	No
T8_150	613550,159818	29.65	26.10	26.16	0.05	0.51%	-34.92%	No	No
T8_160	613554,159808	29.65	26.10	26.16	0.05	0.51%	-34.92%	No	No
T8_170	613557,159799	29.65	26.11	26.16	0.05	0.50%	-34.93%	No	No
T8_180	613560,159790	29.65	26.11	26.16	0.05	0.50%	-34.92%	No	No
T12_0	613885,159884	30.68	26.92	26.97	0.04	0.43%	-37.17%	No	No
T12_10	613875,159886	30.35	26.65	26.69	0.04	0.40%	-36.60%	No	No
T12_20	613866,159889	30.18	26.51	26.55	0.04	0.41%	-36.28%	No	No
T12_30	613856,159891	30.08	26.43	26.47	0.04	0.42%	-36.03%	No	No
T12_40	613846,159894	30.02	26.38	26.42	0.04	0.44%	-35.96%	No	No
T12_50	613836,159896	29.97	26.34	26.39	0.05	0.45%	-35.82%	No	No
T12_60	613827,159898	29.92	26.31	26.36	0.05	0.48%	-35.61%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T12_70	613817,159901	29.90	26.29	26.34	0.05	0.46%	-35.59%	No	No
T13_0	613859,159743	31.83	27.86	27.90	0.04	0.35%	-39.35%	No	No
T13_10	613852,159750	30.97	27.15	27.18	0.04	0.36%	-37.88%	No	No
T13_20	613846,159758	30.57	26.82	26.86	0.04	0.36%	-37.08%	No	No
T13_30	613839,159766	30.35	26.65	26.68	0.04	0.36%	-36.67%	No	No
T13_40	613833,159773	30.19	26.53	26.56	0.04	0.36%	-36.29%	No	No
T13_50	613826,159781	30.11	26.45	26.49	0.04	0.37%	-36.21%	No	No
T13_60	613820,159788	30.03	26.39	26.43	0.04	0.36%	-36.00%	No	No
T13_70	613813,159796	29.96	26.35	26.38	0.04	0.37%	-35.73%	No	No
T13_80	613807,159804	29.92	26.31	26.35	0.04	0.38%	-35.74%	No	No
T13_90	613800,159811	29.88	26.28	26.32	0.04	0.37%	-35.57%	No	No
T14_0	613912,159611	31.40	27.44	27.48	0.04	0.35%	-39.22%	No	No
T14_10	613921,159609	30.70	26.90	26.94	0.03	0.31%	-37.69%	No	No
T14_20	613931,159607	30.38	26.66	26.69	0.03	0.31%	-36.91%	No	No
T14_30	613941,159604	30.19	26.51	26.54	0.03	0.31%	-36.50%	No	No
T14_40	613950,159602	30.07	26.42	26.45	0.03	0.31%	-36.21%	No	No
T14_50	613960,159599	29.97	26.35	26.38	0.03	0.34%	-35.90%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T14_60	613970,159597	29.92	26.30	26.33	0.03	0.31%	-35.84%	No	No
T14_70	613980,159595	29.85	26.26	26.30	0.03	0.34%	-35.56%	No	No
T14_80	613989,159592	29.82	26.23	26.26	0.03	0.30%	-35.56%	No	No
T14_90	613999,159590	29.78	26.21	26.24	0.03	0.31%	-35.37%	No	No
T14_100	614009,159588	29.75	26.19	26.22	0.03	0.30%	-35.33%	No	No
T14_110	614018,159585	29.73	26.17	26.20	0.03	0.31%	-35.27%	No	No
T15_0	614315,160248	31.09	27.22	27.98	0.76	7.61%	-31.17%	Yes	No
T15_10	614306,160244	27.73	24.26	24.58	0.32	3.20%	-31.50%	Yes	No
T15_20	614297,160240	26.83	23.49	23.70	0.21	2.05%	-31.34%	Yes	No
T15_30	614288,160236	26.41	23.15	23.30	0.15	1.51%	-31.13%	Yes	No
T15_40	614279,160232	26.17	22.96	23.08	0.12	1.23%	-30.89%	Yes	No
T15_50	614270,160228	26.02	22.83	22.94	0.10	1.04%	-30.86%	Yes	No
T15_60	614260,160224	25.92	22.75	22.84	0.09	0.89%	-30.80%	No	No
T15_70	614251,160219	25.84	22.69	22.77	0.08	0.79%	-30.70%	No	No
T15_80	614242,160215	25.77	22.64	22.71	0.07	0.74%	-30.53%	No	No
T15_90	614233,160211	25.73	22.60	22.67	0.07	0.70%	-30.57%	No	No
T15_100	614224,160207	25.68	22.57	22.64	0.06	0.64%	-30.46%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T15_110	614215,160203	25.66	22.55	22.61	0.06	0.58%	-30.47%	No	No
T15_120	614206,160199	25.63	22.53	22.59	0.06	0.56%	-30.42%	No	No
T15_130	614197,160194	25.61	22.51	22.57	0.05	0.54%	-30.39%	No	No
T15_140	614188,160190	25.58	22.50	22.55	0.05	0.53%	-30.31%	No	No
T18_0	614110,161381	30.99	27.10	27.13	0.03	0.28%	-38.56%	No	No
T18_10	614100,161383	27.42	24.00	24.03	0.03	0.28%	-33.93%	No	No
T18_20	614090,161385	26.47	23.21	23.24	0.03	0.30%	-32.33%	No	No
T18_30	614080,161387	26.04	22.85	22.88	0.03	0.31%	-31.53%	No	No
T18_40	614070,161388	25.78	22.65	22.69	0.03	0.31%	-30.90%	No	No
T18_50	614060,161390	25.62	22.53	22.56	0.03	0.32%	-30.55%	No	No
T18_60	614051,161392	25.51	22.44	22.47	0.03	0.32%	-30.34%	No	No
T18_70	614041,161394	25.43	22.38	22.41	0.03	0.29%	-30.20%	No	No
T18_80	614031,161396	25.36	22.33	22.36	0.03	0.32%	-29.93%	No	No
T18_90	614021,161397	25.32	22.29	22.33	0.03	0.33%	-29.94%	No	No
T18_100	614011,161399	25.27	22.26	22.30	0.03	0.33%	-29.76%	No	No
T18_110	614001,161401	25.25	22.24	22.27	0.03	0.32%	-29.76%	No	No
T18_120	613992,161403	25.21	22.22	22.25	0.03	0.33%	-29.53%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T18_130	613982,161405	25.18	22.20	22.23	0.03	0.33%	-29.44%	No	No
T18_140	613972,161406	25.17	22.19	22.22	0.03	0.34%	-29.52%	No	No
T18_150	613962,161408	25.15	22.17	22.20	0.03	0.33%	-29.46%	No	No
T18_160	613952,161410	25.13	22.16	22.19	0.03	0.34%	-29.33%	No	No
T18_170	613942,161412	25.12	22.15	22.18	0.03	0.34%	-29.38%	No	No
T18_180	613933,161414	25.10	22.14	22.18	0.04	0.35%	-29.25%	No	No
T18_190	613923,161415	25.10	22.13	22.17	0.04	0.35%	-29.29%	No	No
T18_200	613913,161417	25.08	22.13	22.16	0.03	0.34%	-29.19%	No	No
T20_0	614136,161424	34.31	30.00	30.03	0.03	0.26%	-42.78%	No	No
T20_10	614145,161423	28.25	24.70	24.73	0.03	0.26%	-35.22%	No	No
T20_20	614155,161421	26.93	23.60	23.63	0.02	0.25%	-33.06%	No	No
T20_30	614165,161420	26.35	23.13	23.15	0.03	0.26%	-31.97%	No	No
T20_40	614175,161419	26.02	22.87	22.89	0.03	0.26%	-31.29%	No	No
T20_50	614185,161418	25.83	22.70	22.73	0.03	0.25%	-30.98%	No	No
T20_60	614195,161417	25.69	22.59	22.62	0.02	0.25%	-30.70%	No	No
T20_70	614205,161416	25.58	22.51	22.54	0.02	0.25%	-30.45%	No	No
T20_80	614215,161415	25.50	22.45	22.47	0.02	0.24%	-30.32%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T20_90	614225,161414	25.43	22.40	22.42	0.02	0.24%	-30.07%	No	No
T20_100	614235,161413	25.38	22.36	22.38	0.03	0.25%	-29.94%	No	No
T20_110	614245,161412	25.34	22.33	22.35	0.02	0.24%	-29.92%	No	No
T20_120	614255,161411	25.30	22.30	22.32	0.02	0.24%	-29.74%	No	No
T20_130	614265,161410	25.27	22.27	22.30	0.02	0.24%	-29.73%	No	No
T20_140	614275,161409	25.24	22.25	22.28	0.02	0.23%	-29.65%	No	No
T20_150	614285,161408	25.22	22.24	22.26	0.02	0.23%	-29.60%	No	No
T20_160	614295,161407	25.21	22.22	22.25	0.02	0.23%	-29.65%	No	No
T20_170	614305,161406	25.19	22.21	22.23	0.02	0.23%	-29.57%	No	No
T20_180	614315,161405	25.17	22.20	22.22	0.02	0.23%	-29.48%	No	No
T20_190	614324,161404	25.16	22.19	22.21	0.02	0.22%	-29.53%	No	No
T20_200	614334,161403	25.14	22.18	22.20	0.02	0.20%	-29.43%	No	No
T19_0	614109,161317	34.52	30.20	30.23	0.03	0.32%	-42.82%	No	No
T19_10	614118,161315	28.38	24.82	24.85	0.03	0.29%	-35.31%	No	No
T19_20	614128,161314	27.02	23.67	23.70	0.03	0.29%	-33.15%	No	No
T19_30	614138,161313	26.43	23.18	23.21	0.03	0.31%	-32.14%	No	No
T19_40	614148,161312	26.10	22.91	22.94	0.03	0.30%	-31.52%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T19_50	614158,161310	25.88	22.74	22.77	0.03	0.27%	-31.08%	No	No
T19_60	614168,161309	25.72	22.62	22.65	0.03	0.28%	-30.70%	No	No
T19_70	614178,161308	25.61	22.54	22.57	0.03	0.30%	-30.46%	No	No
T19_80	614188,161306	25.53	22.47	22.50	0.03	0.27%	-30.30%	No	No
T19_90	614198,161305	25.47	22.42	22.45	0.03	0.27%	-30.22%	No	No
T19_100	614208,161304	25.42	22.38	22.41	0.03	0.27%	-30.10%	No	No
T19_110	614218,161303	25.37	22.35	22.37	0.03	0.26%	-29.97%	No	No
T19_120	614228,161301	25.32	22.32	22.34	0.03	0.26%	-29.80%	No	No
T19_130	614237,161300	25.29	22.29	22.32	0.03	0.28%	-29.73%	No	No
T19_140	614247,161299	25.27	22.27	22.30	0.03	0.26%	-29.71%	No	No
T19_150	614257,161298	25.24	22.25	22.28	0.03	0.28%	-29.60%	No	No
T19_160	614267,161296	25.22	22.24	22.26	0.02	0.25%	-29.55%	No	No
T19_170	614277,161295	25.21	22.22	22.25	0.03	0.25%	-29.64%	No	No
T19_180	614287,161294	25.19	22.21	22.24	0.02	0.24%	-29.52%	No	No
T19_190	614297,161292	25.18	22.20	22.23	0.02	0.24%	-29.57%	No	No
T19_200	614307,161291	25.16	22.19	22.21	0.02	0.24%	-29.51%	No	No
T7_0	613452,159956	35.17	30.54	30.97	0.43	4.27%	-41.96%	Yes	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T7_10	613455,159965	31.75	27.75	27.95	0.20	1.98%	-38.03%	Yes	No
T7_20	613458,159975	30.89	27.06	27.20	0.14	1.42%	-36.94%	Yes	No
T7_30	613462,159984	30.48	26.75	26.86	0.11	1.15%	-36.19%	Yes	No
T7_40	613465,159994	30.26	26.57	26.67	0.10	1.01%	-35.92%	Yes	No
T7_50	613468,160003	30.11	26.46	26.55	0.09	0.94%	-35.61%	No	No
T7_60	613471,160013	30.01	26.38	26.46	0.08	0.84%	-35.47%	No	No
T7_70	613474,160022	29.93	26.32	26.40	0.08	0.78%	-35.35%	No	No
T23_0	612412,158396	33.41	29.18	29.79	0.61	6.07%	-36.17%	Yes	No
T23_10	612403,158394	31.55	27.62	27.93	0.31	3.14%	-36.23%	Yes	No
T23_20	612393,158392	30.87	27.06	27.27	0.21	2.11%	-35.97%	Yes	No
T23_30	612383,158390	30.52	26.78	26.94	0.16	1.60%	-35.79%	Yes	No
T23_40	612373,158388	30.30	26.61	26.74	0.13	1.29%	-35.65%	Yes	No
T23_50	612364,158385	30.17	26.49	26.60	0.11	1.09%	-35.63%	Yes	No
T23_60	612354,158383	30.06	26.42	26.51	0.09	0.93%	-35.53%	No	No
T23_70	612344,158381	29.97	26.35	26.44	0.09	0.85%	-35.29%	No	No
T23_80	612334,158379	29.91	26.30	26.38	0.08	0.77%	-35.29%	No	No
T23_90	612324,158377	29.86	26.27	26.34	0.07	0.69%	-35.24%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T23_100	612315,158375	29.81	26.23	26.29	0.06	0.63%	-35.16%	No	No
T23_110	612305,158372	29.78	26.20	26.26	0.06	0.60%	-35.19%	No	No
T23_120	612295,158370	29.74	26.18	26.24	0.05	0.54%	-35.03%	No	No
T23_130	612285,158368	29.71	26.16	26.21	0.05	0.52%	-35.01%	No	No
T22_0	612421,158558	34.80	30.41	31.21	0.80	8.00%	-35.94%	Yes	No
T22_10	612411,158560	32.02	28.01	28.39	0.38	3.84%	-36.24%	Yes	No
T22_20	612401,158561	31.11	27.25	27.50	0.25	2.52%	-36.05%	Yes	No
T22_30	612391,158562	30.64	26.88	27.06	0.19	1.85%	-35.81%	Yes	No
T22_40	612381,158564	30.37	26.66	26.81	0.15	1.48%	-35.68%	Yes	No
T22_50	612371,158565	30.19	26.51	26.64	0.13	1.25%	-35.50%	Yes	No
T22_60	612361,158567	30.04	26.41	26.51	0.10	1.03%	-35.27%	Yes	No
T22_70	612352,158568	29.95	26.33	26.43	0.09	0.91%	-35.28%	No	No
T22_80	612342,158569	29.88	26.27	26.35	0.08	0.82%	-35.23%	No	No
T22_90	612332,158571	29.80	26.23	26.30	0.07	0.73%	-35.05%	No	No
T22_100	612322,158572	29.75	26.18	26.25	0.07	0.68%	-35.01%	No	No
T22_110	612312,158574	29.70	26.15	26.21	0.06	0.62%	-34.90%	No	No
T22_120	612302,158575	29.68	26.12	26.18	0.06	0.58%	-34.95%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T22_130	612292,158576	29.63	26.10	26.15	0.05	0.53%	-34.79%	No	No
T22_140	612282,158578	29.60	26.08	26.13	0.05	0.50%	-34.78%	No	No
T21_0	612435,158690	36.48	31.90	32.95	1.05	10.54%	-35.28%	Yes	No
T21_10	612425,158693	32.29	28.24	28.66	0.43	4.27%	-36.29%	Yes	No
T21_20	612415,158695	31.16	27.30	27.56	0.26	2.62%	-36.02%	Yes	No
T21_30	612406,158698	30.64	26.88	27.07	0.19	1.89%	-35.77%	Yes	No
T21_40	612396,158700	30.35	26.64	26.79	0.15	1.51%	-35.57%	Yes	No
T21_50	612386,158703	30.14	26.49	26.61	0.12	1.21%	-35.32%	Yes	No
T21_60	612377,158706	30.01	26.38	26.49	0.10	1.02%	-35.25%	Yes	No
T21_70	612367,158708	29.91	26.31	26.40	0.09	0.90%	-35.11%	No	No
T21_80	612357,158711	29.83	26.24	26.32	0.08	0.80%	-35.07%	No	No
T21_90	612348,158713	29.76	26.20	26.27	0.07	0.72%	-34.89%	No	No
T21_100	612338,158716	29.71	26.16	26.22	0.07	0.67%	-34.84%	No	No
T21_110	612328,158718	29.68	26.13	26.19	0.06	0.60%	-34.90%	No	No
T21_120	612319,158721	29.63	26.10	26.15	0.05	0.54%	-34.78%	No	No
T21_130	612309,158723	29.60	26.07	26.13	0.05	0.52%	-34.76%	No	No
T21_140	612299,158726	29.58	26.06	26.10	0.05	0.47%	-34.73%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T21_150	612290,158729	29.55	26.04	26.08	0.05	0.45%	-34.70%	No	No
T21_160	612280,158731	29.53	26.02	26.06	0.04	0.43%	-34.63%	No	No
T21_170	612270,158734	29.51	26.01	26.05	0.04	0.41%	-34.59%	No	No
T11_0	613751,160001	30.54	26.48	26.87	0.39	3.86%	-36.69%	Yes	No
T11_10	613753,160011	27.30	23.82	23.98	0.17	1.67%	-33.14%	Yes	No
T11_20	613756,160021	26.47	23.16	23.27	0.11	1.14%	-31.97%	Yes	No
T11_30	613759,160030	26.09	22.87	22.96	0.09	0.91%	-31.23%	No	No
T11_40	613761,160040	25.88	22.71	22.79	0.08	0.77%	-30.87%	No	No
T11_50	613764,160050	25.74	22.61	22.68	0.07	0.68%	-30.69%	No	No
T11_60	613767,160059	25.64	22.53	22.60	0.06	0.64%	-30.46%	No	No
T11_70	613769,160069	25.59	22.48	22.54	0.06	0.61%	-30.44%	No	No
T11_80	613772,160078	25.52	22.44	22.50	0.05	0.55%	-30.20%	No	No
T11_90	613775,160088	25.49	22.41	22.46	0.05	0.55%	-30.25%	No	No
T11_100	613777,160098	25.44	22.38	22.43	0.05	0.53%	-30.08%	No	No
T11_110	613780,160107	25.41	22.36	22.41	0.05	0.49%	-30.05%	No	No
T17_0	614085,161192	29.88	26.09	26.13	0.04	0.37%	-37.51%	No	No
T17_10	614075,161194	27.27	23.86	23.90	0.04	0.40%	-33.73%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T17_20	614065,161196	26.45	23.19	23.23	0.04	0.41%	-32.21%	No	No
T17_30	614055,161198	26.06	22.87	22.91	0.04	0.41%	-31.54%	No	No
T17_40	614045,161200	25.82	22.68	22.72	0.04	0.41%	-30.98%	No	No
T17_50	614036,161202	25.66	22.56	22.60	0.04	0.42%	-30.59%	No	No
T17_60	614026,161204	25.56	22.47	22.52	0.04	0.43%	-30.38%	No	No
T17_70	614016,161206	25.48	22.41	22.46	0.05	0.46%	-30.20%	No	No
T17_80	614006,161208	25.42	22.36	22.41	0.05	0.46%	-30.11%	No	No
T17_90	613996,161210	25.37	22.33	22.37	0.05	0.47%	-29.94%	No	No
T17_100	613987,161212	25.32	22.30	22.34	0.04	0.44%	-29.79%	No	No
T17_110	613977,161214	25.29	22.27	22.32	0.05	0.48%	-29.74%	No	No
T17_120	613967,161215	25.27	22.25	22.30	0.05	0.46%	-29.69%	No	No
T17_130	613957,161217	25.24	22.23	22.28	0.05	0.46%	-29.63%	No	No
T17_140	613947,161219	25.22	22.22	22.27	0.05	0.50%	-29.51%	No	No
T17_150	613938,161221	25.20	22.20	22.25	0.05	0.50%	-29.45%	No	No
T17_160	613928,161223	25.17	22.19	22.24	0.05	0.50%	-29.32%	No	No
T17_170	613918,161225	25.17	22.18	22.23	0.05	0.51%	-29.36%	No	No
T17_180	613908,161227	25.15	22.17	22.22	0.05	0.51%	-29.26%	No	No

Receptor ID	Receptor Location	Nitrogen Deposition (kgN/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (kgN/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T17_190	613898,161229	25.15	22.17	22.22	0.05	0.51%	-29.30%	No	No

ACID DEPOSITON

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T1_0	611758,161210	1.89	1.66	1.66	0.01	0.2%	-7.9%	No	No
T1_10	611751,161203	1.88	1.65	1.65	0.00	0.2%	-7.8%	No	No
T1_20	611744,161197	1.87	1.64	1.65	0.00	0.1%	-7.8%	No	No
T1_30	611737,161190	1.86	1.64	1.64	0.00	0.1%	-7.7%	No	No
T1_40	611729,161183	1.86	1.64	1.64	0.00	0.1%	-7.7%	No	No
T1_50	611722,161176	1.86	1.63	1.64	0.00	0.1%	-7.7%	No	No
T1_60	611715,161169	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T1_70	611708,161162	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T1_80	611700,161155	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T1_90	611693,161148	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T1_100	611686,161141	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T1_110	611679,161134	1.84	1.63	1.63	0.00	0.1%	-7.6%	No	No
T1_120	611672,161127	1.84	1.62	1.63	0.00	0.1%	-7.6%	No	No
T1_130	611664,161120	1.84	1.62	1.63	0.00	0.1%	-7.6%	No	No
T1_140	611657,161113	1.84	1.62	1.62	0.00	0.1%	-7.5%	No	No
T1_150	611650,161107	1.84	1.62	1.62	0.00	0.1%	-7.5%	No	No
T1_160	611643,161100	1.84	1.62	1.62	0.00	0.1%	-7.5%	No	No
T1_170	611636,161093	1.84	1.62	1.62	0.00	0.1%	-7.5%	No	No
T1_180	611628,161086	1.84	1.62	1.62	0.00	0.1%	-7.5%	No	No
T1_190	611621,161079	1.84	1.62	1.62	0.00	0.0%	-7.5%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T1_200	611614,161072	1.84	1.62	1.62	0.00	0.0%	-7.5%	No	No
T2_0	611903,161061	1.88	1.65	1.66	0.01	0.2%	-7.8%	No	No
T2_10	611896,161054	1.87	1.65	1.65	0.00	0.2%	-7.8%	No	No
T2_20	611889,161047	1.87	1.64	1.65	0.00	0.1%	-7.7%	No	No
T2_30	611881,161040	1.86	1.64	1.64	0.00	0.1%	-7.7%	No	No
T2_40	611874,161033	1.86	1.64	1.64	0.00	0.1%	-7.7%	No	No
T2_50	611867,161026	1.86	1.63	1.64	0.00	0.1%	-7.7%	No	No
T2_60	611860,161019	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T2_70	611853,161012	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T2_80	611845,161005	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T2_90	611838,160998	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T2_100	611831,160991	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T2_110	611824,160984	1.84	1.63	1.63	0.00	0.1%	-7.6%	No	No
T2_120	611817,160977	1.84	1.62	1.63	0.00	0.1%	-7.6%	No	No
T2_130	611810,160971	1.84	1.62	1.63	0.00	0.1%	-7.5%	No	No
T2_140	611802,160964	1.84	1.62	1.63	0.00	0.1%	-7.6%	No	No
T2_150	611795,160957	1.84	1.62	1.62	0.00	0.1%	-7.5%	No	No
T2_160	611788,160950	1.84	1.62	1.62	0.00	0.1%	-7.6%	No	No
T2_170	611781,160943	1.84	1.62	1.62	0.00	0.1%	-7.5%	No	No
T2_180	611774,160936	1.84	1.62	1.62	0.00	0.1%	-7.5%	No	No
T2_190	611766,160929	1.84	1.62	1.62	0.00	0.1%	-7.5%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T2_200	611759,160922	1.84	1.62	1.62	0.00	0.1%	-7.5%	No	No
T3_0	612490,160110	1.86	1.64	1.64	0.00	0.2%	-7.6%	No	No
T3_10	612483,160104	1.86	1.64	1.64	0.00	0.1%	-7.7%	No	No
T3_20	612475,160098	1.86	1.63	1.64	0.00	0.1%	-7.6%	No	No
T3_30	612467,160092	1.85	1.63	1.64	0.00	0.1%	-7.6%	No	No
T3_40	612459,160086	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T3_50	612451,160079	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T3_60	612443,160073	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T3_70	612436,160067	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T3_80	612428,160061	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T3_90	612420,160055	1.85	1.63	1.63	0.00	0.1%	-7.6%	No	No
T3_100	612412,160048	1.84	1.63	1.63	0.00	0.1%	-7.5%	No	No
T3_110	612404,160042	1.84	1.63	1.63	0.00	0.1%	-7.6%	No	No
T3_120	612396,160036	1.84	1.63	1.63	0.00	0.1%	-7.5%	No	No
T3_130	612388,160030	1.84	1.62	1.63	0.00	0.1%	-7.5%	No	No
T3_140	612381,160024	1.84	1.62	1.63	0.00	0.1%	-7.6%	No	No
T3_150	612373,160017	1.84	1.62	1.63	0.00	0.1%	-7.5%	No	No
T3_160	612365,160011	1.84	1.62	1.63	0.00	0.1%	-7.5%	No	No
T3_170	612357,160005	1.84	1.62	1.63	0.00	0.1%	-7.5%	No	No
T3_180	612349,159999	1.84	1.62	1.63	0.00	0.1%	-7.5%	No	No
T3_190	612341,159993	1.84	1.62	1.62	0.00	0.1%	-7.5%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T3_200	612334,159986	1.84	1.62	1.62	0.00	0.1%	-7.5%	No	No
T4_0	613114,160304	1.84	1.63	1.80	0.17	7.7%	-1.9%	No	No
T4_10	613124,160303	1.84	1.63	1.69	0.07	3.0%	-6.6%	No	No
T4_20	613134,160303	1.84	1.63	1.67	0.04	1.9%	-7.8%	No	No
T4_30	613144,160303	1.84	1.63	1.66	0.03	1.4%	-8.3%	No	No
T4_40	613154,160302	1.84	1.63	1.65	0.02	1.1%	-8.6%	No	No
T4_50	613164,160302	1.84	1.63	1.65	0.02	0.9%	-8.7%	No	No
T4_60	613174,160302	1.84	1.63	1.64	0.02	0.8%	-8.9%	No	No
T4_70	613184,160302	1.84	1.63	1.64	0.02	0.7%	-9.0%	No	No
T4_80	613194,160301	1.84	1.63	1.64	0.01	0.6%	-9.0%	No	No
T4_90	613204,160301	1.84	1.63	1.64	0.01	0.5%	-9.1%	No	No
T4_100	613214,160301	1.84	1.63	1.64	0.01	0.5%	-9.1%	No	No
T4_110	613224,160300	1.84	1.63	1.64	0.01	0.5%	-9.2%	No	No
T4_120	613234,160300	1.84	1.63	1.64	0.01	0.4%	-9.2%	No	No
T4_130	613244,160300	1.84	1.63	1.63	0.01	0.4%	-9.2%	No	No
T4_140	613254,160299	1.84	1.63	1.63	0.01	0.4%	-9.3%	No	No
T4_150	613264,160299	1.84	1.63	1.63	0.01	0.4%	-9.3%	No	No
T4_160	613274,160299	1.84	1.63	1.63	0.01	0.3%	-9.3%	No	No
T4_170	613284,160299	1.84	1.63	1.63	0.01	0.3%	-9.3%	No	No
T4_180	613294,160298	1.84	1.63	1.63	0.01	0.3%	-9.3%	No	No
T4_190	613304,160298	1.84	1.63	1.63	0.01	0.3%	-9.3%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T4_200	613314,160298	1.84	1.63	1.63	0.01	0.3%	-9.3%	No	No
T5_0	613105,160304	1.84	1.63	1.80	0.17	7.5%	-2.1%	No	No
T5_10	613095,160305	1.84	1.63	1.69	0.07	3.0%	-6.6%	No	No
T5_20	613085,160305	1.84	1.63	1.67	0.04	1.9%	-7.8%	No	No
T5_30	613075,160306	1.84	1.63	1.66	0.03	1.4%	-8.3%	No	No
T5_40	613065,160306	1.84	1.63	1.65	0.02	1.1%	-8.6%	No	No
T5_50	613055,160307	1.84	1.63	1.65	0.02	0.9%	-8.8%	No	No
T5_60	613045,160307	1.84	1.63	1.64	0.02	0.7%	-8.9%	No	No
T5_70	613035,160308	1.84	1.63	1.64	0.01	0.6%	-9.0%	No	No
T5_80	613025,160308	1.85	1.63	1.64	0.01	0.6%	-9.1%	No	No
T6_0	612983,160256	1.85	1.63	1.64	0.01	0.5%	-9.2%	No	No
T6_10	612973,160259	1.85	1.63	1.64	0.01	0.4%	-9.3%	No	No
T6_20	612964,160263	1.85	1.63	1.64	0.01	0.4%	-9.3%	No	No
T6_30	612954,160266	1.85	1.63	1.64	0.01	0.4%	-9.3%	No	No
T6_40	612945,160269	1.85	1.63	1.64	0.01	0.3%	-9.3%	No	No
T6_50	612936,160273	1.85	1.63	1.64	0.01	0.3%	-9.4%	No	No
T16_0	613705,161028	1.13	0.99	1.06	0.07	1.4%	-1.4%	No	No
T16_10	613708,161038	1.09	0.95	0.98	0.03	0.5%	-2.1%	No	No
T16_20	613711,161047	1.07	0.94	0.96	0.02	0.3%	-2.2%	No	No
T16_30	613714,161057	1.07	0.94	0.95	0.01	0.2%	-2.3%	No	No
T16_40	613717,161066	1.07	0.94	0.95	0.01	0.2%	-2.3%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T16_50	613720,161076	1.07	0.94	0.95	0.01	0.1%	-2.4%	No	No
T16_60	613723,161085	1.06	0.94	0.94	0.01	0.1%	-2.4%	No	No
T16_70	613726,161095	1.06	0.94	0.94	0.01	0.1%	-2.4%	No	No
T16_80	613729,161105	1.06	0.94	0.94	0.01	0.1%	-2.4%	No	No
T16_90	613732,161114	1.06	0.94	0.94	0.00	0.1%	-2.4%	No	No
T16_100	613735,161124	1.06	0.93	0.94	0.00	0.1%	-2.4%	No	No
T10_0	613635,160025	2.09	1.82	1.84	0.02	0.8%	-11.2%	No	No
T10_10	613635,160035	1.97	1.72	1.73	0.01	0.5%	-10.5%	No	No
T10_20	613635,160045	1.92	1.69	1.69	0.01	0.3%	-10.1%	No	No
T10_30	613635,160055	1.90	1.67	1.68	0.01	0.3%	-10.0%	No	No
T10_40	613635,160065	1.89	1.66	1.66	0.01	0.3%	-9.9%	No	No
T10_50	613635,160075	1.88	1.65	1.66	0.01	0.2%	-9.9%	No	No
T10_60	613634,160085	1.88	1.65	1.65	0.00	0.2%	-9.8%	No	No
T10_70	613634,160095	1.87	1.64	1.65	0.00	0.2%	-9.8%	No	No
T10_80	613634,160105	1.87	1.64	1.65	0.00	0.2%	-9.7%	No	No
T10_90	613634,160115	1.86	1.64	1.64	0.00	0.2%	-9.7%	No	No
T10_100	613634,160125	1.86	1.64	1.64	0.00	0.2%	-9.7%	No	No
T10_110	613634,160135	1.86	1.64	1.64	0.00	0.2%	-9.7%	No	No
T10_120	613634,160145	1.86	1.64	1.64	0.00	0.2%	-9.6%	No	No
T10_130	613633,160155	1.86	1.63	1.64	0.00	0.2%	-9.6%	No	No
T10_140	613633,160165	1.86	1.63	1.64	0.00	0.2%	-9.6%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T10_150	613633,160175	1.85	1.63	1.64	0.00	0.2%	-9.6%	No	No
T10_160	613633,160185	1.85	1.63	1.64	0.00	0.2%	-9.6%	No	No
T10_170	613633,160195	1.85	1.63	1.64	0.00	0.2%	-9.6%	No	No
T10_180	613633,160205	1.85	1.63	1.63	0.00	0.2%	-9.6%	No	No
T10_190	613633,160215	1.85	1.63	1.63	0.00	0.2%	-9.6%	No	No
T10_200	613632,160225	1.85	1.63	1.63	0.00	0.2%	-9.6%	No	No
T9_0	613615,160013	2.15	1.87	1.89	0.02	1.0%	-11.5%	No	No
T9_10	613617,160003	1.96	1.72	1.73	0.01	0.4%	-10.5%	No	No
T9_20	613618,159993	1.92	1.68	1.69	0.01	0.3%	-10.2%	No	No
T9_30	613620,159983	1.90	1.67	1.67	0.01	0.3%	-10.0%	No	No
T9_40	613621,159973	1.89	1.66	1.66	0.01	0.2%	-10.0%	No	No
T9_50	613623,159964	1.88	1.65	1.66	0.00	0.2%	-9.9%	No	No
T9_60	613624,159954	1.88	1.65	1.65	0.00	0.2%	-9.9%	No	No
T9_70	613626,159944	1.87	1.65	1.65	0.00	0.2%	-9.8%	No	No
T9_80	613627,159934	1.87	1.64	1.65	0.00	0.2%	-9.8%	No	No
T9_90	613628,159924	1.87	1.64	1.65	0.00	0.2%	-9.8%	No	No
T9_100	613630,159914	1.87	1.64	1.65	0.00	0.2%	-9.7%	No	No
T9_110	613631,159904	1.87	1.64	1.64	0.00	0.2%	-9.8%	No	No
T8_0	613501,159960	2.37	2.07	2.08	0.02	0.7%	-12.5%	No	No
T8_10	613505,159950	2.26	1.98	1.99	0.01	0.4%	-11.9%	No	No
T8_20	613508,159941	2.22	1.95	1.96	0.01	0.3%	-11.7%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T8_30	613511,159931	2.21	1.94	1.94	0.01	0.3%	-11.6%	No	No
T8_40	613515,159922	2.20	1.93	1.94	0.01	0.2%	-11.5%	No	No
T8_50	613518,159912	2.19	1.93	1.93	0.00	0.2%	-11.4%	No	No
T8_60	613521,159903	2.19	1.92	1.93	0.00	0.2%	-11.4%	No	No
T8_70	613524,159894	2.18	1.92	1.93	0.00	0.2%	-11.4%	No	No
T8_80	613528,159884	2.18	1.92	1.92	0.00	0.2%	-11.4%	No	No
T8_90	613531,159875	2.18	1.92	1.92	0.00	0.2%	-11.3%	No	No
T8_100	613534,159865	2.18	1.92	1.92	0.00	0.2%	-11.4%	No	No
T8_110	613537,159856	2.18	1.92	1.92	0.00	0.2%	-11.3%	No	No
T8_120	613541,159846	2.18	1.92	1.92	0.00	0.2%	-11.4%	No	No
T8_130	613544,159837	2.18	1.92	1.92	0.00	0.2%	-11.3%	No	No
T8_140	613547,159827	2.18	1.92	1.92	0.00	0.2%	-11.3%	No	No
T8_150	613550,159818	2.18	1.92	1.92	0.00	0.2%	-11.3%	No	No
T8_160	613554,159808	2.18	1.92	1.92	0.00	0.2%	-11.3%	No	No
T8_170	613557,159799	2.18	1.92	1.92	0.00	0.2%	-11.3%	No	No
T8_180	613560,159790	2.18	1.92	1.92	0.00	0.2%	-11.3%	No	No
T12_0	613885,159884	2.25	1.98	1.98	0.00	0.1%	-12.0%	No	No
T12_10	613875,159886	2.23	1.96	1.96	0.00	0.1%	-11.9%	No	No
T12_20	613866,159889	2.22	1.95	1.95	0.00	0.1%	-11.8%	No	No
T12_30	613856,159891	2.21	1.94	1.94	0.00	0.1%	-11.7%	No	No
T12_40	613846,159894	2.20	1.94	1.94	0.00	0.1%	-11.7%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T12_50	613836,159896	2.20	1.93	1.94	0.00	0.1%	-11.6%	No	No
T12_60	613827,159898	2.20	1.93	1.94	0.00	0.2%	-11.5%	No	No
T12_70	613817,159901	2.19	1.93	1.93	0.00	0.1%	-11.5%	No	No
T13_0	613859,159743	2.33	2.04	2.05	0.00	0.1%	-12.7%	No	No
T13_10	613852,159750	2.27	1.99	1.99	0.00	0.1%	-12.3%	No	No
T13_20	613846,159758	2.24	1.97	1.97	0.00	0.1%	-12.0%	No	No
T13_30	613839,159766	2.23	1.96	1.96	0.00	0.1%	-11.9%	No	No
T13_40	613833,159773	2.22	1.95	1.95	0.00	0.1%	-11.8%	No	No
T13_50	613826,159781	2.21	1.94	1.94	0.00	0.1%	-11.7%	No	No
T13_60	613820,159788	2.20	1.94	1.94	0.00	0.1%	-11.7%	No	No
T13_70	613813,159796	2.20	1.93	1.94	0.00	0.1%	-11.6%	No	No
T13_80	613807,159804	2.20	1.93	1.93	0.00	0.1%	-11.6%	No	No
T13_90	613800,159811	2.19	1.93	1.93	0.00	0.1%	-11.5%	No	No
T14_0	613912,159611	2.30	2.01	2.02	0.00	0.1%	-12.7%	No	No
T14_10	613921,159609	2.25	1.97	1.98	0.00	0.1%	-12.2%	No	No
T14_20	613931,159607	2.23	1.96	1.96	0.00	0.1%	-12.0%	No	No
T14_30	613941,159604	2.22	1.95	1.95	0.00	0.1%	-11.8%	No	No
T14_40	613950,159602	2.21	1.94	1.94	0.00	0.1%	-11.7%	No	No
T14_50	613960,159599	2.20	1.93	1.94	0.00	0.1%	-11.6%	No	No
T14_60	613970,159597	2.20	1.93	1.93	0.00	0.1%	-11.6%	No	No
T14_70	613980,159595	2.19	1.93	1.93	0.00	0.1%	-11.5%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T14_80	613989,159592	2.19	1.93	1.93	0.00	0.1%	-11.5%	No	No
T14_90	613999,159590	2.19	1.92	1.93	0.00	0.1%	-11.5%	No	No
T14_100	614009,159588	2.18	1.92	1.93	0.00	0.1%	-11.5%	No	No
T14_110	614018,159585	2.18	1.92	1.92	0.00	0.1%	-11.4%	No	No
T15_0	614315,160248	2.27	1.99	2.04	0.05	2.4%	-10.1%	No	No
T15_10	614306,160244	2.03	1.78	1.80	0.02	1.0%	-10.2%	No	No
T15_20	614297,160240	1.97	1.72	1.74	0.01	0.6%	-10.1%	No	No
T15_30	614288,160236	1.94	1.70	1.71	0.01	0.5%	-10.1%	No	No
T15_40	614279,160232	1.92	1.68	1.69	0.01	0.4%	-10.0%	No	No
T15_50	614270,160228	1.91	1.67	1.68	0.01	0.3%	-10.0%	No	No
T15_60	614260,160224	1.90	1.67	1.67	0.01	0.3%	-10.0%	No	No
T15_70	614251,160219	1.89	1.66	1.67	0.01	0.2%	-9.9%	No	No
T15_80	614242,160215	1.89	1.66	1.67	0.01	0.2%	-9.9%	No	No
T15_90	614233,160211	1.89	1.66	1.66	0.00	0.2%	-9.9%	No	No
T15_100	614224,160207	1.88	1.66	1.66	0.00	0.2%	-9.9%	No	No
T15_110	614215,160203	1.88	1.65	1.66	0.00	0.2%	-9.9%	No	No
T15_120	614206,160199	1.88	1.65	1.66	0.00	0.2%	-9.9%	No	No
T15_130	614197,160194	1.88	1.65	1.66	0.00	0.2%	-9.8%	No	No
T15_140	614188,160190	1.88	1.65	1.65	0.00	0.2%	-9.8%	No	No
T18_0	614110,161381	2.26	1.98	1.98	0.00	0.1%	-12.4%	No	No
T18_10	614100,161383	2.01	1.76	1.76	0.00	0.1%	-11.0%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T18_20	614090,161385	1.94	1.70	1.70	0.00	0.1%	-10.5%	No	No
T18_30	614080,161387	1.91	1.68	1.68	0.00	0.1%	-10.2%	No	No
T18_40	614070,161388	1.89	1.66	1.66	0.00	0.1%	-10.0%	No	No
T18_50	614060,161390	1.88	1.65	1.66	0.00	0.1%	-9.9%	No	No
T18_60	614051,161392	1.87	1.65	1.65	0.00	0.1%	-9.8%	No	No
T18_70	614041,161394	1.87	1.64	1.64	0.00	0.1%	-9.8%	No	No
T18_80	614031,161396	1.86	1.64	1.64	0.00	0.1%	-9.7%	No	No
T18_90	614021,161397	1.86	1.64	1.64	0.00	0.1%	-9.7%	No	No
T18_100	614011,161399	1.85	1.63	1.64	0.00	0.1%	-9.6%	No	No
T18_110	614001,161401	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T18_120	613992,161403	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T18_130	613982,161405	1.85	1.63	1.63	0.00	0.1%	-9.5%	No	No
T18_140	613972,161406	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T18_150	613962,161408	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T18_160	613952,161410	1.84	1.63	1.63	0.00	0.1%	-9.5%	No	No
T18_170	613942,161412	1.84	1.63	1.63	0.00	0.1%	-9.5%	No	No
T18_180	613933,161414	1.84	1.63	1.63	0.00	0.1%	-9.5%	No	No
T18_190	613923,161415	1.84	1.62	1.63	0.00	0.1%	-9.5%	No	No
T18_200	613913,161417	1.84	1.62	1.63	0.00	0.1%	-9.5%	No	No
T20_0	614136,161424	2.50	2.19	2.19	0.00	0.1%	-13.8%	No	No
T20_10	614145,161423	2.07	1.81	1.81	0.00	0.1%	-11.4%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T20_20	614155,161421	1.97	1.73	1.73	0.00	0.1%	-10.7%	No	No
T20_30	614165,161420	1.93	1.70	1.70	0.00	0.1%	-10.3%	No	No
T20_40	614175,161419	1.91	1.68	1.68	0.00	0.1%	-10.1%	No	No
T20_50	614185,161418	1.89	1.67	1.67	0.00	0.1%	-10.0%	No	No
T20_60	614195,161417	1.88	1.66	1.66	0.00	0.1%	-9.9%	No	No
T20_70	614205,161416	1.88	1.65	1.65	0.00	0.1%	-9.9%	No	No
T20_80	614215,161415	1.87	1.65	1.65	0.00	0.1%	-9.8%	No	No
T20_90	614225,161414	1.87	1.64	1.65	0.00	0.1%	-9.7%	No	No
T20_100	614235,161413	1.86	1.64	1.64	0.00	0.1%	-9.7%	No	No
T20_110	614245,161412	1.86	1.64	1.64	0.00	0.1%	-9.7%	No	No
T20_120	614255,161411	1.86	1.64	1.64	0.00	0.1%	-9.6%	No	No
T20_130	614265,161410	1.85	1.63	1.64	0.00	0.1%	-9.6%	No	No
T20_140	614275,161409	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T20_150	614285,161408	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T20_160	614295,161407	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T20_170	614305,161406	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T20_180	614315,161405	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T20_190	614324,161404	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T20_200	614334,161403	1.85	1.63	1.63	0.00	0.1%	-9.5%	No	No
T19_0	614109,161317	2.51	2.20	2.20	0.00	0.1%	-13.8%	No	No
T19_10	614118,161315	2.08	1.82	1.82	0.00	0.1%	-11.4%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T19_20	614128,161314	1.98	1.73	1.74	0.00	0.1%	-10.7%	No	No
T19_30	614138,161313	1.94	1.70	1.70	0.00	0.1%	-10.4%	No	No
T19_40	614148,161312	1.91	1.68	1.68	0.00	0.1%	-10.2%	No	No
T19_50	614158,161310	1.90	1.67	1.67	0.00	0.1%	-10.1%	No	No
T19_60	614168,161309	1.89	1.66	1.66	0.00	0.1%	-9.9%	No	No
T19_70	614178,161308	1.88	1.65	1.66	0.00	0.1%	-9.9%	No	No
T19_80	614188,161306	1.87	1.65	1.65	0.00	0.1%	-9.8%	No	No
T19_90	614198,161305	1.87	1.65	1.65	0.00	0.1%	-9.8%	No	No
T19_100	614208,161304	1.87	1.64	1.64	0.00	0.1%	-9.8%	No	No
T19_110	614218,161303	1.86	1.64	1.64	0.00	0.1%	-9.7%	No	No
T19_120	614228,161301	1.86	1.64	1.64	0.00	0.1%	-9.7%	No	No
T19_130	614237,161300	1.86	1.64	1.64	0.00	0.1%	-9.6%	No	No
T19_140	614247,161299	1.85	1.63	1.64	0.00	0.1%	-9.6%	No	No
T19_150	614257,161298	1.85	1.63	1.64	0.00	0.1%	-9.6%	No	No
T19_160	614267,161296	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T19_170	614277,161295	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T19_180	614287,161294	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T19_190	614297,161292	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T19_200	614307,161291	1.85	1.63	1.63	0.00	0.1%	-9.6%	No	No
T7_0	613452,159956	2.57	2.23	2.26	0.03	1.3%	-13.5%	Yes	No
T7_10	613455,159965	2.33	2.03	2.05	0.01	0.6%	-12.3%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T7_20	613458,159975	2.27	1.99	2.00	0.01	0.4%	-12.0%	No	No
T7_30	613462,159984	2.24	1.96	1.97	0.01	0.4%	-11.7%	No	No
T7_40	613465,159994	2.22	1.95	1.96	0.01	0.3%	-11.6%	No	No
T7_50	613468,160003	2.21	1.94	1.95	0.01	0.3%	-11.5%	No	No
T7_60	613471,160013	2.20	1.94	1.94	0.01	0.3%	-11.5%	No	No
T7_70	613474,160022	2.20	1.93	1.94	0.01	0.2%	-11.5%	No	No
T23_0	612412,158396	2.45	2.14	2.18	0.04	1.9%	-11.7%	No	No
T23_10	612403,158394	2.31	2.03	2.05	0.02	1.0%	-11.7%	No	No
T23_20	612393,158392	2.26	1.99	2.00	0.02	0.7%	-11.7%	No	No
T23_30	612383,158390	2.24	1.97	1.98	0.01	0.5%	-11.6%	No	No
T23_40	612373,158388	2.22	1.95	1.96	0.01	0.4%	-11.6%	No	No
T23_50	612364,158385	2.21	1.94	1.95	0.01	0.3%	-11.5%	No	No
T23_60	612354,158383	2.21	1.94	1.95	0.01	0.3%	-11.5%	No	No
T23_70	612344,158381	2.20	1.93	1.94	0.01	0.3%	-11.4%	No	No
T23_80	612334,158379	2.20	1.93	1.94	0.01	0.2%	-11.4%	No	No
T23_90	612324,158377	2.19	1.93	1.93	0.00	0.2%	-11.4%	No	No
T23_100	612315,158375	2.19	1.93	1.93	0.00	0.2%	-11.4%	No	No
T23_110	612305,158372	2.19	1.92	1.93	0.00	0.2%	-11.4%	No	No
T23_120	612295,158370	2.18	1.92	1.93	0.00	0.2%	-11.4%	No	No
T23_130	612285,158368	2.18	1.92	1.92	0.00	0.2%	-11.4%	No	No
T22_0	612421,158558	2.55	2.22	2.28	0.06	2.5%	-11.6%	Yes	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T22_10	612411,158560	2.35	2.05	2.08	0.03	1.2%	-11.7%	No	No
T22_20	612401,158561	2.28	2.00	2.02	0.02	0.8%	-11.7%	No	No
T22_30	612391,158562	2.25	1.97	1.99	0.01	0.6%	-11.6%	No	No
T22_40	612381,158564	2.23	1.96	1.97	0.01	0.5%	-11.6%	No	No
T22_50	612371,158565	2.22	1.95	1.96	0.01	0.4%	-11.5%	No	No
T22_60	612361,158567	2.21	1.94	1.95	0.01	0.3%	-11.4%	No	No
T22_70	612352,158568	2.20	1.93	1.94	0.01	0.3%	-11.4%	No	No
T22_80	612342,158569	2.19	1.93	1.93	0.01	0.3%	-11.4%	No	No
T22_90	612332,158571	2.19	1.93	1.93	0.01	0.2%	-11.4%	No	No
T22_100	612322,158572	2.18	1.92	1.93	0.00	0.2%	-11.4%	No	No
T22_110	612312,158574	2.18	1.92	1.92	0.00	0.2%	-11.3%	No	No
T22_120	612302,158575	2.18	1.92	1.92	0.00	0.2%	-11.3%	No	No
T22_130	612292,158576	2.18	1.92	1.92	0.00	0.2%	-11.3%	No	No
T22_140	612282,158578	2.17	1.92	1.92	0.00	0.2%	-11.3%	No	No
T21_0	612435,158690	2.67	2.33	2.41	0.08	3.3%	-11.4%	Yes	No
T21_10	612425,158693	2.37	2.07	2.10	0.03	1.3%	-11.8%	No	No
T21_20	612415,158695	2.29	2.00	2.02	0.02	0.8%	-11.7%	No	No
T21_30	612406,158698	2.25	1.97	1.99	0.01	0.6%	-11.6%	No	No
T21_40	612396,158700	2.23	1.96	1.97	0.01	0.5%	-11.5%	No	No
T21_50	612386,158703	2.21	1.94	1.95	0.01	0.4%	-11.5%	No	No
T21_60	612377,158706	2.20	1.94	1.94	0.01	0.3%	-11.4%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T21_70	612367,158708	2.20	1.93	1.94	0.01	0.3%	-11.4%	No	No
T21_80	612357,158711	2.19	1.93	1.93	0.01	0.3%	-11.4%	No	No
T21_90	612348,158713	2.18	1.92	1.93	0.01	0.2%	-11.3%	No	No
T21_100	612338,158716	2.18	1.92	1.93	0.00	0.2%	-11.3%	No	No
T21_110	612328,158718	2.18	1.92	1.92	0.00	0.2%	-11.3%	No	No
T21_120	612319,158721	2.18	1.92	1.92	0.00	0.2%	-11.3%	No	No
T21_130	612309,158723	2.17	1.91	1.92	0.00	0.2%	-11.3%	No	No
T21_140	612299,158726	2.17	1.91	1.92	0.00	0.1%	-11.3%	No	No
T21_150	612290,158729	2.17	1.91	1.92	0.00	0.1%	-11.3%	No	No
T21_160	612280,158731	2.17	1.91	1.91	0.00	0.1%	-11.2%	No	No
T21_170	612270,158734	2.17	1.91	1.91	0.00	0.1%	-11.2%	No	No
T11_0	613751,160001	2.23	1.94	1.96	0.03	1.2%	-11.8%	No	No
T11_10	613753,160011	2.00	1.74	1.76	0.01	0.5%	-10.7%	No	No
T11_20	613756,160021	1.94	1.70	1.71	0.01	0.4%	-10.3%	No	No
T11_30	613759,160030	1.91	1.68	1.68	0.01	0.3%	-10.1%	No	No
T11_40	613761,160040	1.90	1.67	1.67	0.01	0.2%	-10.0%	No	No
T11_50	613764,160050	1.89	1.66	1.66	0.00	0.2%	-9.9%	No	No
T11_60	613767,160059	1.88	1.65	1.66	0.00	0.2%	-9.9%	No	No
T11_70	613769,160069	1.88	1.65	1.65	0.00	0.2%	-9.9%	No	No
T11_80	613772,160078	1.87	1.65	1.65	0.00	0.2%	-9.8%	No	No
T11_90	613775,160088	1.87	1.64	1.65	0.00	0.2%	-9.8%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T11_100	613777,160098	1.87	1.64	1.65	0.00	0.2%	-9.7%	No	No
T11_110	613780,160107	1.86	1.64	1.64	0.00	0.2%	-9.7%	No	No
T17_0	614085,161192	2.18	1.91	1.91	0.00	0.1%	-12.1%	No	No
T17_10	614075,161194	2.00	1.75	1.75	0.00	0.1%	-10.9%	No	No
T17_20	614065,161196	1.94	1.70	1.70	0.00	0.1%	-10.4%	No	No
T17_30	614055,161198	1.91	1.68	1.68	0.00	0.1%	-10.2%	No	No
T17_40	614045,161200	1.89	1.66	1.67	0.00	0.1%	-10.0%	No	No
T17_50	614036,161202	1.88	1.66	1.66	0.00	0.1%	-9.9%	No	No
T17_60	614026,161204	1.87	1.65	1.65	0.00	0.1%	-9.8%	No	No
T17_70	614016,161206	1.87	1.64	1.65	0.00	0.1%	-9.8%	No	No
T17_80	614006,161208	1.87	1.64	1.64	0.00	0.1%	-9.8%	No	No
T17_90	613996,161210	1.86	1.64	1.64	0.00	0.1%	-9.7%	No	No
T17_100	613987,161212	1.86	1.64	1.64	0.00	0.1%	-9.7%	No	No
T17_110	613977,161214	1.86	1.63	1.64	0.00	0.2%	-9.6%	No	No
T17_120	613967,161215	1.85	1.63	1.64	0.00	0.1%	-9.6%	No	No
T17_130	613957,161217	1.85	1.63	1.64	0.00	0.1%	-9.6%	No	No
T17_140	613947,161219	1.85	1.63	1.63	0.00	0.2%	-9.6%	No	No
T17_150	613938,161221	1.85	1.63	1.63	0.00	0.2%	-9.5%	No	No
T17_160	613928,161223	1.85	1.63	1.63	0.00	0.2%	-9.5%	No	No
T17_170	613918,161225	1.85	1.63	1.63	0.00	0.2%	-9.5%	No	No
T17_180	613908,161227	1.85	1.63	1.63	0.00	0.2%	-9.5%	No	No

Receptor ID	Receptor Location	Acid Deposition (keq/Ha/Yr)							
		2019 Baseline	2040 Baseline	2040 With Dev	Change (keq/Ha/Yr)	"Alone" % Change Relative to Objective	"In-Combination" % Change Relative to Objective	"Alone" >1% and >CL	"In-Combination" >1% and >CL
T17_190	613898,161229	1.85	1.63	1.63	0.00	0.2%	-9.5%	No	No

Mountbatten House
Basing View
Basingstoke, Hampshire
RG21 4HJ

wsp.com

Air Quality Position Statement

DATE:	20 June 2022	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent - Air Quality Assessment Position Statement		
PROJECT:	70080896	**AUTHOR:**	Carol Chan
CHECKED:	Joanna Rochfort	**APPROVED:**	Justin Sherlock

INTRODUCTION

WSP were previously commissioned by University of Kent (UoK) to carry out an assessment of the potential air quality impacts arising from the development of land currently owned by UoK (herein referred to as 'the Site' or 'Proposed Development'). The Site is located on farmland to the north of the main university campus, between the villages of Blean and Tyler Hill, and comprises three development parcels (Sites B, C and D). Collectively, the three land parcels, which total an area of 230.37ha, have been considered within a single Masterplan for development. The current emerging masterplan is for a new residential-led community comprising circa 2,000 dwellings and associated uses. A technical report[1] was produced by WSP in March 2022 to present the findings of the air quality assessment undertaken and the likely effects of changes in air quality on nearby designated ecological sites during both the construction and operation of the Proposed Development. This concluded that whilst the Proposed Development will result in increases in pollutant concentrations (nitrogen oxide (NO_X) and ammonia (NH_3)) and nitrogen (N) deposition within nearby designated ecological sites, this is predicted to occur against an overall future improvement in pollutant concentrations/N deposition.

The position statement presented herein has, therefore, been produced to set out the justification for the methodology applied, namely why we can rely on future improvements within the vehicle fleet to address the identified air quality impacts within the identified designated ecological sites. The position statement comprises the following:

- A summary of the air quality impacts identified;
- Assumptions applied to the air quality modelling;
- Supporting evidence to why the assumptions applied within the modelling are robust and conservative, considering the policy context, relevant technical reports and up to date sales figures regarding the purchase of Electric Vehicles (EVs); and
- Summary and recommendations.

AIR QUALITY ASSESSMENT

Modelling Methodology

Air quality dispersion modelling was undertaken using industry standard software (ADMS Roads[2]) with reference to relevant assessment guidance including:

[1] WSP, March 2022. University of Kent Canterbury Campus Air Quality Assessment: Disposal Site BCD.
[2] Cambridge Environmental Research Consultants Limited (CERC), ADMS Roads v5.0.1 (released February 2022). Further information available at: https://www.cerc.co.uk/index.php

- Defra Local Air Quality Management Review and Assessment Technical Guidance[3];
- Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations[4]; and
- The IAQM's guidance on the Assessment of Air Quality Impacts on Designated Nature Conservation Sites[5].

Traffic data was provided for the following scenarios for use within the air quality modelling:

- 2019 baseline/model verification;
- 2040 Do-Minimum (DM) (i.e. future baseline without the Proposed Development including background growth in the locality of the Site but no contribution to road traffic from the Proposed Development itself);
- 2040 Do-Something (DS) (i.e. with the Proposed Development (DS) including contributions to road traffic from the Proposed Development itself, and background growth in the locality of the Site).

In order to assess the impact of the Proposed Development 'alone', the 2040 DM scenario has been compared against 2040 DS scenario. Similarly, in order to assess the impact of the Proposed Development 'in-combination' with other plans and projects, the 2040 DS scenario has been compared with 2019 baseline case. This approach allows for:

- Forecast improvements in nitrogen oxide (NO_X) concentrations and nitrogen (N) deposition between 2019 and 2040 to be taken into account within the assessment of 'in-combination' effects; and
- Future increases in ammonia (NH_3) due to changes within the vehicle fleet[6], prior to the electrification of the vehicle fleet.

The assessment methodology is detailed in Chapter 3 of the Air Quality Report[7].

Summary of Impacts

The results of the modelling indicate that in some locations the predicted increases in NO_x and NH_3 concentrations and N deposition due to the Proposed Development (including the proposed Access

[3] DEFRA (2021) Part IV The Environment Act 1995 and Environment (Northern Ireland) Order 2002 Part III, Local Air Quality Management Technical Guidance LAQM.TG(16)
[4] Natural England, 2018, Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations
[5] Institute of Air Quality Management, 2019. A guide to the assessment of air quality impacts on designated nature conservation sites
[6] NH_3 emissions do not occur as a result of combustion within vehicle engines, rather they are produced by the emissions controls systems that are used to reduce emissions of NO_X, which have been implemented in response to a tightening of the European type approval standards (Euro Standards) for vehicles.
[7] WSP, March 2022. University of Kent Canterbury Campus Air Quality Assessment: Disposal Site BCD.

Strategy) exceed 1%[8] of the relevant Critical Levels and Loads, respectively. But, as the relevant Critical Levels and Loads are predicted to be met in the future with the Proposed Development in place, no significant effects are anticipated.

The Critical Load for N deposition is predicted to be exceeded within all of the identified designated ecological sites[9] in the 2019 baseline case and all future scenarios.

Due to the rural nature of Canterbury, agriculture is a significant contributor to total background N deposition. For example, source apportionment information obtained from APIS indicates that within Blean Complex Special Area of Conservation (SAC), livestock contributes around 18% to total background N deposition, with fertiliser application and European Import contributing 11% and 16.6%, respectively. In contrast, around 12% of total background N deposition is attributable to road traffic emissions[10].

At the following locations, the change in N deposition exceeds 1% of the relevant CL as a result of the Proposed Development (including the proposed Access Strategy) 'alone': Transects 4, 5 and 6 (Ancient Woodland within Site B), 7 – 11 (all within Park Wood Ancient Woodland), 15 (Ancient Woodland), 16 (Tyler Hill Meadow LNR) and 21 - 23 (Church/Bossenden Woods Ancient Woodland).

Whilst the change in N deposition exceeds 1% of the relevant CL at the above locations, there is an overall reduction in N deposition between the baseline (2019) and 2040 due to future improvements in vehicle emissions and background deposition rates. With the exception of Transects 4 and 5 (both within the Ancient Woodland within Site B), the Proposed Development is not anticipated to result in a significant delay to future improvements.

The changes within Blean Complex SAC due to the Proposed Development are small (less than 1% of the relevant CL). Also there are no changes greater than 1% of the CL due to the Proposed Development within 'in-combination'. Therefore, in the context of Habitats Regulations Assessment (HRA) no Likely Significant Effects (LSE) are anticipated either 'alone' or 'in-combination' with other Plans and Projects. Notwithstanding this, CCC will be undertaking a HRA to determine the effects of their emerging Local Plan on Habitats Sites (including Blean Complex SAC) which, if allocated would include the assessment of the Site.

ASSUMPTIONS APPLIED

- There are uncertainties associated with both measured and predicted concentrations. The model (ADMS Roads) used in this assessment relies on input data (including predicted traffic flows), which

[8] The threshold above which the potential for significant effects cannot be discounted without further investigation.
[9] Exceedances of lower Critical Load Value at Blean Complex SAC, Ancient Woodland within Site B, Park Wood Ancient Woodland, Brethren Wood Ancient Woodland, Ancient Woodland Transects 14-15, West Blean and Thornden Wood SSSI, and Church / Bossenden Woods Ancient Woodland.
[10] Air Pollution Information System – Blean Complex SAC source attribution for nitrogen deposition. https://www.apis.ac.uk/app

also have uncertainties associated with them. The model itself simplifies complex physical systems into a range of algorithms. In addition, local micro-climatic conditions may affect the concentrations of pollutants that the ADMS Roads model will not take into account.

- In order to reduce the uncertainty associated with predicted concentrations, model verification has been carried out following guidance set out in LAQM.TG(16). As the model has been verified against local monitoring data and adjusted accordingly, there can be reasonable confidence in the predicted concentrations. The root mean square error (RMSE) value calculated after verification was 2.4 (well within 10% of the air quality objective) and therefore, the final predications are considered to be robust.
- The traffic data screening (and therefore extent of the study area) was restricted to roads for which traffic data were available. It is recommended that the traffic data screening exercise is repeated once further traffic data modelling is available to determine whether there are any additional roads/designated ecological sites which require further consideration. However, given that traffic will dissipate as it moves away from the Site across the local road network, it is considered that 'worst case' effects have already been assessed.
- The default fleet projections in EFT v11.0 are based on fleet growth assumptions which were current before the Covid-19 outbreak in the UK. In consequence, default fleet outputs from the tool do not reflect short or long term impacts on emissions in 2020 and beyond resulting from behavioural change during and subsequent to the national or local lockdowns.
- Defra's EFT v11.0 has been used to calculate road vehicle pollutant emission rates for NO_x and "Basic Split" is used for Traffic Format input.
- Emissions factors beyond 2030 are not used despite the future year being 2040. This is because the emission factors within the Defra's EFT for years beyond 2030 are provided in support of climate assessments and appraisals only.
- NH_3 emissions data for 2035 (as a proxy for 2040) were obtained from AQC Ltd CREAM, version 1A[11]. Fleet projections are provided up to 2035 outside London (except for taxis, which are available up to 2030) and up to 2030 within London.
- Traffic surveys undertaken in December 2021 combined with trip rates from the TRICS database were used to develop a traffic flow model for use in both the Preliminary Transport Appraisal (PTA) and Air Quality Assessment. Local factors were derived from the Automatic Traffic Counts (ATC) data to allow peak hour Manual Classified Counts (MCC) data to be converted to an equivalent Annual Average Daily Traffic (AADT) using an industry standard approach.

[11] Air Quality Consultants - Air Quality Reports, Resources & Tools (aqconsultants.co.uk)

- Due to the uncertainty surrounding traffic growth as a result of the Covid 19 Pandemic the 2021 traffic flows were used to represent the 2019 base year. The 2040 traffic flows were derived by applying a growth factor to the 2021 observed traffic flows. The growth factor was obtained from the DfT's Trip End Model Presentation Programme (TEMPro) software. Detailed assumptions applied in the traffic model are provided in **Appendix A.**
- Traffic monitoring undertaken by the DfT[12] indicated that traffic volumes are 16.1% lower than pre-pandemic levels. Whether this trend continues creates uncertainty for forecasting future traffic trends.

DISCUSSION

It is considered that the assumptions applied within the modelling are robust and conservative, based on the following considerations:

EFT Emission Rate

The vehicle emission rates used in the assessment have been obtained from Defra's EFT[13]. The EFT takes into consideration the following information available from the National Atmospheric Emissions Inventory (NAEI)[14]:

- Fleet composition data for motorways, urban and rural roads in the UK (excluding London);
- Fleet composition based on European emission standards from pre-Euro I to Euro 6/VI (including Euro 6 subcategories);
- Scaling factors reflecting improvements in the quality of fuel and some degree of retrofitting; and
- Technology conversions in the national fleet.

The EFT provides emission factors for years up to 2050 (for England (not London) only) but advises that *"Emissions outputs for the years 2031-2050 are provided in support of climate assessments and appraisals only. Where emissions are to be used after 2030 to inform air quality assessments, the appropriate caveats around the limitations of the analysis must be included to accompany the assessment."*

Therefore, for the purpose of the air quality assessment, 2030 emission factors were applied despite the future assessment year being 2040. This is considered to represent a conservative approach because the emission rates for 2040 would be significantly lower than those taken for 2030 due to future improvements in vehicle technologies, particularly for NO_X.

[12] https://www.gov.uk/government/statistics/provisional-road-traffic-estimates-great-britain-october-2020-to-september-2021/provisional-road-traffic-estimates-great-britain-october-2020-to-september-2021
[13] https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html
[14] https://naei.beis.gov.uk/data/ef-transport

In addition, the electric vehicle (EV) proportion used within the EFT for future years is considered to be conservative. The proportion of EVs within the vehicle fleet is highly likely to be greater than that assumed within the EFT. The EFT assumes that in 2040, 22.4% of the fleet comprises EV cars and 2.4% comprises EV LDVs. In comparison, utilising the extracted fleet mix within EFT for 2040 and applying that to the existing TAG data book, the following proportions are assumed: 26.5% EV cars and 2.1% EV LDVs. In addition, for NO_X, the modelling utilised 2030 emissions from the EFT, adding a further degree of conservatism into the air quality modelling/results.

Furthermore, there has been a recent announcement[15] (May 2022) with respect to the TAG data book, namely that an update to the data book is planned for November 2022 that assumes EVs make up an even greater proportion of the overall vehicle fleet. Again, reiterating that Defra's current EFT is highly conservative with respect to NO_X emissions.

Policies and Plans

There are a mixture of different policies, targets and grants and incentives to encourage uptake of EVs:

- **Transport Decarbonisation Plan**[16] which sets out the commitments and actions the UK Government has made, or is taking, to decarbonise the UK's transport sector. It outlines that the further measures in future to help achieve its carbon reduction targets, which could, depending on its progress, include targeted actions to cut the use of the most polluting cars and/or tackle congestion in towns and cities.
- **Ending the sale of new petrol and diesel vehicles by 2030**. On 18th November 2020, the Government announced17 that, by 2030, the sale of new petrol and diesel cars and vans will be banned in the UK, except for those which have a capability to drive significant distances with zero tailpipe emissions (such as hybrid vehicles). Additionally, by 2035, the sale of new hybrid vehicles will also be banned. The phasing out of conventional petrol and diesel cars and vans brings this change forward, when compared to the deadlines previously announced (2040 and 2035 in July 2017 and February 2020, respectively). The current projections within Defra's EFT do not take into account the effects of this ban, reiterating that the air quality modelling assumptions are conservative.
- **Green Paper**[18]: The Department for Transport (DfT) published its Green Paper on a New Road Vehicle CO_2 Emissions Regulatory Framework for the United Kingdom, which sets out the

[15] TAG data book: forthcoming change regarding fleet assumptions (publishing.service.gov.uk)
[16] https://www.gov.uk/government/publications/transport-decarbonisation-plan
[17] UK Government press release (18/11/20). Available at: https://www.gov.uk/government/news/government-takes-historic-step-towards-net-zero-with-end-of-sale-of-new-petrol-and-diesel-cars-by-2030 (Accessed 27/11/20)
[18] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1007466/green-paper-on-a-new-road-vehicle-CO2-emissions-regulatory-framework-for-the-United-Kingdom-web-version.pdf

regulatory options to help deliver its commitments to phase out the sale of petrol and diesel cars by 2030 and ensure all new cars and vans are zero emission at the tailpipe by 2035[19].

- **Net Zero Strategy[20]**. To help achieve its 2030 and 2035 targets, the Government, as part of its Net Zero Strategy, confirmed its plan to introduce a ZEV mandate from 2024. The mandate will set annual targets for the percentage of manufacturers' new car and van sales that need to be zero emission from 2024 onwards.

Therefore, under these policies and plans, it is considered that the uptake of EVs will be faster than the forecast established in the NAEI and used within the EFT.

In addition, CCC has published its Transport Strategy 2014 - 2031[21] which identifies actions to encourage uptake of EVs to improve air quality (such as encouraging the use of greener vehicles by CCC and KCC within their fleet and pool cars and ensuring new developments have charging points for EVs).

EV Sales and Forecast

Market data[22] indicates that there were nearly 20,000 new electric car registrations in April 2022 and more than 22,000 battery-electric vans in the UK in March 2022. Furthermore,

"*Last year (2021) saw the biggest annual increase in number of registrations, with more than 395,000 battery-electric cars registered, showing a growth of 92% on 2020*[23]*…*

In 2015 just 1.1% of new vehicles registered had a plug compared to 3.2% in 2019; by the end of December 2021, this figure had accelerated to 18.6% (11.6% Battery Electric Vehicles (BEV) and 7.0% Plug In Hybrid EVs (PHEV). These numbers reflect both the increase in demand for electric vehicles and the decline in demand for traditional, particularly diesel, cars."

It is expected this trend will continue and the percentage to increase as the year progresses, especially taking into account policy drivers (as described above) and the Government's ban on the sale of new petrol and diesel vehicles by 2030.

Survey data has shown that 52% of drivers aged between 16 and 49, who own a conventional vehicle (all petrol, diesel and hybrid) said they were either likely or very likely to switch to an all-electric vehicle in the next 10 years[24]. And 44% of all petrol, diesel and hybrid drivers said they were either likely or very likely to

[19] DfT, Green Paper on a New Road Vehicle CO2 Emissions Regulatory Framework for the United Kingdom, July 2021
[20] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf
[21] Canterbury City Council Transport Strategy - https://drive.google.com/file/d/1Vj_00sKhTUtYG-bckBvwOEvvzOhaY4l_/view
[22] https://www.zap-map.com/ev-market-statistics/
[23] https://www.zap-map.com/ev-market-statistics/
[24] Among adults in Great Britain surveyed by the Opinions and Lifestyle Survey (OPN) between 22 September and 3 October 2021

switch to an all-electric vehicle in the next 10 years. This again suggests that there will be a high demand of EVs likely in the next decade and that we can have confidence that the air quality modelling is conservative and that we can reply on assumptions regarding future improvements within the vehicle fleet.

NO_x and NO_2 Trend

AQC's recent study (May 2022) on long-term NO_x and NO_2 trends across the UK[25] shows that NO_2 and NO_x concentrations at the majority of roadside and urban locations in the UK are continuing to improve and are unlikely exceed those seen during 2019 at any point in the foreseeable future.

SUMMARY AND RECOMMENDATIONS

Based on the above discussions, it is considered that the assumptions applied within the modelling are robust and conservative. The assessment concluded that significant effects with the Proposed Development in place are unlikely when considering the predicted changes against forecast improvements in vehicle emissions and background concentrations. The residual effects are therefore considered to be not significant.

The Proposed Development should be designed to promote sustainable modes of transport including the provision of appropriate infrastructure for pedestrians and cyclists. Infrastructure for EVs should also be incorporated into the Proposed Development.

A Travel Plan will be prepared to accompany the submission of the planning application which will include a number of measures that are also likely to benefit general air quality within the vicinity of the Site.

Furthermore, it is understood that CCC will be undertaking a HRA to determine the effects of their emerging Local Plan on Habitats Sites (including Blean Complex SAC). If allocated, this will include the assessment of the Site. Depending on the results of the study, there is the potential that strategic mitigation may be proposed to reduce the effects of the emerging Local Plan on nearby Habitats sites.

[25] AQC, May 2022. Trends in UK NO_x and NO_2 Concentration – May 2022 Update. https://www.aqconsultants.co.uk/CMSPages/GetFile.aspx?guid=4f51f53e-0e95-4e33-9523-05d705ffbd21

DATE:	20 June 2022	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent - Air Quality Assessment Position Statement		
PROJECT:	70080896	**AUTHOR:**	Carol Chan
CHECKED:	Joanna Rochfort	**APPROVED:**	Justin Sherlock

APPENDIX A – TRAFFIC MODEL ASSUMPTIONS

The traffic flows used in the Air Quality (AQ) assessment have been developed based upon observed traffic counts undertaken in December 2021. Department for Transport (DfT) guidance26 recommends the undertaking of traffic data collection in a 'neutral' or 'representative' month avoiding main and local holiday periods. The collection of traffic data has been interrupted in recent years due to the Covid 19 Pandemic and therefore it has been difficult to collect data that fully meets the requirements of DfT guidance. As part of the scoping exercise undertaken for the Preliminary Transport Appraisal (PTA) for the site, agreement was reached with Kent County Council, as local highway authority to collect data in December 2021 for use in the preliminary studies required to assess the impact of the Site. The data collection was undertaken outside of main and local holiday periods.

Two types of data were collected:

- Manual Classified Counts (MCC) at 13 junctions across Canterbury on Tuesday 7th December 2021 collected for the peak periods 07:00-10:00 and 16:00-19:00; and
- Automatic Traffic Counts (ATC) at two locations for a two-week period starting on Tuesday 7th December 2021.

The MCC data was collected when no Covid related Government restrictions were in place. The second week of the ATC data was collected when the Government had implemented work from home guidance. The second week of ATC data was therefore excluded from the traffic flow model with only the first week of data utilised.

The observed traffic data was used to develop a traffic flow model for use in both the PTA and AQ assessment. Local factors were derived from the ATC data to allow peak hour MCC data to be converted to an equivalent Annual Average Daily Traffic (AADT) using an industry standard approach.

The AQ assessment considers the impact of the development in a base year of 2019 and future year of 2040. Due to the uncertainty surrounding traffic growth as a result of the Covid 19 Pandemic the 2021 traffic flows were used to represent the 2019 base year. The 2040 traffic flows were derived by applying a growth factor to the 2021 observed traffic flows. The growth factor was obtained from the DfT's Trip End Model Presentation Programme (TEMPro) software.

TEMPro version 7.2c was used to create the 2040 future forecast year growth factor. The forecasts within TEMPro are based on increases in households and jobs anticipated for the upcoming years. Whilst no explicit development is included within these growth projections they do include for the level of growth anticipated at a local authority level.

[26] Department for Transport (DfT) Transport Analysis Guidance (TAG) Unit M1.2 Data Sources and Surveys (May 2020) Section 3.36-3.38

Air Quality Position Statement

DATE:	20 June 2022	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent - Air Quality Assessment Position Statement		
PROJECT:	70080896	**AUTHOR:**	Carol Chan
CHECKED:	Joanna Rochfort	**APPROVED:**	Justin Sherlock

Since the start of the Covid 19 Pandemic traffic levels have varied significantly with a steep reduction in traffic flow witnessed in 2020 followed by a gradual increase. As we emerge from the pandemic it is unclear whether traffic volumes will return to pre-pandemic levels as it is widely anticipated that there will be a shift in the way people work to follow a more hybrid approach mixing home and office type working. Research undertaken during the pandemic27 indicated that if people worked from home two days per week this could result in 14% fewer peak time trips.

Traffic monitoring undertaken by the DfT28, for roads across the UK, indicates that traffic volumes are 16.1% lower than pre-pandemic levels. Whether this trend continues creates uncertainty for forecasting future traffic trends. The TEMPro traffic model has not been updated since before the Pandemic and therefore the factors it creates should be treated with caution.

The growth factors contained within TEMPro were adjusted using the alternative assumption tool to remove the housing associated with the Proposed Development to avoid potential double counting of trips. As such, 2000 dwellings were removed from the growth factor assumptions for 2040.

For the purposes of this assessment, the geographic area of Canterbury was selected and growth factors for car driver trips selected.

The growth factor was applied to the observed 2021 traffic flows to provide 2040 forecast traffic flows for use in the AQ assessment.

Trip rates used to represent the residential land use on the Site were derived from the TRICS trip generation database. TRICS is an industry standard database containing a range of traffic surveys conducted at sites across the UK. The category ‘Private Houses’ was selected to reflect the likely mix of dwellings proposed on the site. The ‘Private Houses’ trip rate was applied as this allows for up to 25% of the dwellings to be affordable and up to 25% of the dwellings to be apartments.

The person trip rates, and the subsequent person trip generation were then disaggregated by journey purpose and mode. This approach enabled detailed consideration of internalisation as well as providing an opportunity for different mode shares to be applied to each journey purpose.

The methodology utilised the National Travel Survey (NTS0502) data which identified journey purpose by time of day.

A review of 2011 Census Travel to Work data for the Mid Layer Super Output Area (MSOA) Canterbury 012 in which the site is located was undertaken to identify the likely mode share of residential external trip making by all journey purposes.

[27] https://www.creds.ac.uk/wp-content/uploads/CREDS-covid-transport-report.pdf

[28] https://www.gov.uk/government/statistics/provisional-road-traffic-estimates-great-britain-october-2020-to-september-2021/provisional-road-traffic-estimates-great-britain-october-2020-to-september-2021

APPENDIX C

Heritage Constraints Report

University of Kent

UNIVERSITY OF KENT

Cultural Heritage and Archaeology Constraints and Opportunities Appraisal

70080896-001
MAY 2021

CONFIDENTIAL

University of Kent

UNIVERSITY OF KENT

Cultural Heritage and Archaeology Constraints and Opportunities Appraisal

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70080896

OUR REF. NO. 70080896-001

DATE: MAY 2021

University of Kent

UNIVERSITY OF KENT

Cultural Heritage and Archaeology Constraints and Opportunities Appraisal

WSP

4th Floor
6 Devonshire Square
London
EC2M 4YE

Phone: +44 20 7337 1700

Fax: +44 20 7337 1701

WSP.com

CONFIDENTIAL

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	First issue			
Date	10/05/2021			
Prepared by	Jack Smith & Janette Platt			
Signature				
Checked by	Jon Chandler Reider Payne			
Signature				
Authorised by	Jon Chandler			
Signature				
Project number	70080896			
Report number	1			
File reference	"Z:\KENT\University of Kent 70080896\B Report\Heritage Constraints_Uniof Kent_13-04-2021.docx"			

CONTENTS

EXECUTIVE SUMMARY

1 INTRODUCTION 1

1.1 PROJECT BACKGROUND 1
1.2 AIMS AND OBJECTIVES 1
1.3 STATEMENT OF LIABILITY 2

2 SCOPE 3

2.1 DATA SOURCES 3
2.2 STUDY AREA 4
2.3 LIMITATIONS 4

3 KNOWN HERITAGE ASSETS 5

3.1 DESIGNATED HERITAGE ASSETS 5
3.2 UNDESIGNATED HERITAGE ASSETS / PAST INVESTIGATIONS 10

4 FACTORS AFFECTING ARCHAEOLOGICAL SURVIVAL 16

4.1 GEOLOGY 16
4.2 PAST LAND USE 16

5 IMPACTS, MITIGATION AND MANAGEMENT 19

5.1 BUILT/DESIGNATED HERITAGE ASSETS 19
5.2 BURIED HERITAGE ASSETS 20
5.3 RECOMMENDATIONS 21

APPENDICES

APPENDIX A
PLANNING POLICY
APPENDIX B
REFERENCES
APPENDIX C
FIGURES

FIGURES

Figure 1 – Site location

Figure 2 – Designated Heritage Assets within 100m study area and World Heritage Sites

Figure 3 – Past archaeological investigations and features/findspots within the site

Groundsure Historic Ordnance Survey mapping has been appended to this report

EXECUTIVE SUMMARY

WSP has been commissioned by the University of Kent to carry out a Heritage Constraints Appraisal (HCA) in advance of proposed development at the University of Kent – Canterbury Campus, Canterbury, Kent. The developing scheme comprises the sale of five parcels (disposal areas) of greenfield land, approximately 125 ha in total, for non-university development (residential, higher education and associated uses). The remaining 105 ha is to be retained and will continue as the University's main campus. The scheme in this area will comprise new university buildings, a new hotel/conference facility and a new access road through the campus.

The assessment constitutes a preliminary scoping for the client, outlining the likely constraints to future scheme options in terms of buried heritage assets (archaeological remains) and above ground assets (standing buildings of historic interest and their setting). Such assets, whether designated or not, are afforded protection and can represent a constraint to future development. This top-level appraisal does not constitute an Archaeological or Historical Desk Based Assessment that might be submitted, where required, in support of a planning application.

Above ground heritage assets/designated heritage assets

The Site is **high risk** in terms of physical impacts to statutorily designated heritage assets. The Site contains seven nationally designated (protected) heritage assets, comprising:

- two scheduled monuments of very high heritage significance: the remains of a dispersed medieval settlement and Roman building located on the western side of Site B and the buried remains of the former Tyler Hill medieval pottery and tile industry which includes approximately 40% of Site E.;
- one Grade II* listed structure of very high heritage significance: Tyler Hill Railway Tunnel, including north and south portals, under Tyler Hill (former Canterbury and Whitstable Railway) within the Retained Main Campus; and
- four Grade II listed structures of high heritage significance: two assets at Hothe in the north-western part of the Main Campus: Hothe Court, a 16th century timber framed building, and the adjoining 17th century barn; Father Courage, a mid-20th century sculpture in the eastern part of the Main Campus,; and Beverley Farmhouse, a 15th century timber framed building located in the south-western part of the Main Campus.

The Site also lies within the boundary of six Conservation Areas (high heritage significance), as designated by the Local Planning Authority. There are also six listed buildings within 200m of the Site, and further designated heritage assets in the wider area. These include the Grade II* listed 13th century Church of St Cosmus and St Damian, of very high heritage significance, and the Grade II Church Cottage, of high heritage significance, which lie adjacent to Site B.

There will be a physical impact on the scheduled monuments and listed buildings within the Site where any below ground works, potentially including hard and soft landscaping, extend into the constraints area for either scheduled monument or into the curtilage of any of the listed buildings. There may also be physical impacts on listed buildings on listed buildings from vibration during any construction nearby and during the construction and operation of the proposed new access road.

The Site is **high risk** in respect of potential impacts to the setting of nearby statutorily and locally designated heritage assets, through the introduction of a significant quantity of built form into the primarily rural landscapes in Sites A – F, additional built form within the Retained University Campus, and the proposed new access road.

Considering the sensitivity of the Site, it is recommended that a heritage consultant is engaged to advise at the earliest stages of design and throughout the design process, to ensure that proposals minimise harm to the historic environment and where possible maximise opportunities to enhance the significance of nearby heritage assets through considered design. A Heritage Statement would be required to support a planning application. This would assess the impact of any proposals on the designated assets within the Site, and on the character and appearance of the conservation areas which extend into the Site.

In addition, given the likely settings impacts on designated assets, an Historic Environment Desk Based Assessment (HEDBA), would be required for planning. This would assess the impact of any proposals on the setting of selected designated heritage assets located within and beyond the Site boundary. It would also assess the potential impact of the proposed development on buried heritage assets.

Prior written permission, known as Scheduled Monument Consent (SMC) is required from the Secretary of State for works physically affecting a scheduled monument. Such works include landscaping SMC is separate from the statutory planning process. It is, however, recommended that no works physically impacting either monument are proposed. It is unlikely that SMC would be given.

Buried heritage assets

The risk is assessed as **high** in terms of the presence of significant archaeological remains. As detailed above, the Site contains two scheduled monuments (in Site B and Site E), both designated due to their potential for archaeological remains of very high heritage significance. Furthermore, Sites A–C are primarily greenfield, with high potential for archaeological survival, while significant parts of the Retained Main Campus have not previously been built on.

Based on this preliminary appraisal, the greatest archaeological potential (high) is for archaeological remains from the prehistoric period, Roman and later medieval periods, particularly on the western side of Site B and, in terms of later medieval remains of the Tyler Hill pottery industry, in Site E and the eastern side of the Retained Main Campus. Remains from these periods, if present, would potentially be of medium or high/very high heritage significance.

The proposed construction of new buildings across the Site, excavation for new services and any cut below ground level for hard and soft landscaping and/or the proposed new access road would truncate or completely remove any archaeological remains within their footprint, the severity of the impact depending on the depth of these below ground intrusions. Given that Sites A–C are primarily greenfield, while significant parts of the Retained Main Campus have not previously been built on, any archaeological remains in these areas are likely to lie just below the topsoil.

Given the size of the Site, and its potential for significant archaeological remains, the LPA archaeological advisor will almost certainly request that archaeological evaluation is carried out prior to the determination of planning consent. The evaluation would most likely consist of two phases: a geophysical survey followed by targeted trial trenching. It is recommended that the LPA archaeological advisor is consulted as early as possible and that sufficient time (eg 6 months) is left

in the programme for this work. Carrying out the evaluation at the earliest opportunity would help to de-risk the Site.

Depending on the results of the evaluation, further archaeological work may be required to mitigate the impact of the scheme. This might include the preservation *in situ* of remains of very high (national) significance, ie through modifications in design, with such remains most likely to be found within and around the scheduled monuments within the Site. Where this is not necessary, mitigation normally comprises preservation by record through targeted archaeological excavation or by watching brief(s) during groundworks for remains of lesser significance.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1. WSP has been commissioned by University of Kent to carry out Heritage Constraints Appraisal (HCA) in advance of proposed development at the University of Kent Campus in Canterbury (NGR 613310 160139; **Figure 1**). The early appraisal is required to inform masterplanning/Local Plan inputs. The developing scheme comprises the sale of five parcels (Sites A, B, C, D & E on **Figure 1**) of greenfield land, approximately 125 ha in total, for non-university development (residential, higher education and associated uses). The remaining 105 ha (Retained Main Campus on **Figure 1**) will continue as the University's main campus. The scheme in this area will comprise new university buildings, a new hotel/conference facility and a new access road through the campus.

1.1.2. Statutory provision for the safeguarding of heritage assets has been made at a national and local level (see Appendix A). These might comprise below and above ground archaeological remains, buildings, structures, monuments or heritage landscape within or immediately around the Site, identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Such assets are identified as having a degree of significance meriting consideration in planning decisions and include designated heritage assets and assets identified by the local planning authority (including local listing), and non-designated assets.

1.1.3. The presence or potential presence of heritage assets can therefore constitute a constraint and may affect the initial selection of development options on the potential development site (hereafter referred to as 'the Site') and in the subsequent design, planning and programming. This document therefore aims to provide a high level appraisal of the likely heritage constraint specific to the Site and flag up potential issues so that so that they may be anticipated, planned and, where feasible, mitigated.

1.1.4. This report does not constitute an Archaeological Desk Based Assessment (ADBA),Historic Environment Desk Based Assessment (HEDBA) or Heritage Statement (HS), often required by the LPA to accompany a planning application. It is a preliminary scoping of any predicted heritage constraints, as a commercial appraisal for the client.

1.1.5. The assessment is made from a number of key sources and information. The report does not purport to be exhaustive but indicative. Information in this document is, to the best knowledge of the author and WSP, correct at the time of writing.

1.2 AIMS AND OBJECTIVES

1.2.1. The aim of this document is to:

- Indicate the presence of designated (ie protected through national or local planning policy) and known non-designated heritage assets within the Site or its immediate vicinity, and the significance of such assets;
- Provide an indication of previous impacts which may have affected heritage asset survival for known assets but also possible, previously unrecorded assets;
- Provide a broad indication of the likely constraints to any possible future development on the Site; and
- Outline likely mitigation requirements to reduce or offset any adverse effects.

1.3 STATEMENT OF LIABILITY

1.3.1. This document is for the exclusive benefit of the Client (University of Kent). It may not be assigned to or relied upon by a third party without the agreement of WSP UK Limited ('WSP') in writing. WSP retains all copyright and other intellectual property rights in the document and its contents unless transferred by written agreement between WSP and the Client.

1.3.2. The findings and opinions expressed are based on the conditions encountered and/or the information reasonably available at the date of issue of this document (or other date e.g. date of inspection) and shall be applicable only to the circumstances envisaged herein.

1.3.3. No person except the Client shall have the benefit of this document by virtue of the *Contracts (Rights of Third Parties) Act 1999*.

2 SCOPE

2.1 DATA SOURCES

2.1.1. The appraisal has been carried out in accordance with the requirements of the National Planning Policy Framework (NPPF) (MHCLG 2019, MHCLG 2018) and to standards specified by the Chartered Institute for Archaeologists (CIfA Dec 2014a, 2014b) and Historic England (HE 2016, HE 2017).

2.1.2. This Heritage Risk Assessment provides a review of statutorily designated (protected) and known undesignated assets within the footprint of the proposed development areas ('the Site', comprising the Retained Main Campus and Sites A–E) and a study area around them. It also identifies whether the Site is in a LPA conservation area or archaeological priority zone.

2.1.3. The report provides an initial assessment of how past land use and past ground disturbance as suggested by historic Ordnance Survey maps may have compromised the survival of any archaeological remains that might be present within the Site.

2.1.4. Table 2-1 indicates those sources consulted for the appraisal.

Table 2-1 –Data sources consulted

Source	Data	Comment
Historic England	National Heritage List for England (NHLE) with information on statutorily designated heritage assets	Statutory designations (scheduled monuments; statutorily listed buildings; registered parks and gardens; historic battlefields) can provide a significant constraint to development.
Kent County Council.	Historic Environment Record (HER)	Primary repository of archaeological information. Includes information from past investigations, local knowledge, find spots, and documentary and cartographic sources
Local Planning Authority	Archaeological priority area	Area of interest identified by the local authority. There is likely to be a requirement for archaeological investigation (initially a desk-based assessment) as part of any planning application.
Local Planning Authority	Conservation area	An area of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance.
Local Planning Authority	Locally listed building	Building of local importance designated by the local planning authority due to architectural and/or historic significance and a positive contributor to the character of an area. Whilst not statutorily protected, a building's inclusion on the list means that it is a material consideration in the planning process.
British Geological Survey (BGS)	Solid and drift geology digital map; online BGS	Subsurface deposition, including buried geology and topography, can provide an indication of potential for

Source	Data	Comment
	geological borehole record data.	early human settlement, and potential depth of archaeological remains.
Groundsure Ltd	Ordnance Survey maps from the 1st edition (1860–70s) to present day	Provides a good indication of past land use and impacts which may have compromised archaeological survival. Provides an indication of the possible date of any buildings on the Site.
Google	Satellite imagery and Streetview	The imagery was used to provide an understanding of the current environment and landscape and an initial understanding of possible issues in respect of the setting of designated heritage assets.

2.2 STUDY AREA

2.2.1. Due to the extent of the Site area, only Historic Environment Record data within the Site (defined as the Retained Main Campus and Sites A–E) has been examined; though reference is made to data outside of this area where relevant. The size of the study area is based on professional judgement and has been selected in order to allow an appraisal of the historic environment potential within the area. For Designated Heritage Assets, those within a radius of 200m from the Site have also been included in the study area in order to assess those assets most likely to be impacted by the proposed scheme.

2.2.2. **Figure 2** shows the location of known historic environment features within the study area, as identified by the sources above. These have been allocated a unique 'assessment' reference number (**A1, 2,** etc.), which is listed in a gazetteer in Section 4 and is referred to in the text. Archaeological Priority Zones are not shown. All distances quoted in the text are approximate (within 5m).

2.3 LIMITATIONS

2.3.1. Several limitations to the appraisal should be recognised:

- The assessment is a high-level appraisal of heritage risk and has not included a review of a full range of resources (eg documentary, cartographic, air photographic, and geotechnical, architectural and engineering sources) that would normally be consulted in a full desk-based assessment for planning. No site walkover/inspection has been carried out. For this reason, it is possible that there are assets within the Site which have not been identified by this assessment.
- Archaeological remains are buried and not visible. In the absence of intrusive archaeological field investigation, it is possible that there are buried assets within the Site that have not been identified by this Heritage Constraints Appraisal.
- Trees protected by Tree Preservation Orders, hedgerows protected under the Hedgerow Regulations 1997, or Ancient Woodland designated by Natural England and/or the LPA that would be a material consideration in the planning process, are not included within the scope of this assessment.
- Burial grounds have been identified from Ordnance Survey mapping. Consultation of a more comprehensive range of sources would be required to confirm with greater certainty the likely presence or absence of human remains within the Site.

3 KNOWN HERITAGE ASSETS

3.1 DESIGNATED HERITAGE ASSETS

3.1.1. Designation includes statutory protection for nationally significant assets, and other local designations which identify an asset which may be a material consideration in the planning process.

3.1.2. Table 3-1 indicates whether or not the Site (defined as the Retained Main Campus and Sites A–E) contains, or falls within, a statutorily or locally designated site or area. It also indicates whether there is a designated asset in the vicinity; the Site may therefore be within that asset's setting. National planning policy requires that the impact of proposed development on the setting of a designated asset should be taken into account in the determination of planning applications.

3.1.3. Designated assets are also described in Table 3-1, other than LPA archaeological priority zones, conservation areas and locally listed buildings.

Table 3-1 – Designated heritage assets

Designated heritage asset	Planning constraint	Within Site?
World heritage site (very high significance)	Site and setting (including any 'buffer zone') designated for its outstanding universal value. Protected through standard national and local planning policy controls.	No, nearest is 1.2km south-east (Canterbury Cathedral, St Augustine's Abbey and St Martin's Church in the centre of Canterbury)
Scheduled monument (very high significance)	Nationally significant archaeological site protected under the Ancient Monuments and Archaeological Areas Act 1979. Prior Scheduled Monument Consent is required from the Secretary of State for works affecting a scheduled monument.	Yes, two scheduled monuments, one in Site B (Dispersed medieval settlement remains and a Roman building immediately southwest of St Cosmus and St Damian's Church) and one in Site E (Part of the Tyler Hill medieval pottery and tile industry)
Grade I / II* listed building *(very high significance)	A structure of exceptional or special architectural and/or historical interest which is statutorily protected under the Planning (Listed Buildings and Conservation Areas) Act 1990. Listed building consent is required from the LPA, as advised by Historic England, for works affecting a listed building	Yes, the Grade II* listed Tyler Hill Railway Tunnel, including north and south portals, under Tyler Hill (former Canterbury

Designated heritage asset	Planning constraint	Within Site?
	(which may include attached and curtilage buildings or other structures).	and Whitstable Railway) within the Retained Main Campus. The Grade II* Church of St Cosmus and St Damian also lies outside the Site, adjacent to Site B
Grade I / II* registered park and garden (very high significance)	Registration by Historic England is a material consideration in the planning process. The LPA must consider the impact of any proposed development on the special character of the landscape, and consult Historic England.	No
Registered battlefield (very high significance)	Registration by Historic England is a material consideration in the planning process. The LPA must consider the impact of any proposed development	No
Protected wreck (very high significance)	Nationally significant wreck protected under the Protection of Wrecks Act 1973. An application to the Secretary of State is required for any works affecting a protected wreck and an area of restriction around it.	No
Site of special scientific interest (SSSI) (very high significance)	Some SSSIs have an archaeological aspect. Certain operations require consent from Natural England	No
Grade II listed building (high significance)	A structure of exceptional or special architectural and/or historical interest which is statutorily protected under the Planning (Listed Buildings and Conservation Areas) Act 1990. Listed building consent is required from the LPA, as advised by Historic England, for works affecting a listed building (which may include attached and curtilage buildings or other structures).	Yes, five, all in the Retained Main Campus and a further six within the study area
Local Planning Authority conservation area (high significance)	Standard planning permission applies, but this includes proposals to demolish within a conservation area. Failure to have the required (planning) permission is a criminal offence under the Planning (Listed Buildings and Conservation Areas) Act 1990. LPA policy typically includes strengthening controls over minor development and there is special provision for the protection of trees within conservation areas.	Yes, six (all of Sites E and F, part of Sites B, C, D and part of the Retained Main Campus)
Local Planning Authority locally listed building	Local listing is a way of flagging up to owners and decision makers that the building is of value to the local scene, character or history. Whilst this designation holds less heritage significance than statutorily listed buildings it can nevertheless represent a constraint to future development.	No

Designated heritage asset	Planning constraint	Within Site?
Local Authority archaeological priority areas/zones	There is likely to be a requirement for archaeological investigation (desk-based assessment or otherwise) as part of any planning application if the Site is located within such an area.	No
Burial grounds	Development affecting any former burial ground is regulated by statute (principally the Burial Act 1857, the Disused Burial Grounds Act 1888 and 1981 and the Pastoral Measure 1983). Exhumations from land which is subject to the Church of England's jurisdiction will need the Church's authorisation (a Faculty or the approval of a proposal under the Care of Cathedrals Measure 2011). Where human remains may potentially be disturbed by proposed development on land which is not subject to the Church of England's jurisdiction, a licence is required from the Secretary of State, under Section 25 of the Burial Act 1857 as amended by the Church of England (Miscellaneous Provisions) Measure 2014.	No

3.1.4. Table 3–2 below is a gazetteer of designated assets within the 200m study area (see **Figure 2**).

3.1.5. The Site (defined as the Retained Main Campus and Sites A–E) contains seven nationally designated (protected) heritage assets, comprising two scheduled monuments, one Grade II* listed structure and four Grade II listed structures. The Site also lies within the boundary of six Conservation Areas, as designated by the Local Planning Authority. The scheduled monuments comprise the remains of a dispersed medieval settlement and Roman building (**A1;** NHLE ref: 1018785) located on the western side of Site B and the buried remains of the former Tyler Hill medieval pottery and tile industry (**A2**; NHLE ref. 1426019) which includes approximately 40% of Site E.

3.1.6. The one Grade II* and four Grade II listed structures within the Site are all located within the Retained Main Campus. The early 19th century Tyler Hill Railway tunnel and portals (**A4**; NHLE ref: 1392354) is listed Grade II* and is located in the eastern part of the Main Campus. The Grade II listed buildings comprise two assets at Hothe in the north-western part of the Main Campus: Hothe Court, a 16th century timber framed building (**A13**; NHLE ref: 1336585) along with an adjoining 17th century barn (**A6**; NHLE ref: 1085524). There is a further Grade II listed structure south of Giles Lane in the eastern part of the Main Campus: Father Courage, a mid-20th century sculpture (**A14**; NHLE ref: 1430801). The other Grade II listed building is Beverley Farmhouse, a 15th century timber framed building located in the south-western part of the Main Campus (**A10**; NHLE ref: 1259931).

3.1.7. In addition to those assets within the Site, there are a further six listed buildings within 200m of the Site, including the Grade II* listed Church of St Cosmus and St Damian (**A3**; NHLE 1085522), which lies adjacent to the north-western boundary of Site B. The other five listed buildings are all Grade II: the 18th century Church Cottage (**A12**, NHLE ref: 1336584) adjacent to the north-western part of Site B; the 18th century Tyler Hill Cottage (**A5**, NHLE ref: 1085523) and Tyler Hill House (**A7**; NHLE ref: 1085561) located 160m east of the northern extension to the Retained Main Campus; the early 19th

century Blean House (**A8**, NHLE ref: 1187070) located 30m west of the Retained Main Campus; the early-19th century Moat House (**A11**, NHLE ref: 1336583) located 160m west of the Retained Main Campus; and the mid-19th century St Edmund's School (**A9**, NHLE ref: 1242647) located 180m west of the Retained Main Campus.

3.1.8. There are no locally listed buildings within the Site, though two (both early 19th century buildings) are located within 60m of the northern extension of the Retained Main Campus: Oakwell Farmhouse (**A49**) 30m to the east of the Site and Oakwell in the Blean (**A48**) 60m to the east of the Site.

Table 3-2 – Gazetteer of designated assets (see Figure 2)

Assess. (A) ref.	Description	Period	HER ref / NHLE ref. / site code
1	**Dispersed medieval settlement remains and a Roman building immediately southwest of St Cosmus and St Damian's Church** Scheduled monument including the earthwork and below ground remains of a dispersed medieval settlement and an earlier Roman building within the pasture field immediately to the west of St Cosmus and St Damian's Church (**A3**). This is probably the site of the mansion recorded as built as a vicarage in 1375.	Roman Later medieval	NHLE1018785 MKE5554
2	**Part of the Tyler Hill medieval pottery and tile industry** Scheduled monument designating earthwork and below ground archaeological remains of kilns and indications of kilns forming part of the Tyler Hill pottery and tile industry, operational from at least the 12th century until the 19th century. The scheduled area is defined by the locations of 'known' kilns found during archaeological investigations.	Later medieval	NHLE1426019
3	**Church of St Cosmus and St Damian** Grade II* listed 13th century church. The churchyard contains some 18th century headstones and some 19th century oval bodystones.	Later medieval	NHLE1085522
4	**Tyler Hill Railway Tunnel, including north and south portals, under Tyler Hill (former Canterbury and Whitstable Railway)** Grade II* listed early 19th century railway tunnel and portals.	Post-medieval	NHLE1392354
5	**Tyler Hill Cottage** Grade II listed mid-18th century cottage of 2 storeys.	Post-medieval	NHLE1085523
6	**Barn adjoining Hothe Court on the north** Grade II listed timber barn, probably dating to the 17th century.	Post-medieval	NHLE1085524
7	**Tyler Hill House** Grade II listed probable 18th century house of 2 storeys.	Post-medieval	NHLE1085561
8	**Blean House** Grade II listed early 19th century house of 3 storeys.	Post-medieval	NHLE1187070

Assess. (A) ref.	Description	Period	HER ref / NHLE ref. / site code
9	**St Edmund's School** Grade II listed mid-19th century school of 2 to 3 storeys, by P C Hardwick. The associated Grade II listed former headmaster's house, St Edmund's School, dating to 1897, is separately listed (NHLE1242648) and falls just outside the study area.	Post-medieval	NHLE1242647
10	**Beverley Farmhouse** Grade II listed 15th century timber-framed building, with east section of 16th or early 17th century in date. A large wing was added to the west in the 19th century. House is of 2 to 3 storeys.	Later medieval/post-medieval	NHLE1259931
11	**Moat House** Grade II listed house, dated to 1800 of 2 storeys.	Post-medieval	NHLE1336583
12	**Church Cottage** Grade II listed early 18th century house of 2 storeys.	Post-medieval	NHLE1336584
13	**Hothe Court** Grade II listed 16th century (or earlier) timber framed building of 2 storeys. Later refaced and restored in 18th century.	Post-medieval	NHLE1336585
14	**Father Courage** Grade II listed public sculpture and plinth, 'Father Courage' by F E McWilliam, dating to 1960.	Modern	NHLE1430801
15	**Hothe Court** LPA Conservation area. Hothe Court is located in an area known in the 14th century as La Hothe suggesting an area of heathland. Contains four Grade II listed buildings: Hothe Court (**A13**) and associated barn (**A6**), Moat House (**A11**) and Blean House (**A8**). 1–6 Hothe Court (mid to late 19th century cottages) and playing fields to the rear form part of the setting of the group (Canterbury City Council, 1994). No conservation area appraisal has been produced for this conservation area.	Post-medieval	
16	**Allcroft Grange (Hackington)** LPA Conservation area. The Grange is late 19th century. Built for local artist Thomas Sydney Cooper and designed by Richard Normal Shaw. One of the few examples in Kent of his work. Much of Little Hall Wood to the west of the Grange was replanted to make a Pinetum at the end of the 19th century, to be maintained as a place of beauty for interested people to enjoy (Canterbury City Council, 1995). No conservation area appraisal has been produced for this conservation area.	Post-medieval	
17	**Amery Court (Blean)** LPA Conservation Area. Amery Court is situated in the early settlement of North Blean which had its own lord but was subject to the chief lord of the manor of Cosmusblean. It consisted of a cluster of farmsteads probably within a forest clearing. The original manor has gone but the moat still survives. Cutballs Farm (now called Arbele) dates to the 15th/16th century on land	Later medieval Post-medieval	

Assess. (A) ref.	Description	Period	HER ref / NHLE ref. / site code
	farmed by the Cotebold family in the 13th & 14th centuries. Much of the forest has now been felled but the original field patterns survive, together with most of the boundary hedges and ditches. The meadows to the north form an important part of its setting (Canterbury City Council, 1995). No conservation area appraisal has been produced for this conservation area.		
18	**Blean Conservation Area** LPA Conservation Area. The conservation area covers the Grade II* listed Church of St Cosmus and St Damien (**A3**), with its comparatively unusual moated churchyard, the Grade II listed Church Cottage (**A12**) and the agricultural fields to the south and west of the church, part of which is a scheduled monument (**A1**) on the site of a former Roman villa and medieval manorial complex of Cosmusblean. The surviving features can still be identified, including the dam for the manorial fishpond and the associated channel dug in *c* 1200 (Canterbury City Council, 1994). No conservation area appraisal has been produced for this conservation area.	Roman Later medieval Post-medieval	
19	**Tyler Hill Conservation Area** LPA Conservation Area. The settlement was one of many which grew up on clearings in the Bean forest in the medieval period and it is still largely confined by the boundaries of the original forest clearing. The landscape in and around Tyler Hill is little changed. Location of the major medieval Tyler Hill pottery & tile industry (Canterbury City Council, 1995). No conservation area appraisal has been produced for this conservation area.	Later medieval onwards	
20	**Canterbury and Whitstable Railway including Hackington & Blean** LPA Conservation Area. Covers around 80% of the original route of the railway. The 'Crab and Winkle line' started operating in 1830 and was the first steam railway in the world, recognised in the Guinness Book of Records. The line and its first engine, Invincta, were engineered by George and Robert Stevenson (Canterbury City Council, 2000).	Post-medieval	
48	**No 9 Oakwell in the Blean** Locally listed building. Early 19th century house.	Post-medieval	MKE18517
49	**No 11 Oakwell Farmhouse** Locally listed building. Early 19th century farm house.	Post-medieval	MKE18518

3.2 UNDESIGNATED HERITAGE ASSETS / PAST INVESTIGATIONS

3.2.1. Table 3-3 is a gazetteer of undesignated heritage assets and past archaeological investigations within the Site (see **Figure 3**).

3.2.2. A total of 13 archaeological investigations have been conducted within the Site mainly comprising trial trench evaluation and watching briefs. Just one of these investigations included a full archaeological excavation (**A23**), in the south-western part of the Main Campus. Indeed, most of the past investigations were conducted within the Retained Main Campus, and mainly in the central part

of the campus. Given the limited nature of most of the previous archaeological investigations and their limited geographic coverage, the nature of archaeological activity is not well understood across much of the Site, especially for the prehistoric period for which there is no written record.

3.2.3. Six of the previous archaeological investigations within the Site found no archaeological finds or features (**A21**, **25**, **27**, **29**, **30**, **31**). However, as mentioned above, these investigations were fairly limited in scope so are not necessarily indicative of the archaeological potential of the wider area.

3.2.4. Within the southern part of the Main Campus, however, an archaeological evaluation followed by archaeological excavation at Turing College (**A23**) in 2009–2013 revealed evidence for prehistoric activity during the Bronze Age and Iron Age, as well as some later medieval evidence. The remains included a nationally significant Bronze Age water hole, along with cremation burials of the same date. The water hole is understood to have been part of the wider agricultural landscape of the Stour Valley in the late Bronze Age, a landscape that was characterised by livestock management with intermittent small settlements. The four cremation burials were provisionally dated to the late Bronze Age–early Iron Age transition period. There was also extensive evidence of settlement during the Iron Age, which included areas for textile production, pottery manufacture, and farming activity.

3.2.5. On the eastern side of the Main Campus, at Tyler Court, evaluation trenching (**A28**) in 1993 recorded medieval tile kilns overlain by further undefined linear features. Slightly east of this location, at the far western end of Site E, an archaeological watching brief (**A32**) in 1993 during installation of a service main recorded further evidence of medieval tile manufacture including a thick layer of ash and pottery interpreted as large extraction pits filled with industrial waste from the nearby tile kilns. The Kent Historic Environment Record (HER) also records 13th century Tyler Hill pottery (**A42**) having been found at Eliot College on the eastern side of the Main Campus.

3.2.6. Other potential archaeological features and finds were identified through geophysical survey (**A26**) in 2009 in the north-western part of Site B, close to St Cosmus and St Damian church (**A3**). These were described as four possible pits and a trackway. No further intrusive investigation has confirmed the nature of these anomalies. However, the National Mapping Project, a programme of aerial photography interpretation, has mapped an area of large enclosures including ring ditches, linear features and other features (**A47**) in this area, suggesting potential for further remains.

3.2.7. Further south, in Site A, an archaeological watching brief on geotechnical test-pitting (**A24**) in 2011 demonstrated the existence of a complex, geoarchaeologically significant sequence of buried ancient landforms.

3.2.8. Fieldwalking in 1991 (**A22**), which included a small part of the northern linear extension to the Retained Main Campus, recorded a burial soil containing calcified flints and carbon specks of possible archaeological nature.

3.2.9. The HER also records a number of findspots within the Site area, most notably 31 prehistoric flint tools (**A33**) dating from the early Mesolithic to the early Bronze Age and recorded as having been found on the western edge of Area B. However, these findspots were all taken from the Portable Antiquities Scheme (PAS) database which deliberately does not give a precise location for finds, so it is uncertain whether or not any of them were actually found within the Site. The same applies to the two Iron Age coins (**A41**), from the PAS, which are recorded on the HER as also having been found on the western side of Area B. However, the proximity of these finds to crop marks identified in the National Mapping Programme (**A26**), at least some of which are likely to be prehistoric in nature, eg the ring ditches (likely Bronze Age), makes it more likely that these finds may have come

from the Site or close by. Other finds recorded on the HER comprise a Roman coin and a Bronze Age axe (**A40**) found in the north-eastern part of the Main Campus.

3.2.10. The HER also records a number of features relating the WWII activity within the Site: the site of a former heavy anti-aircraft gun emplacement (**A36**) at Hothe Court in the southern part of Area D; the site of a Home Guard auxiliary unit operation base (**A38**) in the north-western part of the Retained Main Campus (it also records the approximate location of an auxiliary unit operation base – **A34** – in a similar location, but it is possible that this is the same as **A38**); and the site of a former temporary road block (**A37**) on the eastern side of the Main Campus, on what is now Giles Lane.

3.2.11. On the basis of this evidence and the rapid appraisal, within the Site there is a:

- High potential for Roman remains, of high/very high significance (settlement/villa remains) or medium significance (evidence of field systems) (low for isolated residual remains), particularly in Site B, in and around the scheduled monument (**A1**) which among other things marks the location of a Roman building/villa (**A44**);
- High potential for later medieval remains relating to the medieval Tyler Hill pottery industry, of high or very high significance, particularly in and around the scheduled monument (**A2**) marking the known location of kilns at the western end of Site E;
- High potential for later medieval remains relating to a deserted medieval settlement thought to have been located in the western part of Area B (part of which has been designated a scheduled monument – **A1**), in the vicinity of the Church of St Cosmus and St Damian. Settlement remains may be of high or very high significance (medium for agricultural remains);
- Moderate to high potential for prehistoric remains, of high significance (settlement/burial remains) (low for isolated residual remains);
- High potential for post-medieval remains (eg former field boundaries, a former quarry - **A35** - in Site E) of low significance;
- Moderate to high potential for modern (WWII) remains, particularly in the Retained Main Campus and Site D, of low significance; and
- Low potential for early medieval/Saxon remains.

Table 3-3 – Gazetteer of known historic environment assets (see Figure 3)

Assess. (A) ref.	Description	Period	HER ref / NHL ref. / site code
21	**University of Kent, Parkwood Site** Archaeological watching brief in 2004 by Canterbury Archaeological Trust (CAT). No archaeological features or artefacts were found.	NA	EKE10341
22	**Fieldwalking Broad Oak Water Phase 1** Fieldwalking by CAT in 1991. Recorded a burial soil containing calcified flints and carbon specks of possible archaeological nature west Tyler Hill. The buried soil was 0.8m below ground level and exposed in a stream bank.	Undated	EKE8139
23	**Turing College, University of Kent, Canterbury** Magnetometer survey carried out by University of Kent in 2009. Two areas of disturbance were identified, possibly relating to industrial activity. A later trial trench evaluation and excavation was carried	Bronze Age Iron Age Later medieval	EKE12454 EKE20452 EKE16449 MKE102212

Assess. (A) ref.	Description	Period	HER ref / NHL ref. / site code
	out by CAT in 2013. The evaluation revealed mostly Iron Age features, with some medieval. The excavation revealed Bronze Age and Iron age archaeology, including a nationally and regionally rare Bronze Age water hole, some cremation burials, and evidence of an early Iron Age settlement with areas for textile production, pottery manufacture, and later farming in the Middle Bronze age.		
24	**Chaucer Fields, University of Kent, Canterbury** Archaeological watching brief on geotechnical test-pitting by CAT in 2011. Demonstrated the existence of a complex, geoarchaeologically significant sequence of buried ancient landforms.	Undated	EKE19237
25	**Archaeological Evaluation at Darwin Field, Giles Lane, University of Kent, Canterbury** Archaeological trial trench evaluation by CAT in 2006. No archaeological features or deposits were encountered.	NA	EKE18509
26	**Land at St Cosmus and St Damian** Magnetometry survey by the University of Kent in 2009. Revealed four possible pits and a trackway of possible archaeological origin.	Undated	EKE12452 EKE12453
27	**Student Union Building, University of Kent** Evaluation by CAT in 1996. No archaeological finds or features were found.	NA	EKE8220
28	**Tyler Court, University of Kent** CAT evaluation in 1993 and later watching brief in 2003. The evaluation comprised 8 trenches, three of which found archaeological features dating to the medieval period (Tile Kilns). The later watching brief in the area found no archaeological finds or features.	Late medieval	EKE8224 EKE5914 MKE18116 MKE93303
29	**The Registry, University of Kent** Trial trench evaluation by CAT in 2002. Nothing of archaeological significance was encountered.	NA	EKE5913
30	**Site of the Proposed Law Clinic Building** CAT trial trench investigation in 2014. No archaeological finds or features recorded.	NA	EKE16396
31	**A290 (Between St Thomas Tower and Blean Reservoir), Canterbury** Watching brief by Kent Archaeological Projects in 2006 comprising monitoring of the topsoil strip across the easement of the pipeline route. No archaeological features or artefacts were found.	NA	EKE10342
32	**Tyler Hill Rising Main** CAT watching brief in 1993. Recorded prehistoric flint scatters, Roman pottery finds and number medieval features and finds. A thick layer of ash and medieval pottery was also found, though to be evidence of extensive medieval clay extraction pits back filled with industrial waste, ash, rejected pottery and tile etc from nearby kilns.	Prehistoric Roman Later medieval Post-medieval	EKE8210 MKE20019 MKE20020 MKE20021 MKE78234

Assess. (A) ref.	Description	Period	HER ref / NHL ref. / site code
33	**Land to the east of The Kiln Hill A290, Blean** HER point location for a high quantity of Portable Antiquities Scheme (PAS) findspots: 31 prehistoric flint lithic implement, dated from the early Mesolithic to early Bronze Age. The precise location of these finds is not known.	Mesolithic to Bronze Age	MKE57386 MKE57388 MKE57389 MKE57390 MKE57391 MKE57393 MKE57396 MKE57397 MKE57398 MKE57399 MKE57412 MKE57413 MKE57414 MKE57415 MKE57416 MKE57421 MKE57422 MKE57423 MKE57424 MKE57425 MKE57427 MKE57433 MKE57436 MKE57437 MKE57428 MKE57429 MKE57430 MKE57431 MKE57432 MKE57384 MKE57385
34	**Land north of Park Wood Road, University of Kent** Approximate site of WWII auxiliary unit operation base – no further information on HER entry.	Modern	MKE17231
35	**Little Hall Farm, Tyler Hill** Boundary marked, but not named on 1st Edition Ordnance Survey 6": mile map of 1872. Named 'Old Gravel Pits' by the time of the on 2nd edition and 3rd editions.	Post-medieval	MKE16570
36	**Land north of Tyler Hill Road, Hothe Court Farm** Location of WWII Heavy anti-aircraft gun emplacement immediately to the north of Hothe Court Farm.	Modern	MKE42715
37	**Giles Lane, Hackington University of Kent** Location of former WWII temporary road block on what is now Giles Lane, Hackington.	Modern	MKE42813
38	**Land north of Park Wood Road, University of Kent** Location of former WWII Home Guard Auxiliary unit operational base.	Modern	MKE42712
39	**Beverley Farm** Building survey of Grade II listed farm (**A10**) in 1983-4 in advance of proposed major structural and general refurbishment of the farmhouse. The earliest fabric, dating to the late 15th century, consisted mainly of the largely	Post medieval	MKE12800 MKE24889

Assess. (A) ref.	Description	Period	HER ref / NHL ref. / site code
	intact crown-post roof occupying the site of the hall of a 'Wealden'-type house. Both ends of the Wealden house were subsequently replaced by 17th and 19th century construction.		
40	**Giles Lane/Library Road, University of Kent** Findspot comprising a Roman copper alloy coin and a prehistoric bronze digging tool known as a palstave axe. The latter was found in the brick clay at Tyler Hill.	Bronze Age Roman	MKE5555 MKE57254
41	**Land 320m north-east of Tile Kiln Hill (A290)** Approximate PAS findspot of two Iron Age coins.	Iron Age	MKE57625 MKE57133
42	**Eliot College, University of Kent** Findspot for 13th century Tyler Hill pottery.	Medieval	MKE5009
43	**Harkness Drive, University of Kent** Findspot of Lower/Middle Palaeolithic flint artefacts including numerous handaxes and debitage (waste material producing from flint knapping), and a few Levallois flakes.	Palaeolithic	MKE91413
44	**Romano British building at St Cosmus and St Damian** Buried remains have been identified as a villa. The scatter of masonry visible in the plough soil suggests that it occupies the northern part of the scheduled monument (**A1**), in use during the first to third centuries AD.	Roman	MKE19894
45	**Deserted Medieval Settlement**, **St. Cosmus and St. Damian** Suggested extent of dispersed remains of medieval settlement, close to the site of the Church of St Cosmus and St Damian, and partly on the site of the Romano-British villa site (**A44**). A scheduled monument (**A1**).	Later medieval	MKE5568
46	**Canterbury and Whitstable Railway** Former line of the Canterbury and Whitstable Railway, the first public steam railway dated 1830-1953.	Post-medieval	MKE56539
47	**Church Cottage, 140m south of Tyler Hill Road, Hothe Court** Recorded cropmarks and enclosures as plotted by the National Mapping Project based on aerial photography. The features comprise a large rectilinear enclosure (east of Church Cottage) with ring ditches, linear features and potential undefined features in the same field.	Prehistoric? Roman?	MKE5573

4 FACTORS AFFECTING ARCHAEOLOGICAL SURVIVAL

4.1 GEOLOGY

4.1.1. Table 4-1 indicates the geology type. Geology can provide an indication of suitability for early settlement. It can also provide an indication of the potential depth of buried heritage assets. Archaeological features (pits, ditches) may be within the subsoils and cut into the top of the underlying geology, and also buried within deposits such as alluvium and undated made ground.

Table 4-1 – Geology and archaeological potential

Geology type	Comment	Present on Site
Gravel	Gravels provide well drained and fertile soils, and would have been conducive to early settlement and farming.	Approximately 50% of the Retained Main Campus
Clay	Clay would not have been a first choice for early settlement and farming and generally has lower archaeological potential prior the post-medieval period.	Across large parts of the Retained Main Campus, Site B, Site E and Site F. Small part of the other areas of the Site
Other	Suitability for early settlement and farming uncertain.	Head is found across the majority of Site A, Site C and Site D, and parts of the other areas of the Site also. Sand (bedrock) at far southern extent of the Site
Made ground	Modern made ground will be archaeologically sterile. Undated made ground may contain archaeological remains.	Made ground will be present across large parts of the Retained Main Campus and in location of the two scheduled monuments within the Site (Site B and Site E)

4.2 PAST LAND USE

4.2.1. Table 4-2 has used Ordnance Survey mapping from the 1st edition onwards to identify past land use and impacts which may have compromised the survival of any archaeological remains that might be present.

Table 4-2 – Past land use and factors affecting archaeological survival

Past impact	Description	Presence and approximate proportion of Site
Standard strip/pad/raft foundations	Ordnance Survey maps show the presence of buildings predating the mid-20th century on the Site. These are likely to have strip or pad footings which will have removed any archaeological remains locally within the footprint of each construction, typically to a depth of 1.0–1.5 metres below ground level. Archaeological remains, if present, potentially survive between and beneath these localised impacts. If alluvium and made ground is present (see table 4), depending on the depth of these deposits, archaeological remains may survive intact beneath the foundations. Footings of buildings pre-dating the early 20th century are potentially of archaeological interest.	5–10%, all in the Retained Main Campus
Piled foundations	Ordnance Survey maps show the presence of large buildings of mid-20th century and later date on the Site. These may have had piled foundations (alternatively they had strip/pad/raft foundations: see above) Piling will have removed any archaeological remains within the footprint of each pile. The severity of the impact would depend on the pile type, pile size and pile density. A dense piling layout may mean that surviving archaeological assets (potentially preserved between each pile) are effectively inaccessible in terms of any archaeological investigation. Pile caps would have caused additional impact, typically to 1.0–1.5 metres below ground level.	5–10%, all in the Retained Main Campus
Basements	Ordnance Survey maps show the presence of buildings on the Site. It is not known whether these had basements, the construction of which is likely to have removed any archaeological remains within its footprint. If alluvium and made ground is present (see table 4), depending on the depth of the basement in relation to the depth of these deposits, archaeological remains may survive intact beneath the basement slab.	5–10%, all in the Retained Main Campus
Services/ utilities trenches	The presence and extent of service/utilities/drainage trenches on the Site is not known. These will have removed any archaeological remains locally within the footprint of each trench, typically to a depth of 1.0–2.0 metres below ground level. If alluvium and made ground is present (see table 4), depending on the depth of these deposits in relation to the depth of the trench, archaeological remains may survive intact.	Less than 5%, mainly in the Retained Main Campus
Quarrying	Ordnance Survey maps show quarrying on the Site. Any archaeological remains pre-dating the quarry will have been entirely removed.	Less than 1%, in Site E and possible also east side of Site B

Past impact	Description	Presence and approximate proportion of Site
	Quarry structures pre-dating the 20th century may be present, and potentially of archaeological interest.	
Ground raising	Ordnance Survey maps show hachures and/or Ordnance Datum levels that suggest artificial ground raising within the Site. This will have buried but not removed potential archaeological remains.	Less than 10%, in Retained Main Campus
Terracing	Ordnance Survey maps indicate a natural slope. Hachures and/or Ordnance Datum levels that suggest terracing or cutting on the Site. This is likely to have partially or completely removed any archaeological remains present within the area of ground disturbance.	Less than 10%, in Retained Main Campus
Open land (rural)	Ordnance Survey maps from the 1st edition map to the present day show that all/the majority of the Site has never been built on. Archaeological survival potential is therefore likely to be high. If the Site is currently arable cultivation, ploughing is likely to have reworked the upper 0.3 metres of the ground. Archaeological remains may have been truncated, but not removed.	All of Site A, Site C, Site D and Site F, and over 95% of Sites B and Site E
Woodland	Ordnance Survey maps consulted show woodland on the Site. Root action from trees is likely to have caused extensive disturbance to archaeological remains, typically to a depth of up to 1.5 metres below ground level.	15%, almost all in Retained Main Campus
Lakes / ponds	Artificial lakes/pond may be water filled quarries. Any archaeological remains pre-dating the lake/pond/quarry excavation will have been entirely removed. Natural lakes/ponds have potential for alluvium which might contain palaeoenvironmental remains (eg pollen) and/or well preserved organic remains. Lakes/ponds created as part of a designed landscape (historic park) would potentially be of archaeological interest.	Less than 1%, mainly in Retained Main Campus

5 IMPACTS, MITIGATION AND MANAGEMENT

5.1 BUILT/DESIGNATED HERITAGE ASSETS

5.1.1. The Site is **high risk** in terms of physical impacts to statutorily designated heritage assets.

5.1.2. The Site (defined as the Retained Main Campus and Sites A–E) contains seven nationally designated (protected) heritage assets, comprising two scheduled monuments of very high significance, a Grade II* listed building of very high significance and four Grade II listed structures of high significance:

- Dispersed medieval settlement remains and a Roman building immediately southwest of St Cosmus and St Damian's Church (scheduled monument), located on the western side of Site B;
- Part of the Tyler Hill medieval pottery and tile industry (scheduled monument), which extends into approximately 40% of Site E;
- Hothe Court, a 16th century timber framed building (listed Grade II) along with an adjoining 17th century barn (listed Grade II), located in the north-western part of the Retained Main Campus;
- Father Courage, a mid-20th century sculpture (listed Grade II) and the 19th century Tyler Hill Railway tunnel and portals (listed Grade II*) south of Giles Lane, located in the eastern part of the Retained Main Campus; and
- Beverley Farmhouse (listed Grade II), a 15th century timber framed building, located in the south-western part of the Retained Main Campus.

5.1.3. The Site also lies within the boundary of six Conservation Areas, as designated by the Local Planning Authority:

- Hothe Court, which extends into the north-western edge of the Retained Main Campus;
- Allcroft Grange (Hackington), which includes the whole of Site F;
- Amery Court (Blean) a tiny part of which extends into the south-eastern edge of Site C and the western edge of Site D;
- Blean, which extends into the western side of the Site B, a small part of the Retained Main Campus (in the north-west corner) and a tiny part of Site C (the south-east extension);
- Tyler Hill, which extends across the whole of Site E and lies adjacent to the western and north-eastern edges of Site F; and
- Canterbury and Whitstable Railway including Hackington and Blean, which includes the northern extension of the Retained Main Campus and lies adjacent to the eastern edge of Site D.

5.1.4. In addition to the assets within the Site, there are six listed buildings within 200m of the Site. These include the Grade II* listed 13th century Church of St Cosmus and St Damian, of very high heritage significance, and the Grade II Church Cottage, of high heritage significance, which lie adjacent to Site B. There are also further designated assets in the wider area, whose setting may be a material consideration.

5.1.5. There will be a physical impact on the scheduled monuments and listed buildings within the Site where any below ground works extend into the constraints area for either scheduled monument or into the curtilage of any of the listed buildings. Currently, no new buildings are proposed within these areas, but there may be physical impacts from hard and soft landscaping and from vibration on listed buildings during any construction nearby and during the construction and operation of the

proposed new access road which would pass close to the two Grade II listed buildings at Hothe Court in the Retained Main Campus and the Grade II listed Blean House just outside the Site.

5.1.6. The Site is **high risk** in respect of potential impacts to the setting of nearby statutorily and locally designated heritage assets, through the introduction of a significant quantity of built form into the primarily rural landscapes in Sites A – F, additional built form within the Retained University Campus, and the proposed new access road running from north-east to south-west through Site B and the north-western part of the Retained Main Campus.

5.2 BURIED HERITAGE ASSETS

5.2.1. The risk is assessed as **high** in terms of the presence of significant archaeological remains. As detailed above, the Site contains two scheduled monuments (in Site B and Site E), both designated due to their potential for archaeological remains of very high heritage significance. Significant remains, dating most particularly to the Bronze Age and Iron Age, have been found on the gravel geology within the central part of the Main Campus, while evidence of the former medieval Tyler Hill pottery industry has been found in a number of locations on the eastern side of the Site, most particularly in the area marked by a scheduled monument, part of which extends into Site E. Further significant earthwork remains thought to relate to a possible Roman villa and later deserted medieval settlement, combined with ring ditches and enclosures identified from aerial photographs, some of which are suggestive of prehistoric activity, have been identified in and around the scheduled monument located on the western side of Site B.

5.2.2. Furthermore, Sites A–C are primarily greenfield, while significant parts of the Retained Main Campus have not previously been built on according to historic Ordnance Survey map evidence. Archaeological survival is therefore likely to be high across the majority of the Site (80%); low to moderate within the footprint of the existing buildings, virtually all of which are within the Retained Main Campus, and within the footprint of existing services/utility trenches, trees, modern roads and historic quarries, which will have reduced survival locally.

5.2.3. Based on this preliminary appraisal, therefore, the greatest archaeological potential (high) is for archaeological remains from the prehistoric period, Roman and later medieval periods, particularly on the western side of Site B and, in terms of later medieval remains of the Tyler Hill pottery industry, in Site E and the eastern side of the Retained Main Campus. Remains from these periods, if present, would potentially be of medium or high/very high heritage significance, depending on their survival, nature and extent, though low for isolated residual remains. There is also moderate to high potential for evidence of the agricultural use of the Site in the post-medieval period (in the form of pits and ditches) and of the footings of WWII structures known to have been present within Retained Main Campus and Site D, of low heritage significance.

5.2.4. The proposed construction of new buildings across the Site, excavation for new services and any cut below ground level for hard and soft landscaping and/or the proposed new access road would truncate or completely remove any archaeological remains within their footprint, the severity of the impact depending on the depth of these below ground intrusions. Given that Sites A–C are primarily greenfield, while significant parts of the Retained Main Campus have not previously been built on, any archaeological remains in these areas are likely to lie just below the topsoil.

5.3 RECOMMENDATIONS

5.3.1. A Historic Environment Desk Based Assessment (HEDBA) would be required to support a planning application. This would assess the impact of any proposals on the setting of selected designated heritage assets within and beyond the Site and would aim to quantify the potential and significance of buried heritage assets within the Site, and how such assets would be affected by the proposed development.

5.3.2. National planning policy requires LPAs to take account of the desirability of sustaining and enhancing the significance of heritage assets when determining planning applications.

BUILT HERITAGE/DESIGNATED HERITAGE ASSETS

5.3.3. Considering the sensitivity of the Site, it is recommended that a heritage consultant is engaged to advise at the earliest stages of design and throughout the design process, to ensure that proposals minimise harm to the historic environment and where possible maximise opportunities to enhance the significance of nearby heritage assets through considered design.

5.3.4. In addition to a HEDBA, a Heritage Statement would be required to support a planning application. This would assess the impact of any proposals on the designated assets within the Site, and on the character and appearance of the conservation areas which extend into the Site.

5.3.5. Prior written permission, known as Scheduled Monument Consent (SMC), is required from the Secretary of State for works physically affecting a scheduled monument. Such works include landscaping. SMC is separate from the statutory planning process. It is, however, recommended that no works physically impacting either monument are proposed. It is unlikely that SMC would be given.

ARCHAEOLOGY

5.3.6. Given the size of the Site, the high archaeological survival potential across the majority of the Site, and the potential for significant archaeological remains, most particularly in the vicinity of the two scheduled monuments, it is thought that archaeological field evaluation will almost certainly be requested by the LPA, most likely pre-determination. The evaluation is most likely to comprise two phases: a geophysical survey followed by targeted trial trenching.

5.3.7. Highly significant archaeological remains, whether designated or not, normally require preservation *in situ*. This clearly has implications regarding the granting of planning permission and can represent a significant constraint to any proposed scheme design, which should respect, retain and protect the remains. If the Site has the potential to affect suspected remains of national significance, the LPA and Historic England may require preliminary site-based evaluation prior to the determination of a planning application. This ensures that the LPA retains the option of preservation *in situ* if such assets are found to be present.

5.3.8. Given the sensitivity of the Site, it is recommended that the LPA archaeological advisor is consulted as early as possible and that sufficient time (eg 6 months) is left in the programme for this work. Carrying out the evaluation at the earliest opportunity would help to de-risk the Site.

5.3.9. Depending on the results of the evaluation, further archaeological work may be required to mitigate the impact of the scheme. This might include the preservation *in situ* of remains of very high (national) significance, ie through modifications in design, with such remains most likely to be found within and around the scheduled monuments within the Site. Where this is not necessary, mitigation

normally comprises preservation by record through targeted archaeological excavation or by watching brief(s) during groundworks for remains of lesser significance.

Appendix A

PLANNING POLICY

Confidential

PLANNING FRAMEWORK

NATIONAL PLANNING POLICY FRAMEWORK

The Government issued a revised version of the National Planning Policy Framework (NPPF) in February 2019 (MHCLG 2019) and supporting revised Planning Practice Guidance in 2018 (MHCLG 2018).

The purpose of the planning system is to contribute to the achievement of sustainable development, and the NPPF has a presumption in favour of such, where it meets needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development is achieved within the context of economic, social and environmental objectives.

Section 16 of the NPPF deals with 'Conserving and Enhancing the Historic Environment'. The NPPF recognises that heritage assets are an irreplaceable resource which 'should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations' (para 184).

The NPPF requires the significance of heritage assets to be considered in the planning process, whether designated or not. NPPF Section 16 is reproduced in full below:

> ***Proposals affecting heritage assets***
>
> ***Para 184****. Heritage assets range from sites and buildings of local historic value to those of the highest significance, such as World Heritage Sites which are internationally recognised to be of Outstanding Universal Value [footnote: Some World Heritage Sites are inscribed by UNESCO to be of natural significance rather than cultural significance; and in some cases they are inscribed for both their natural and cultural significance]. These assets are an irreplaceable resource, and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations [Footnote: The policies set out in this chapter relate, as applicable, to the heritage-related consent regimes for which local planning authorities are responsible under the Planning (Listed Buildings and Conservation Areas) Act 1990, as well as to plan-making and decision-making].*
>
> ***Para 185.*** *Plans should set out a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. This strategy should take into account:*
>
> *a) the desirability of sustaining and enhancing the significance of heritage assets, and putting them to viable uses consistent with their conservation;*
>
> *b) the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;*
>
> *c) the desirability of new development making a positive contribution to local character and distinctiveness; and*
>
> *d) opportunities to draw on the contribution made by the historic environment to the character of a place.*

Para 186. *When considering the designation of conservation areas, local planning authorities should ensure that an area justifies such status because of its special architectural or historic interest, and that the concept of conservation is not devalued through the designation of areas that lack special interest.*

Para 187. *Local planning authorities should maintain or have access to a historic environment record. This should contain up-to-date evidence about the historic environment in their area and be used to:*

a) assess the significance of heritage assets and the contribution they make to their environment; and

b) predict the likelihood that currently unidentified heritage assets, particularly sites of historic and archaeological interest, will be discovered in the future.

Para 188. *Local planning authorities should make information about the historic environment, gathered as part of policy-making or development management, publicly accessible.*

Para 189. *In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.*

Para 190. *Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal.*

Para 191. *Where there is evidence of deliberate neglect of, or damage to, a heritage asset the deteriorated state of the heritage asset should not be taken into account in any decision.*

Para 192. *In determining applications, local planning authorities should take account of:*

a) the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conversation;

b) the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and

c) the desirability of new development making a positive contribution to local character and distinctiveness.

Considering potential impacts

Para 193. *When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the*

more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.

Para 194. *Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of:*

a) grade II listed buildings, or grade II registered parks or gardens, should be exceptional;

b) assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and grade II listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional. (footnote: Non-designated heritage assets of archaeological interest, which are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets].*

Para 195. *Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:*

a) the nature of the heritage asset prevents all reasonable uses of the site; and

b) no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and

c) conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and

d) the harm or loss is outweighed by the benefit of bringing the site back into use.

Para 196. *Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use.*

Para 197*. The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.*

Para 198*. Local planning authorities should not permit the loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred.*

Para 199. *Local planning authorities should require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible [footnote: Copies of evidence should be deposited with the relevant historic environment record, and any archives with a local museum or other public depository]. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.*

Para 200. *Local planning authorities should look for opportunities for new development within Conservation Areas and World Heritage Sites, and within the setting of heritage assets, to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to the asset (or which better reveal its significance) should be treated favourably.*

Para 201*. Not all elements of a Conservation Area or World Heritage Site will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 195 or less than substantial harm under paragraph 196, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole.*

Para 202. *Local planning authorities should assess whether the benefits of a proposal for enabling development, which would otherwise conflict with planning policies but which would secure the future conservation of a heritage asset, outweigh the disbenefits of departing from those policies.*

The web-based National Planning Policy Guidance (https://www.gov.uk/government/collections/planning-practice-guidance) provides supporting information in respect of conserving and enhancing the historic environment.

LOCAL POLICY

The Canterbury District Local Plan was adopted by Canterbury City Council in July 2017 and sets out plans to develop Canterbury District until 2031. Policies HE1, HE4, HE6 and HE8 are of most relevance.

Policy HE1 Historic Environment and Heritage Assets:

The City Council will support proposals which protect, conserve and enhance the historic environment and the contribution it makes to local distinctiveness and sense of place. Proposals that make sensitive use of historic assets through regeneration and reuse, particularly where these bring redundant or under-used buildings and areas into an appropriate use, will be encouraged.

Development must conserve and enhance, or reveal, the significance of heritage assets and their settings. Development will not be permitted where it is likely to cause substantial harm to the significance of heritage assets or their setting unless it is necessary to achieve substantial public benefit that would outweigh the harm or loss, or all of the following apply:

- *the nature of the heritage asset prevents all reasonable uses of the site; and,*
- *no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and,*
- *conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible; and,*
- *the harm or loss is outweighed by the benefit of bringing the site back into use.*

Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.

Any development affecting directly, or the setting of, a listed or locally listed building, Conservation Area, Scheduled Monument, registered park or garden, historic landscape, or archaeological site will be required to submit a Heritage Statement with any Planning Application. The statement will need to outline and provide evidence as to the significance of the heritage asset including its setting, the likely impact of the development upon it and be proportional to the importance of the said heritage asset.

Should permission be granted for the removal of part or all of a heritage asset the City Council will not permit the removal or demolition of the heritage asset until it is proven that the approved replacement development will proceed.

Policy HE4 Listed Buildings:

Alterations and extensions to listed buildings and development affecting the setting of listed buildings and locally listed buildings should preserve and enhance their character and appearance and the special features for which they are designated. These features can include curtilage buildings, structures, spaces and the landscape setting that are integral to their character and important views within, of, into and out of the area or site.

Development that would have an adverse impact on their special historic or architectural interest, or their setting, will not normally be permitted.

The re-use of listed buildings, including locally listed buildings, will be encouraged where that use (the optimum viable use) is demonstrated to be compatible with the character, appearance, fabric, interior and setting of the building.

Listed buildings including those on the local list should be retained wherever possible. Substantial harm to or demolition of listed buildings, including curtilage listed buildings and locally listed buildings will only be permitted in exceptional circumstances. Where an application will lead to substantial harm or total loss of significance to the heritage asset, consent will be refused unless it can be demonstrated that:

- *The substantial or loss of significance is necessary to deliver substantial public benefits that outweigh the harm; or*
- *The nature of the heritage asset prevents all reasonable uses of the site; and*
- *No viable use can be found in the medium term; and*
- *Conservation through grant funding is not possible; and*
- *The harm to or loss of the asset is outweighed by the public benefits of bringing the site back into use.*

Applications for new works to listed buildings will be carefully assessed. Extensions will be required to be of an appropriate scale and design and in materials that retain the special interest of the original building. The character and significance of the building should not be diminished by over-restoration. Existing architectural or historic features including internal features should be retained as they are important to the character of the building.

Policy HE6 Conservation Areas:

Development within a conservation area should preserve or enhance its special architectural or historic character or appearance.

Development, in or adjoining a conservation area, which would enhance its character, appearance, or setting will normally be permitted. Important features or characteristics, which contribute to its special character and setting, that need to be protected, include; plan form, buildings, architectural features, built form, archaeological sites, materials, trees, streets and spaces and the relationships between these features.

New development in a conservation area should aim to preserve and enhance the character and local distinctiveness of the historic environment and respect its surroundings in terms of height, massing, volume, scale, form, materials, details, roofscape, plot width and the design of any new pedestrian, cycle or vehicular access.

Development within, affecting the setting of, or views into and out of, a conservation area, as shown on the Proposals Map and all Insets, should preserve or enhance all features that contribute positively to the area's character, appearance or setting.

Particular consideration will be given to the following:

a. The retention of buildings, groups of buildings, existing street patterns, historic building lines and ground surfaces;

b. Retention of architectural details that contribute to the character or appearance of the area;

c. The impact of the proposal on the townscape, roofscape, skyline, landscape and the relative scale and importance of buildings in the area;

d. The need to protect trees and landscape;

e. The removal of unsightly and negative features; and

f. The need for the development.

Policy HE8 Heritage Assets in Conservation Areas:

The City Council has a presumption in favour of the conservation of heritage assets. The more significant the asset, the greater the presumption in favour of conservation and the greater the justification required for its alteration. Proposals involving substantial harm to designated heritage assets within a conservation area will normally be refused unless it can be shown that the harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all the other criteria in Policy HE1 apply. If the proposal will lead to less than substantial harm to the significance of a heritage asset, or the building, or the element affected does not contribute to the significance of the area, the harm will be weighed against the public benefits of the proposal.

Appendix B

REFERENCES

Confidential

PUBLISHED AND DOCUMENTARY SOURCES

Canterbury City Council, December 2000 (revised December 2009), Canterbury and Whitstable Railway Conservation Area Appraisal

Canterbury City Council, July 2017, *Canterbury District Local Plan*

Canterbury City Council, February 1995, *Agenda Item No 4, Planning Committee, Proposed Conservation Area Extension at Tyler Hill and New Conservation Area at Allcroft Grange*

Canterbury City Council, February 1995, *Agenda Item No 4, Planning Committee, Proposed Conservation Area at Amery Court, Blean*

Canterbury City Council, September 1994, *Planning Committee, Report to Director of Planning, Proposed Conservation Areas at Blean and Hothe Court*

CIfA [Chartered Institute for Archaeologists] Dec 2014a, *Standards and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment*, Reading.

CIfA [Chartered Institute for Archaeologists] Dec 2014b, *Standards and guidance for historic environment desk-based assessment*, Reading

CIfA [Chartered Institute for Archaeologists] Dec 2014c, *Standards and guidance for the archaeological investigation and recording of standing buildings or structures*, Reading

Historic England, 2016 *The setting of heritage assets. Historic Environment Good Practice Advice in Planning Note 3*.

Historic England, 2017 *Conservation principles, policies and guidance. Consultation Draft*. Swindon

Landscape Institute and Institute of Environmental Management and Assessment (2013) *Guidelines for Landscape and Visual Impact Assessment 3rd Edition* (GLVIA3)

MHCLG 2019 [Ministry of Housing, Communities and Local Government], February 2019 *National Planning Policy Framework*

MHCLG 2018 [Ministry of Housing, Communities and Local Government], July 2018 *Conserving and Enhancing the Historic Environment: Planning Practice Guide*

OTHER SOURCES

British Geological Survey

Historic Environment Record

Historic England designation data

https://mapping.canterbury.gov.uk/webapps/Planning_information/ accessed 28.04.2021

Internet – web-published sources

CARTOGRAPHIC SOURCES

Ordnance Survey mapping from the 1st edition to the present day.

Appendix C

FIGURES

Confidential

Date Modified:

Drawn By: UKJXS010 26-03-19

Site C

Site D

Site B

Site A

Site E

Site F

Northern extension to retained main campus

Retained main campus

Well Court

Langton Lodge

Butlers Farm

Little Well Farm

Brittoncourt Farm

Honey Wood

Great Hall Wood

Tyler Hill

Hothe Lodge

Hothe Court Farm

Church Cottage

Aycroft Grange

Little Hall Wood

Eastingdown

Little Hall Farm

Hales Place

St Stephen's

Rough Common

Stock Wood

Neal's Place

Bleane Hill

A290

Giles Lane

Rough Common Road

St Thomas Hill

Whitstable Road

Canterbury Hill

St Stephen's Hill

Beacon Acres Road

Beaconsfield Road

St Stephen's Road

Broad

Sturry Road

B2248

Canterbury

Kent

Margate

Canterbury

Dover

Contains OS data © Crown Copyright and database right 2020

WHITSTABLE

Swalecliffe

Chestfield

Sturry

Fordwich

CANTERBURY

Contains Ordnance Survey data © Crown copyright and database right 2021.

0 50100 200 300 400 500

Meters

File: T:\KENT\Stour Park, Ashford 70056115\B Report\6 Figs

wsp

TITLE:

University of Kent
Heritage Constraints Appraisal

FIGURE No:

FIGURE 1
Site location

Date Modified:

Drawn By:

File:

0 100 200 400 600 800 1,000 Meters

Site D

Site C

Site B

Northern extension to retained main campus

Retained main campus

Site F

Site E

Site A

Key

- Listed building (within 200m)
- Locally listed building (within 200m)
- Site boundary
- Scheduled monument (within 200m)
- Conservation area
- 200m study area (listed buildings)
- World Heritage Site

Contains Ordnance Survey data © Crown copyright and database right 2021.

wsp

TITLE:

University of Kent
Heritage Constraints Appraisal

FIGURE No:

FIGURE 2
Designated Heritage Assets within 200m study area and World Heritage Sites

Date Modified:

Drawn By:

File:

0 50 100 200 300 400 500 Meters

Site C

Site D

Site B

Northern extension to retained main campus

Site F

Site E

Retained main campus

Site A

Walnut Tree Farm

Butlers Court Farm

Little Well Farm

Brittoncourt Farm

Honey Wood

Great Hall Wood

Tyler Hill

Hothe Lodge

Hothe Court Farm

Church Cottage

Blean

Blean Common

Blean Hill

Aldcroft Grange

Little Hall Wood

Eastingdown

Little Hall Farm

Calais Hill

Canterbury Hill

Giles Lane

St Thomas Hill

Beaconsfield Road

Hales Place

St Stephen's Hill

Neal's Place

Common

A290

31

32

Key

- Past investigation (point location)
- Past investigation (area known)
- Past investigation (linear)
- Archaeological feature/findspot (point location)
- Archaeological feature/findspot (area known)
- Archaeological feature/findspot (linear)
- Site boundary

Contains Ordnance Survey data © Crown copyright and database right 2021.

wsp

TITLE:

University of Kent
Heritage Constraints Appraisal

FIGURE No:

FIGURE 3
Past archaeological investigations and features/findspots on the site

4th Floor
6 Devonshire Square
London
EC2M 4YE

wsp.com

CONFIDENTIAL

APPENDIX D

Minerals Assessment

TECHNICAL NOTE 1

DATE:	16 April 2021	**CONFIDENTIALITY:**	Confidential
SUBJECT:	Mineral Resource Assessment		
PROJECT:	University of Canterbury, Kent	**AUTHOR:**	E Morgan
CHECKED:	C Smith	**APPROVED:**	D Watts

TERMS OF REFERENCE

WSP UK Limited (WSP) were instructed by Avison Young on behalf of the University of Kent (UoK) to provide a Mineral Resource Assessment in line with requirements of the Canterbury District Local Plan and the Kent Minerals and Waste Local Plan (MWLP). The assessment is to provide support as part of the planning and disposal strategy of approximately 125hectares (ha) of UoK land which will then be redeveloped into mixed end-uses.

DEVELOPMENT PROPOSALS AND BACKGROUND

The UoK's current landholdings comprise approximately 230ha of land within and around its campus near Canterbury. Approximately 125ha of this land has been identified for divestment for purposes of non-university development, the remaining land would be retained by UoK for the university's higher educational purposes.

The proposed areas of divestment have been divided into six subsections (A-F). A summary of the site area and proposed redevelopment details is provided in Table 1.

Table 1: Summary of Divestment Sites

Site	Site Size (hectares)	Proposed Redevelopment
A	5.6	Proposed for use for higher education and / or associated uses including commercial employment and/or a conference facility.
B	93	Proposed for residential development of approximately c. 2500 homes and associated uses.
C		
D		
E	8.1	Proposed for use for mixed use development comprising housing, higher education and /or associated student housing and commercial employment.
F	18.4	

TECHNICAL NOTE 1

DATE:	16 April 2021	**CONFIDENTIALITY:**	Confidential
SUBJECT:	Mineral Resource Assessment		
PROJECT:	University of Canterbury, Kent	**AUTHOR:**	E Morgan
CHECKED:	C Smith	**APPROVED:**	D Watts

Insert 1: Aerial overview of Divestment areas

SCOPE OF ASSESSMENT

Given that areas of the development have been identified to lie within Mineral Safeguarding Areas (MSA) as part of the planning and disposal strategy it is required to produce a Mineral Resource Assessment (MRA) to identify whether the proposed non-mineral development will cause unnecessary sterilisation of mineral resources. This assessment will include:

- An assessment of the geological information underlying the site from geological maps and a review of any pertinent available borehole data;
- Commentary on whether the proposal can be modified to avoid sterilisation of any mineral resources;

TECHNICAL NOTE 1

DATE:	16 April 2021	**CONFIDENTIALITY:**	Confidential
SUBJECT:	Mineral Resource Assessment		
PROJECT:	University of Canterbury, Kent	**AUTHOR:**	E Morgan
CHECKED:	C Smith	**APPROVED:**	D Watts

- Consideration of whether the mineral resource is of value or potential to warrant safeguarding;
- Where there is an overriding need for the development which outweighs safeguarding or prior extraction of the mineral deposit; and,
- Assessment of whether it is feasible and viable to extract the mineral resource.

SOURCES OF INFORMATION

The following relevant sources of information were used to produce this technical note:

- Canterbury District Council, Local Plan (adopted 2017);
- Kent County Council, Minerals and Waste Local Plan 2013 to 2030, adopted September 2020.
- British Geological Survey (BGS) Onshore GeoIndex (https://mapapps2.bgs.ac.uk/geoindex/home.html) – geology mapping and BGS borehole records.
- BGS Sheet 289 Canterbury and Sheet 273 Faversham, Scale 1:50,000, Solid and Drift.

LIMITATIONS

This mineral assessment is addressed to and may be relied upon by UoK and may not be relied upon or transferred to any other parties without the express written agreement of WSP.

This technical note should be read and used in full. No responsibility will be accepted where this report is used, in its entirety or in part, by any other party. WSP cannot and will not be held liable for third party information.

LOCAL MINERAL DESIGNATION

The Canterbury District Local Plan states that the Kent MWLP is adopted and should be utilised.

The Kent MWLP provides the overarching strategy and planning policies for mineral extraction and the spatial implication of economic, social and environmental change in relation to strategic minerals and waste planning.

Development Management (DM) Policy 7 states the following regarding safeguarding Mineral Resources:

" Planning permission will only be granted for non-mineral development that is incompatible with minerals safeguarding,(106) where it is demonstrated that either:

1. the mineral is not of economic value or does not exist; or

2. that extraction of the mineral would not be viable or practicable; or

3. the mineral can be extracted satisfactorily, having regard to Policy DM9, prior to the non-minerals development taking place without adversely affecting the viability or deliverability of the non-minerals development; or

4. the incompatible development is of a temporary nature that can be completed and the site returned to a condition that does not prevent mineral extraction within the timescale that the mineral is likely to be needed; or

5. material considerations indicate that the need for the development overrides the presumption for mineral safeguarding such that sterilisation of the mineral can be permitted following the exploration of opportunities for prior extraction; or

6. it constitutes development that is exempt from mineral safeguarding policy namely householder applications, infill development of a minor nature in existing built up areas, advertisement applications, reserved matters applications, minor extensions and changes of use of buildings, minor works, non-material amendments to current planning permissions; or

7. it constitutes development on a site allocated in the adopted development plan where consideration of the above factors (1-6) concluded that mineral resources will not be needlessly sterilised."

Policy DM 9 of the plan relates to prior extractions and states:

"Planning permission for, or incorporating, mineral extraction in advance of development will be granted where the resources would otherwise be permanently sterilised provided that:

1. the mineral extraction operations are only for a temporary period; and,

2. the proposal will not cause unacceptable adverse impacts to the environment or communities

Where planning permission is granted for the prior extraction of minerals, conditions will be imposed to ensure that the site can be adequately restored to a satisfactory after-use should the main development be delayed or not implemented."

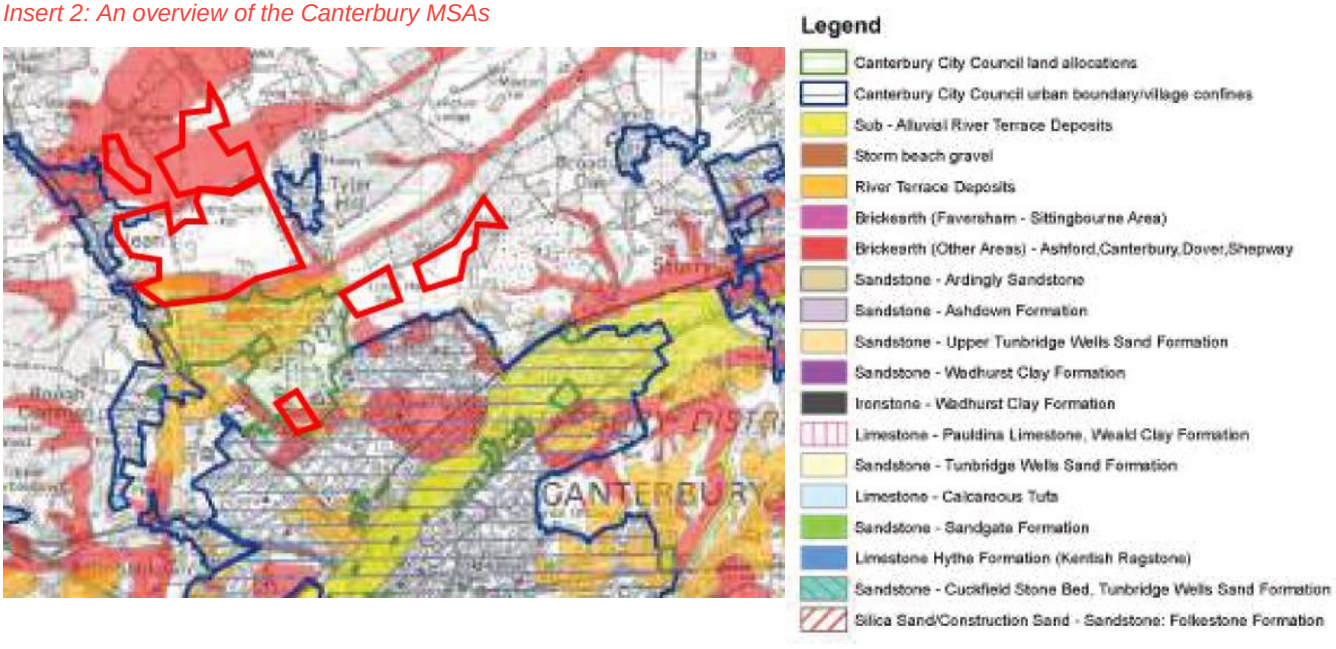
The Kent MLWP is in place to ensure that valuable mineral resources are not unnecessarily sterilised, and that where non-mineral development is permitted that due consideration is given to ensuring that appropriate investigation is undertaken to establish if viable mineral deposits can be recovered as part of the development process (i.e. from prior extraction). However, there is also an acknowledgement in the MLWP that development shall be permitted to effectively sterilise the mineral where merits of the development outweigh the safeguarding.

An overview of the Canterbury Mineral Safeguarding Areas (MSA) as shown in the Kent MLWP in relation to the development areas is presented as Insert 2. It demonstrates the following within each development area:

- Area A: the MSA for Brickearth is shown within the central and southern portion of the area;

- Area B: The southern strip of the area is within an MSA for River Terrace Deposits and Brickearth.
- Area C: The entire area is within an MSA for Brickearth.
- Area D: The entire area excluding the northern portion is within the MSA for Brickearth.
- Area E: The site is not within an MSA.
- Area F: The site is not within an MSA.

Insert 2: An overview of the Canterbury MSAs



RESOURCE QUALITY AND AVAILABILITY

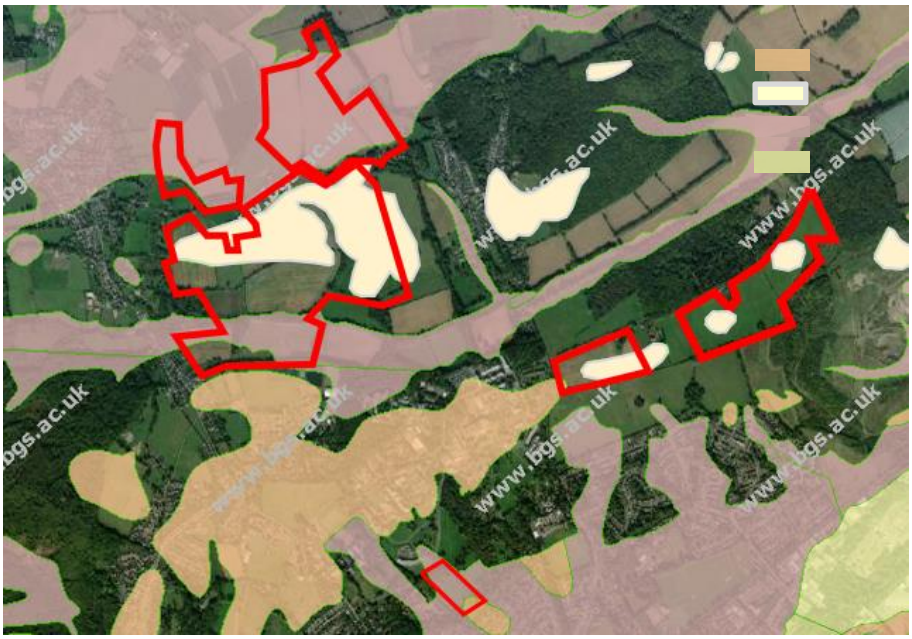
An overview of the superficial geology in relation to the development areas is presented as Insert 3.

Insert 3: Overview of Superficial Geology

Key
- River Terrace Deposits
- Head Deposits (Gravel)
- Head Deposits (Brickearth)
- Alluvium

TECHNICAL NOTE 1

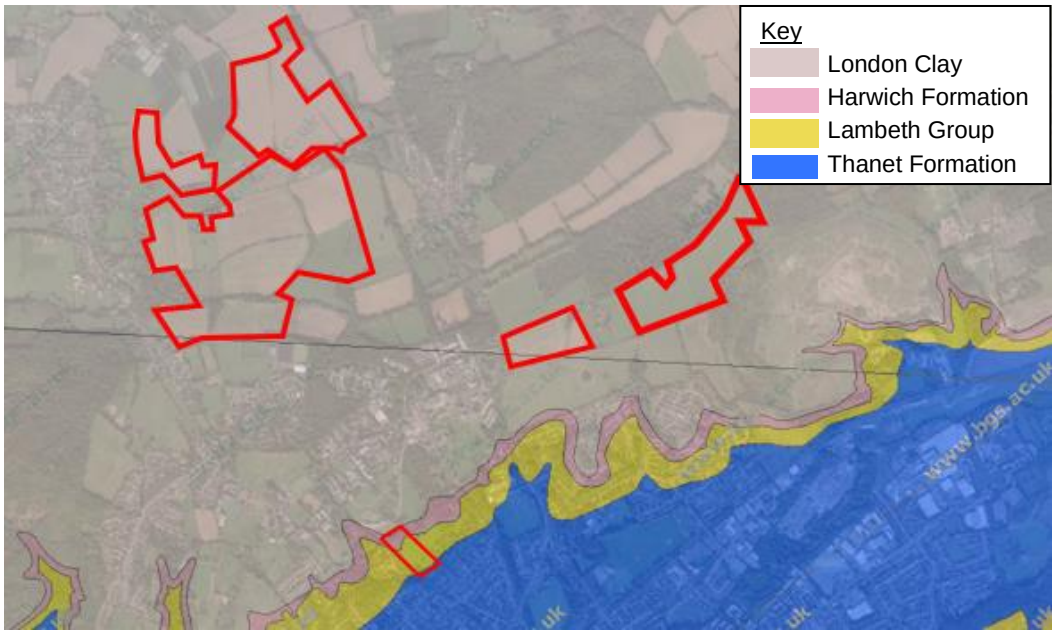
DATE:	16 April 2021	**CONFIDENTIALITY:**	Confidential
SUBJECT:	Mineral Resource Assessment		
PROJECT:	University of Canterbury, Kent	**AUTHOR:**	E Morgan
CHECKED:	C Smith	**APPROVED:**	D Watts



The superficial mapping deposits of Head (Brickearth) correspond to the Canterbury MSA mapping of Brickearth deposits. The majority of Area B and the small deposits recorded in Areas E and F are recorded as Head Deposits (Gravel) which would corroborate their exclusion from the MSA map. It is also noted that the River Terrace Deposits do not extend beneath Area B on BGS mapping unlike on the MSA mapping.

An overview of the development areas in relation to bedrock is included as Insert 4.

Insert 4: Overview of Bedrock Geology



DATE:	16 April 2021	**CONFIDENTIALITY:**	Confidential
SUBJECT:	Mineral Resource Assessment		
PROJECT:	University of Canterbury, Kent	**AUTHOR:**	E Morgan
CHECKED:	C Smith	**APPROVED:**	D Watts

The development areas that are classified as part of MSA are designated as they are underlain by Head Brickearth and River Terrace Deposits.

A review of publicly available historical borehole logs available via the BGS Onshore GeoIndex provide an indication of the encountered ground conditions on or within the immediate vicinity of some of the development areas which lie within an MSA:

- Area A: three boreholes immediately adjacent to the west of Area A (logs TR15NW59, TR15NW60 and TR15NW61) recorded brickearth to range between depths of 8.75m bgl to the southwest (TR15NW61) of the area and 3.20m to the northwest of the area (TR15NW61).
- Area B, C and D: There are no boreholes available within these areas or within 50m of these areas that display representative geology. The quality of the mineral deposits beneath these areas and therefore the economic viability of extraction cannot be qualified.

In summary, representative borehole logs indicating potential ground conditions are only available for Area A. The shallow superficial deposits recorded adjacent to Area A comprise Brickearth in three locations which is indicative of the potential deposits beneath Area A.

There is not sufficient information to characterise the potential ground conditions beneath Sites B, C and D. It is noted however that only a small portion of Site B is recorded as part of an MSA.

Sites E and F are not shown to be in a defined MSA.

FEASIBILITY OF INCIDENTAL EXTRACTION

With consideration to requirement 3 of policy DM7 and requirement 2 of DM9, prior extraction of the mineral resource should be incorporated into the development if 'the proposal will not cause unacceptable adverse impacts to the environment or communities'. Extraction of the mineral resource is likely to require an Environmental Impact Assessment (EIA) to determine the potential adverse impacts.

The nature of mineral extraction of Brickearth would likely result in areas of deep excavations not suitable for subsequent redevelopment without importation of significant amounts of other material such as waste products. Risks of flooding and ground instability would also need to be considered.

Given the above the potential impacts of prior extraction are considered to be:

- Adverse effects on local amenity of existing residents as a result of plant activities, noise, dust and traffic impacts that are likely to result in opposition from local residents.
- Potential negative impacts on the environment which would require assessment and mitigation, including impacts on hydrogeology, hydrology and biodiversity.
- Prior extraction would result in the creation of a void which would result in a negative visual impact on the landscape.
- If left open this void could potentially become an open water body causing loss of developable land.

In addition, the extraction of brickearth is a high cost exercise with significant upfront costs for plant hire, permits and planning permission. Prior extraction would therefore be viable if there were a high demand for

the mineral resource, however the Kent MLWP states that brickearth is not currently in high demand within the county and moving the mineral resource outside the county for processing would not be cost effective.

Finally, prior extraction would compromise the ability to move forward with the proposed residential schemes which would limit the number of new homes provided in the area. The overriding need for these homes is discussed below.

OVERRIDING NEED FOR DEVELOPMENT

The following extract confirms there is a shortage of new housing in the local area and therefore the proposed development will both increase the available housing stock in the area and provide a range of homes to further meet the local demand.

Document Canterbury City Council Housing, Homelessness and Rough Sleeping Strategy 2018 – 2023 states *"there are currently not enough homes to meet the housing needs and aspirations of the district and as such there is a programme to increase housing supply. The Local Plan, which was adopted in 2017, allocates land for housing to ensure the supply of at least 16,000 new homes meets the needs of the current and future population until 2031".*

It is therefore considered that without the development there would be a shortfall in the construction of new homes that is required to meet the current and future population. The overriding requirement for housing should be considered when assessing the requirement for sterilisation of the underlying mineral deposits along with the wider extraction issues.

SUMMARY STATEMENT

The proposed development would sterilise the underlying land in the context of mineral extraction beneath Site A and to an unknown degree beneath Sites B, C and D. However, given the following reasons the sterilisation is considered to be justifiable:

- Although an extractable Brickearth deposit is potentially underlying Area A, it is immediately bound to the south by residential properties. This would present a material constraint as extraction from the area would have the potential for noise, vibration, dust and traffic nuisance to the adjacent residential properties.
- All of Area C, the majority of Area D and a section in the south of Area B could potentially be underlain with economically viable Brickearth deposits, a section of the southern western area of Area B could also be potentially underlain by River Terrace Deposits.
- Area C is located immediately adjacent to residential properties to the east and for the reasons given above in relation to Area A extraction is unlikely to be possible this close to residential properties.
- Whilst potentially possible to extract from Areas B and D, there is little requirement currently for Brickearth within the Kent area and the future requirement is likely to be met from other areas. If extraction did occur at Areas B and D it would delay the development of residential housing which is a priority as part of the Local Plan it would also create the requirement for backfilling of the quarried area

which may present adverse financial implications to the development and delay the development programme.

Overall, given the overriding need for residential development, the difficulties in extracting from immediately adjacent to existing residential areas and the lack of requirement for Brickearth now and in the future it is considered that sterilisation of the mineral resource without prior extraction is acceptable at the site.

APPENDIX E

Noise Report

MEMO

TO	University of Kent	**FROM**	Tom Farmer, WSP Acoustics
DATE	**25 March 2021**	**CONFIDENTIALITY**	**Confidential**
SUBJECT	**University of Kent Land Disposal Sites – initial noise constraints**		

The following text accompanies the initial noise constraints figure below, and highlights the key noise constraints for the development of these sites.

SITE A

- Unlikely to be any significant noise constraints for noise sensitive development (i.e. residential).

SITE B

- Unlikely to be any significant noise constraints for noise sensitive development (i.e. residential).
- Good acoustic design measures (e.g. carefully consideration of development layout/ orientation to screen external amenity areas (i.e. gardens)) should be considered for the area of the site located nearest to the A290.

SITE C

- Unlikely to be any significant noise constraints for noise sensitive development (i.e. residential).

SITE D

- Unlikely to be any significant noise constraints for noise sensitive development (i.e. residential).

SITE E

- Whilst residential development is not expected at this site, there are unlikely to be any significant noise constraints for noise sensitive development.

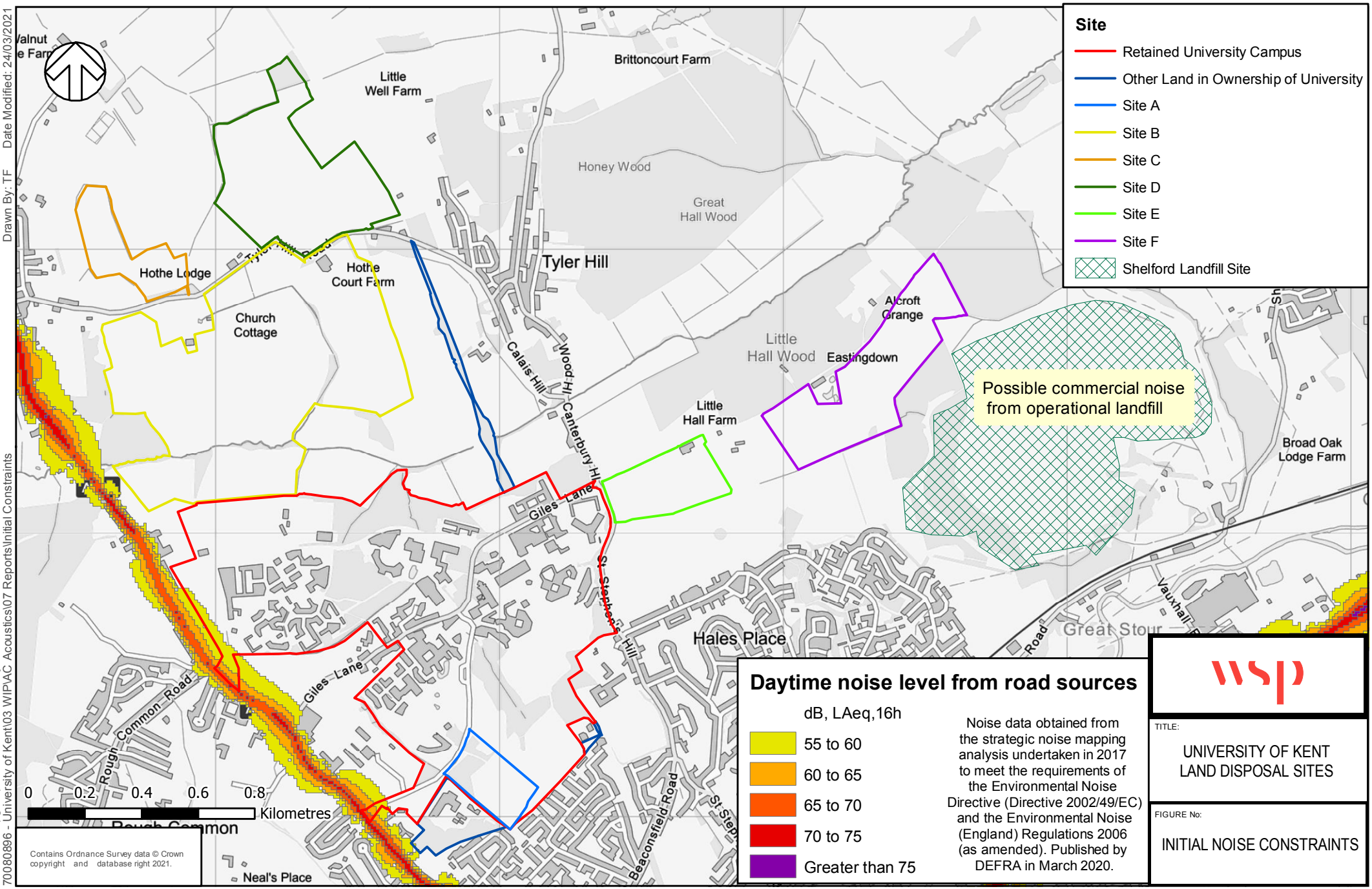
SITE F

- Whilst residential development is not expected at this site, the Shelford Landfill, located 60m from the site at the closest point, may represent a constraint to noise sensitive development, due to the potential for noise from vehicles, plant and machinery operating at the landfill.
- In the event noise sensitive development was proposed at Site F, it would be prudent for a noise survey and assessment to be completed as part of a planning application. The noise assessment would likely follow the principles of British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*, or an appropriate successor standard, to establish the likelihood of an adverse impact on proposed sensitive land uses, and the measures, if required, to mitigate any adverse impact.

ALL DEVELOPMENT SITES

- Depending on the nature and scale of the development, all sites have the potential to generate additional road traffic, which has the potential to create noise. This could adversely impact existing sensitive receptors and any new noise sensitive receptors constructed as part of the developments. The following principles should be applied when considering the design and location of new access roads:
  - New roads should be located as far as reasonably practicable from existing sensitive receptors;
  - Using cut and fill to screen sensitive receptors from roads as much as possible;

- Good acoustic design principles should be followed during the masterplanning of new development. Noise sensitive development (e.g. residential) should be avoided near to busy roads where possible, and the offset distance between busy roads and sensitive development should be maximised as much as possible whilst acknowledging other development constraints. The layout and orientation of noise sensitive development closest to new roads should be carefully considered, for example by positioning external amenity space on the ‘quieter side’ of buildings.



File: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\AC Acoustics\07 Reports\Initial Constraints

Drawn By: TF Date Modified: 24/03/2021

TITLE:
UNIVERSITY OF KENT
LAND DISPOSAL SITES

FIGURE No:
INITIAL NOISE CONSTRAINTS

APPENDIX F

Preliminary Ecological Appraisal

University of Kent

UNIVERSITY OF KENT DISPOSAL SITES

Preliminary Ecological Appraisal

001
MAY 2021

CONFIDENTIAL

University of Kent

UNIVERSITY OF KENT DISPOSAL SITES

Preliminary Ecological Appraisal

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70080896

OUR REF. NO. 001

DATE: MAY 2021

WSP

6 Devonshire Square
London
EC2M 4YE

Phone: +44 117 930 2000

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks				
Date	14/05/21			
Prepared by	Gwen Brassine			
Signature				
Checked by	Paul Joyce			
Signature				
Authorised by	Ruth Bramwell			
Signature				
Project number	70080896			
Report number	001_Issue			
File reference	\\Uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\EC Ecology			

CONTENTS

1 INTRODUCTION 2

1.1 PROJECT BACKGROUND 2
1.2 ECOLOGICAL BACKGROUND 2
1.3 SCOPE OF REPORT 3
1.4 RELEVANT LEGISLATION AND POLICY 3

2 METHODS 4

2.1 OVERVIEW 4
2.2 DESK STUDY 4
2.3 HABITAT SURVEY 5
2.4 PROTECTED SPECIES ASSESSMENT 5
2.5 NOTES AND LIMITATIONS 6

3 RESULTS AND EVALUATION 7

3.1 DESIGNATED SITES 7
3.2 HABITAT SURVEY 12
3.3 PROTECTED AND NOTABLE SPECIES ASSESSMENT 18

4 DISCUSSION AND RECOMMENDATIONS 23

4.1 STATUTORY DESIGNATED SITES 23
4.2 NON-STATUTORY DESIGNATED SITES 23
4.3 HABITATS 24
4.4 PROTECTED AND NOTABLE SPECIES 24
4.5 FURTHER SURVEY REQUIREMENTS 29
4.6 PRELIMINARY AVOIDANCE, MITIGATION AND COMPENSATION MEASURES 35
4.7 ECOLOGICAL ENHANCEMENT OPPORTUNITIES 36

5 CONCLUSIONS 38

6 REFERENCES 39

7 FIGURES 41

TABLES

Table 1 – Statutory designated sites of international importance 7

Table 2 – Statutory designated sites of national importance 9

Table 3 – Statutory designated sites of local importance 10

Table 4 – Non-statutory designated sites 11

Table 5 – Site A Phase 1 habitat areas 12

Table 6 – Site B Phase 1 habitat areas 13

Table 7 – Site C Phase 1 habitat areas 14

Table 8 – Site D Phase 1 habitat areas 15

Table 9 – Site E Phase 1 habitat areas 16

Table 10 – Site F Phase 1 habitat areas 16

Table 11 - Access Road land Phase 1 habitat areas 17

Table 12 – Key Ecological Constraints and Further Survey Requirements 30

Table 13 – Avoidance, mitigation and compensation 35

APPENDICES

APPENDIX A

LEGISLATION AND POLICY CONTEXT

APPENDIX B

TARGET NOTES

EXECUTIVE SUMMARY

As part of the emerging Canterbury Local Plan review, Avison Young, on behalf of the University of Kent (UoK), have requested provision of Environmental Consultancy Services to support the delivery of a planning and disposal strategy. The planning and disposal strategy is aimed at surplus land within UoK's ownership, in and around its Canterbury Campus. It comprises of six separate land parcels including and adjacent to the retained main campus, alongside land proposed for an access road (the 'Access Road Site') and a disused railway line to be developed as a cycleway (the 'Dismantled Railway Site'). These land parcels will hereafter be referred to collectively as the 'Disposal Sites', with the 6 individual sites referred to as Site A to Site F.

Desk study was undertaken using species and designated sites data from Kent and Medway Biodiversity Information Centre, publicly available data regarding statutory designated sites, Habitats of Principal Importance, in addition to the use of aerial imagery. The desk study identified 6 National Network sites (the closest being Blean Complex Special Area of Conservation; SAC, 200m to the west of Site B), 5 Sites of Special Scientific Interest; SSSI (the closest being West Blean and Thornden Woods which is directly adjacent to Site F), a single National Nature Reserve; NNR, Blean Woods NNR 200m to the west of Site B and three Local Nature Reserves (the closest being Tyler Hill Meadow 0.8km to the north of the Dismantled Railway Site. Seven non-statutory designated sites (Local Wildlife Sites; LWS) were also identified with CA15 Blean Pastures being located within the boundary of Site B.

Suitable habitat is present for protected and notable species and further survey is recommended for bats, badger; hazel dormouse; otter; water vole, breeding birds (focussing on farmland bird species), reptiles, great crested newt, notable plants and invertebrates. No surveys are recommended for hedgehog, but instead precautionary methods of working have been recommended to avoid effects on this species.

Retention of important habitats, including those within CA15 Blean Pastures LWS in Site B and HPI more widely, is recommended. Where important habitats are to be removed compensatory habitat creation would be required to offset losses and achieve biodiversity net gain. Implementation of recommendations within this report for avoidance, mitigation and enhancement measures would allow development of the Disposal Sites to proceed in compliance with relevant biodiversity legislation and planning policy, although it should be noted that the findings of further surveys will likely highlight further such requirements.

In line with the National Planning Policy Framework and local planning policy, recommendations to enhance the biodiversity value of the Disposal Sites have also been put forward for incorporation into development designs.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1. As part of the emerging Canterbury Local Plan review, Avison Young, on behalf of the University of Kent (UoK), have requested provision of Environmental Consultancy Services to support the delivery of a planning and disposal strategy. The planning and disposal strategy is aimed at surplus land within UoK's ownership, in and around its Canterbury Campus. It comprises of six separate land parcels including and adjacent to the retained main campus, alongside land proposed for an access road (the 'Access Road Site') and a disused railway line (formerly the Crab and Winkle Railway Line) to be developed as a cycleway (the 'Dismantled Railway Site'). These land parcels will hereafter be referred to collectively as the 'Disposal Sites', with the 6 individual sites referred to as Site A to Site F.

1.1.2. The current University masterplan focusses on the retained main campus land, proposing little/no development on the remaining land parcels. The intention is to update the existing masterplan via a series of addendums (Sites B/C/D, Site A, Site E, Site F) within an Environmental/Technical Feasibility Report, to support development. The intention is that these would be informally endorsed by the Local Planning Authority as per the current masterplan.

1.1.3. The proposed Disposal Sites are associated with the University of Kent's landholdings in Canterbury (approximate grid reference: TR130602). The University's landholdings extend to 230ha of land within and around its campus in Canterbury. Approximately 125ha of this land has been identified to be sold for the purposes of non-university development. The remaining 105ha is to be retained and will continue to be used as the University's main campus, for Higher Education purposes.

1.1.4. Land within the boundaries of Site's A-F and an area of 100m either side of the proposed access road to Site's B/C/D (which falls within the main campus) comprised the focus of the Preliminary Ecological Appraisal (PEA) and are collectively referred to as 'the Survey Area'. An additional area, the Dismantled Railway Site, was also included as a new cycleway is proposed along this feature. The Survey Area is to the north of the city of Canterbury, the surrounding area being made up of urban residential areas, scattered trees/ornamental planting, agricultural fields and woodland, including ancient woodland.

1.2 ECOLOGICAL BACKGROUND

1.2.1. A baseline ecological review was undertaken as part of an earlier feasibility study. This comprised a walkover of the Sites noting features of ecological interest, classification of habitats and a desk study of protected and notable species records, designated sites and habitats. This PEA builds upon this data, which was incorporated into the University of Kent Canterbury Campus Framework Masterplan (2018).

1.2.2. The Survey Area is within and adjacent to the current extent of the University of Kent buildings. A PEA of the University of Kent Campus and surrounding land holdings was produced in February 2018 (Biodiversity by Design/Studio Engleback, 2018). The results of this survey are discussed where relevant in this PEA.

1.3 SCOPE OF REPORT

1.3.1. Avison Young commissioned WSP to complete a Preliminary Ecological Appraisal (PEA) of the University of Kent's proposed land Disposal Sites in March 2021. The brief was:

- To provide baseline ecological information about the Survey Area and a surrounding study area with particular reference to whether legally protected and/or notable sites, species or habitats are present or likely to be present;
- To provide recommendations to enable compliance with relevant nature conservation legislation and planning policy; and
- If necessary, to identify the need for avoidance, mitigation, compensation or enhancement measures and/or further ecological surveys.

1.4 RELEVANT LEGISLATION AND POLICY

1.4.1. The appraisal has been compiled with reference to the following relevant nature conservation legislation, planning policy and the UK Biodiversity Framework from which the protection of sites, habitats and species is derived in England. These are listed below. The context and applicability of each item is explained as appropriate in relevant sections of the report and additional details are presented in Appendix A.

- The Conservation of Habitats and Species Regulations 2017 (as amended) (Habitats Regulations);
- The Wildlife and Countryside Act 1981 (as amended) (WCA);
- Countryside Rights of Way Act 2000;
- The Natural Environment and Rural Communities (NERC) Act 2006 (England);
- The Protection of Badgers Act 1992;
- The Hedgerow Regulations 1997;
- The National Parks and Access to the Countryside Act 1949;
- The Town and Country Planning (Environmental Impact Assessment) Regulations 2017;
- The UK Post-2010 Biodiversity Framework (2011-2020) (JNCC and DEFRA, 2012);
- Biodiversity 2020: A strategy for England's wildlife and ecosystem services (DEFRA, 2011);
- UK Biodiversity Action Plan (UKBAP)[1];
- The National Planning Policy Framework (NPPF) 2019 (Ministry of Housing Communities & Local Government, February 2019); and
- The Canterbury District Local Plan until 2031 (Canterbury City Council, 2017).

[1] The UK BAP has now been replaced by the UK Post-2010 Biodiversity Framework, however, it contains useful information on how to characterise important species assemblages and habitats which is still relevant.

2 METHODS

2.1 OVERVIEW

2.1.1. This appraisal has been prepared with reference to current good practice guidance published by the Chartered Institute for Ecology and Environmental Management (CIEEM, 2017a), and Joint Nature Conservation Committee (JNCC, 2010); and guidance contained in the British Standard - Code of Practice for Biodiversity and Development BS42020:2013 (British Standards Institute, 2013).

2.1.2. This PEA is based on the following data sources:

- An ecological desk study, including a previous PEA report from 2018;
- A habitat survey; and
- A protected/notable species assessment.

2.2 DESK STUDY

2.2.1. The desk study for the Survey Area was undertaken in April 2021 to review existing ecological baseline information available in the public domain and to obtain information held by relevant third parties. For the purpose of the desk study exercise, records were collated within various distances around the Survey Area. This approach is consistent with current good practice guidance published by CIEEM (2017a and 2017b). To provide the baseline data for the ecological desk study, the following information was requested from Kent and Medway Biological Records Centre (KMBRC):

- records of legally protected and notable species within 2 km of the Survey Area;
- bat records within a 5 km radius of the Survey Area; and
- records of non-statutory sites designated for nature conservation value within 2km of the Survey Area.

2.2.2. Freely downloadable datasets (available from Natural England) were consulted for information regarding the presence of statutory designated habitats[2] within 2km of the Survey Area. This search was extended to 10km for National Network sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)) of European importance and internationally designated Ramsar sites.

2.2.3. Other datasets available from Natural England were also consulted for information regarding Habitats of Principal Importance (HPI)[3] and Species of Principal Importance (SPI)[4] woodland listed on the Ancient Woodland Inventory[5], from within 500m of the Survey Area. In addition, open source 1:25,000 Ordnance Survey mapping was used to identify any mapped water bodies and watercourses within 500m of the Survey Area.

[2] Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR).

[3] Mapped locations of HPI are usually not available, but HPI aligns in the most part with UKBAP habitats. Inventories of UKBAP habitat have been prepared by a variety of organisations and at a national (Natural England priority habitat inventory) and local scale (e.g. by local records centres). In some instances, these are primarily based on aerial photograph analysis rather than field survey.

[4] These species are listed under Section 41 of the NERC Act 2006 and are material consideration in the planning process.

[5] The ancient woodland inventory in England lists areas over two hectares in size which have been continuously wooded since at least 1600.

2.2.4. The findings of the desk study have been incorporated within Section 3 and Appendix B of this report and are shown on Figures 1 and 2.

2.3 HABITAT SURVEY

2.3.1. A Phase 1 habitat survey of Disposal Sites A-F and dismantled railway was carried out on the 13-14th March 2020 in wet, cold weather conditions. The area encompassing the Access Road Site, within the main campus, was surveyed on the 9th April 2021 in dry, sunny conditions. Consideration was given to surrounding habitats using aerial photograph imagery. The Phase 1 habitat survey was carried out by an Associate member of CIEEM, with extensive experience within the last four years of completing PEAs of a variety of greenfield and brownfield sites.

2.3.2. Habitats were described and mapped following the standard Phase 1 habitat survey methodology (JNCC, 2010). Phase 1 habitat survey is a standard technique for classifying and mapping British habitats. The dominant plant species are recorded, and habitats are classified according to their vegetation types. Where appropriate consideration was given to whether habitats qualify, or could qualify, as a Habitat of Principal Importance following habitat descriptions published by the Joint Nature Conservation Committee (JNCC, 2008).

2.3.3. A list of plant species was compiled, with relative plant species abundance estimated using the DAFOR scale[6]. The scientific names for plant species follow those in the New Flora of the British Isles (Stace, 2019).

2.3.4. Habitats were marked on a paper base map and mobile mapping tablet and were subsequently digitised using a Geographical Information System (GIS). The smallest area to be mapped was approximately 0.25 ha (50m x 50m), which was selected as a suitable scale to sample the range of different vegetation types present. Target notes were made to provide information on specific features of ecological interest (e.g. a badger *Meles meles* sett) or habitat features too small to be mapped.

2.3.5. Invasive plant species listed on Schedule 9 of the WCA 1981 (as amended) which were evident during the Phase 1 habitat survey were also described in the target notes. Detailed mapping of such species; or a full survey of the Survey Area for all invasive plant species is beyond the scope of this commission.

2.3.6. Data collected as part of this Phase 1 habitat survey is suitable for use in retrospective biodiversity unit calculations to inform a Biodiversity Net Gain assessment.

2.4 PROTECTED SPECIES ASSESSMENT

2.4.1. The suitability of the Survey Area to support legally protected and notable species was assessed based on the desk study results combined with field observations made during the habitat survey. The assessment of habitat suitability for protected and notable species was based on professional experience and judgement. This was supplemented by standard sources of guidance on habitat suitability assessment for key faunal groups including: birds (Gilbert et al, 1998 and Bibby et al, 2000), great crested newt *Triturus cristatus* (Gent and Gibson, 2003 and English Nature, 2001);

[6] The DAFOR scale has been used to estimate the frequency and cover of the different plant species as follows: Dominant (D) - >75% cover, Abundant (A) – 51-75% cover, Frequent (F) – 26-50% cover, Occasional (O) – 11-25% cover, Rare (R) – 1-10% cover., The term 'Locally' (L) is also used where the frequency and distribution of a species are patchy and 'Edge' (E) is also used where a species only occurs on the edge of a habitat type.

reptiles (Froglife, 1999 and Gent and Gibson, 2003); bats (Collins, 2016 and Mitchell-Jones, 2004); badger (Harris *et al,* 1991); hazel dormouse *Muscardinus avellanarius* (English Nature, 2006); otter *Lutra lutra* (Chanin, 2003); water vole *Arvicola terrestris* (Dean *et al*, 2016) and invertebrates (Drake *et al*, 2007 and Kirby, P, 2001).

2.5 NOTES AND LIMITATIONS

2.5.1. Every effort has been made to provide a comprehensive description of the Survey Area; however, the following specific limitations apply to this assessment:

- Ecological survey data is typically valid for up to 18 months unless otherwise specified (CIEEM, 2019b), for example if conditions are likely to change more quickly due to ecological processes or anticipated changes in management.
- Records held by local biological record centres and local recording groups are generally collected on a voluntary basis; therefore, the absence of records does not demonstrate the absence of species, it may simply indicate a gap in recording coverage. To overcome this limitation, this PEA supplements desk study information with field survey evidence.
- The survey was completed two weeks earlier than the optimal survey season for Phase 1 habitat survey, generally accepted to be from April-September (inclusive). Botanical surveys are seasonally limited, and throughout the spring and summer period certain species will be more or less evident at different times (i.e. depending on the flowering season). However, it is considered that sufficient information was gathered to enable an assessment of the habitat types present, in line with standard Phase 1 habitat categories and the potential for these to support protected or notable species.
- The southern section of the Dismantled Railway Site and the tunnel present within it had restricted access due to encroaching scrub and woodland. Survey of the northern section, the previous PEA descriptions and aerial imagery was used to identify habitats present in this area. It is, therefore, considered that the Phase 1 habitat type was accurately identified.
- The Phase 1 Habitat survey was carried out over the period of three days in spring, as such only a selection of all species that occur within the Survey Area will have been recorded. However, through use of desk study information to supplement site survey data, it is considered that an accurate assessment of the potential for the Site to support protected species or those of conservation concern was possible.
- The extended Phase 1 habitat map (Figure 3) has been reproduced from field notes and plans. Whilst this provides a sufficient level of detail to fulfil the requirements of a PEA, the maps are not intended to provide exact locations of key habitats.
- A number of ornamental plant species were present within the main campus. These have been identified to species level where possible; however, owing to the large number of horticultural varieties some plants could not be identified. Ornamental plants may be of value to wildlife; however, none are characterised as rare or notable from a native biodiversity conservation perspective. Thus, this limitation does not affect the overall conclusions of this appraisal.

3 RESULTS AND EVALUATION

3.1 DESIGNATED SITES

STATUTORY SITES

3.1.1. The desk study identified 12 statutory nature conservation sites within 10km of the Survey Area, 6 of international importance, and 6 of national importance. A description of the international sites are detailed in Table 1 below and a description of national sites are detailed in Table 2; they are shown in Figure 1a and Figure 1b respectively.

Table 1 – Statutory designated sites of international importance

Site Name	Designation	Size (ha)	Distance and orientation	Description
Blean Complex	SAC	523.5	278m west of where the access road has been proposed at its closet point.	Broadleaved deciduous woodland. Hornbeam *Carpinus betulus* coppice occurs interspersed with pedunculate oak *Quercus robur* stands and introduced sweet chestnut *Castanea sativa*. Great woodrush *Luzula sylvatica* is locally dominant in the woodland, and the characteristic greater stitchwort *Stellaria holostea* is found in more open patches. The stands have traditionally been managed as coppice and are one of the British strongholds for the heath fritillary butterfly *Mellicta athalea.*
Stodmarsh	SAC/SPA/ Ramsar	566.0	2.64km west southwest of Site F.	A wetland in the Stour valley contains a wide range of habitats including open water, extensive reedbeds, scrub and alder carr which together support a rich flora and fauna. The vegetation is a southern eutrophic flood plain hosting a number of rare plants. The invertebrate fauna is varied, and several scarce moths have been recorded in recent years. The site is a designated SPA due to its diverse breeding bird assemblages, presence of bittern *Botaurus stellaris*, gadwall *Anas strepera*, hen harriers *Circus cyaneus*, shoveler *Anas clypeata* and other water bird assemblages. Designated as a SAC for the presence of Desmoulin's whorl snail, *Vertigo moulinsiana* (S1016). Part of this site is a National Nature Reserve.
The Swale	SPA/ Ramsar	6509.9	4.37km northwest of Site C	The Swale (estuary) comprises of extensive intertidal mudflats. It contains the largest expanse of grazing marsh in Kent, which provides important feeding and roosting grounds for many waterbirds, areas of saltmarsh bordering the intertidal mudflats, several patches of littoral rock providing

Site Name	Designation	Size (ha)	Distance and orientation	Description
				suitable habitat for mussel beds, and the large areas of intertidal mudflats which provides extensive roosting sites for large populations of waterbirds, particularly during the winter for duck and wader species. Designated as a SPA for the presence of large waterbirds and breeding bird assemblages, dark-bellied Brent goose *Branta bernicla bernicla*, and dunlin *Calidris alpina alpina.*
Tankerton Slopes and Swalecliffe	SAC	13.1	Tankerton Slopes 5.66km north Swalecliffe 5.76km north	Tankerton Slopes is composed of London Clay and support tall herb communities dominated by hog's fennel *Peucedanum officinale* (nationally rare), and some areas of neutral grassland dominated by meadow barley *Hordeum secalinum*, false oat-grass *Arrhenatherum elatius* and red fescue *Festuca rubra.* Associated herbs include spiny restharrow Ononis spinosa, smooth tare *Vicia tetrasperma*, grass-leaved vetchling *Lathyrus nissolia* and dyer's greenweed *Genista tinctoria* (locally scarce). Designated as a SAC for the presence of Fisher's estuarine moth *Gortyna borelii lunata* (S4035)
Thanet Coast & Sandwich Bay	SPA / Ramsar	1881.3	Two sections within 10km of the Disposal Sites. • 5.72km north of Site D • 7.97km north east of Site F	A large proportion of the site is intertidal consisting of large areas of intertidal mud and sand flats, with shingle and rocky shores, saltmarsh habitats, lagoons and intertidal shingle habitats. Terrestrial habitats within the SPA, consist of improved and unimproved grassland, with some arable land all important habitat for golden plover to roost and feed. The intertidal reef, together with the mudflats and sandflats which characterise the remainder of the coastline in North East Kent, provide valuable feeding grounds and roosting areas at low water for wintering waders including turnstone *Arenaria interpres.* In summer, shingle provides an important breeding habitat for little terns *Sterna albifrons*. Designated as a SPA for the presence of golden plover *Pluvialis apricaria*, little tern and turnstone.
Outer Thames Estuary	SPA	392,451.8	5.97km north of Site D	The SPA is divided into three discreet areas: the outer estuary of the Thames (including Kent and Essex coastal waters); the Suffolk and south Norfolk coastal waters; and an

Site Name	Designation	Size (ha)	Distance and orientation	Description
				offshore area further northeast. The site crosses the 12 nautical mile boundary and therefore lies partly in territorial and partly in offshore waters. The SPA consists of areas of shallow and deeper water, high tidal current streams and a range of mobile sediments. Large areas of mud, silt and gravelly sediments form the deeper water channels, including the port approaches to London. The site is designated for red-throated diver *Gavia stellate*, common tern *Sterna hirundo* and little tern *Sternula albifrons*

Table 2 – Statutory designated sites of national importance

Site Name	Designation	Size (ha)	Distance and orientation	Description
West Blean and Thornden Woods	SSSI	55.6	Directly adjacent to Site F at its closest point	A complex (7 sections) of lowland broadleaved, mixed, and yew woodland. Old or moderately aged sweet chestnut coppice with occasional oak and birch are present. Good cover of ground flora, including; bluebell (*Hyacinthus non-scripta*), wood anemone (*Anemone nemorosa*) and heather (*Calluna vulgaris*). Old and dead trees are present which support a wide range of invertebrates including wood ants (formica sp.)
Blean Woods	NNR	508.4	200m west of Site B at its closest point	A large area of semi-natural broadleaved woodland containing several hectares of ancient replanted and semi-natural woodland.
Church Woods, Blean	SSSI	66.1	200m west of Site B at its closest point	Lowland broadleaved, mixed and yew woodland. Good canopy and understory cover with high diversity of species. Dominated by oak sp. Presence of young trees and dead wood could provide a range of habitats for invertebrates. Good population of heath fritillaries present.
Sturry Pit	SSSI	0.7	1.91km east of Site F	A disused quarry noted for pre-historic artefacts. Designated for the Pleistocene gravels of Sturry, which belong to the 3rd Terrace of the Kentish Stour. Piles of deadwood and evidence of vegetation management is present.
Ellenden Wood	SSSI	32.4	1.89 km northwest of Site C	An ancient woodland site contains several uncommon woodland types. Sessile oak-beech predominates on the acidic sandy soils in the central and eastern parts of the wood. Hornbeam with pedunculate and sessile oak

Site Name	Designation	Size (ha)	Distance and orientation	Description
				occurs on the clay soils of the western valley. Other types are also present including small plantations of sweet chestnut coppice. The wood has a diverse flora with over 250 higher plants and 300 fungi present. Large numbers of insects including three nationally rare species have been recorded. The area also supports a diverse breeding bird community.
Chequer's Wood and Old Park	SSSI	33.9	1.94km southeast of Site F	Dominated by lowland acid grassland. Current management of scrub has allowed a rich community of flora and invertebrate fauna to establish.

3.1.2. Three statutory designated sites of local importance, LNRs, were also identified by desk study. Table 3 below provides a description of each of these sites and they are shown in Figure 1b.

Table 3 – Statutory designated sites of local importance

Site Name	Designation	Size (ha)	Distance and orientation	Description
Tyler Hill Meadow	LNR	0.8	North, across the Tyler Hill Road (6.67m) from the Dismantled Railway Site.	A complex of lowland deciduous woodland, unimproved neutral grassland and scattered scrub habitats. Supporting birds, plants and invertebrates. Eleven species of butterfly and slow-worms and common lizards have been recorded.
Bus Company Island	LNR	1.1	1.02 km south of Site A.	Located on the northern bank of the Great Stour river, adjacent to residential areas and an agricultural field. It is made up of broadleaved semi-natural woodland, semi-improved grassland and dense scrub.
Whitehall Meadows	LNR	11.6	1.25 km of Site A.	Two sections 6.32 and 5.31 ha. The sections are separated by the Great Stour River and the Chatham Main Line. Dominated by neutral and wet grassland. Bats, snails, common reptiles, and numerous species of insects have been recorded.

NON-STATUTORY SITES

3.1.3. The desk study identified 7 non-statutory nature conservation sites, designated as Local Wildlife Sites (LWS) within 2km of the Survey Area. They are described in Table 4 below and shown in Figure 1c. CA15 Blean Pastures LWS lies within Site B with CA14 Tyler Hill Pastures LWS and CA18 Lttle Hall and Kemberland Woods and Pasture directly adjacent to Sites D and F respectively. Other LWS are at a distance from the Survey Area.

Table 4 – Non-statutory designated sites

Site Name	Designation	Size (ha)	Distance and orientation	Description
CA15 Blean Pastures	LWS	15.9	Within and adjacent to west side of Site B	Comprising ecologically important grassland habitat
CA14 Tyler Hill Pastures	LWS	5.3	Adjacent to east side of Site D	Comprising ecologically important grassland habitat
CA18 Little Hall and Kemberland Woods and Pasture	LWS	26.3	Adjacent to Site F	Comprising woodland (some ancient) and grassland habitat
CA34 Blean Woods, Harbledown to Dunkirk	LWS	130.5	650m west of the Access Corridor	Comprising woodland habitat
CA16 Clowes Wood and Marley Wood	LWS	230.5	700m north of Site D	Comprising woodland habitat
AS27 Great Stour, Ashford to Fordwich	LWS	81.5	1.1km south of Site A	Comprising the reach of the River Great Stour which runs to the south of Canterbury
CA52 St Augustine's Abbey, Canterbury	LWS	2.2	1.8km south of Site A	Comprising grasslands and parkland in the grounds of St Augustine's Abbey

OTHER HABITATS OF CONSERVATION IMPORTANCE

3.1.4. Ancient semi-natural and plantation woodland was identified within the Survey Area and within 500m of the boundary. Two parcels are located within Site B, 12 parcels are within and one is adjacent to the retained university land, one is adjacent to Site B and four are adjacent to Site F. The location of these is shown in Figure 2.

3.1.5. HPIs mapped by Natural England were identified within the desk study area including lowland mixed deciduous woodland, traditional orchard and wood-pasture and good quality semi-improved grassland. Lowland mixed deciduous woodland priority habitat was identified within and adjacent to the all the Disposal Sites.

3.2 HABITAT SURVEY

OVERVIEW

3.2.1. The Phase 1 habitat types were identified and are described below. They are mapped on Figure 3 and are listed in Tables 5 - 11 along with areas in hectares or length for linear features. A description of the dominant and notable species, the composition and management of each habitat is provided below. Target notes are provided in Appendix B. Alpha-numeric codes used in this section cross-refer to the JNCC Phase 1 habitat survey classification (JNCC, 2010). The order of the habitat descriptions below reflects their ordering in the Phase 1 habitat survey manual and does not reflect habitat importance.

Table 5 – Site A Phase 1 habitat areas

Phase 1 Habitat	Description	Area / Length	% of Site Area
A1.1.1 Broadleaved semi-natural woodland	A mature woodland is found in the northern part of Site A. The wood has a diverse mixture of broadleaved tree species: sycamore *Acer pseudoplatanus* was frequent, with occasional silver birch *Betula pendula*, maple *Acer* sp., willow *Salix* sp., beech *Fagus sylvatica* and pedunculate oak *Quercus robur*. A limited scrub layer was present made up of abundant ivy *Hedera helix*, occasional cleavers *Galium aparine*, bramble *Rubus fruticosus* agg. and lords-and-ladies *Arum maculatum*, interspersed with frequent cow-parsley *Anthriscus sylvestris*. Holly *Ilex aquifolium* and hawthorn *Crategus monogyna* were rare. A strip of woodland which connects the mature woodland to the adjacent woods in Chaucer College land contained a more dense scrub layer, with frequent wild privet *Ligustrum vulgare*, ivy and occasional hazel *Corylus avellana* and hawthorn.	1.30ha	24.3
A2.1 Dense / continuous scrub	A small patch of scrub is present north of the site, extending out of the boundary. It is dominated by hawthorn, with abundant ivy and frequent common nettle *Urtica dioica*.	0.13ha	2.4
A3.3 Mixed parkland/ scattered trees	Mature scattered trees on amenity grassland with frequent ash *Fraxinus excelsior* and hazel saplings beneath the mature trees which comprise occasional pedunculate oak, with rare lime *Tilia* sp., larch *Larix decidua*, Douglas fir *Pseudotsuga menziesii*, horse chestnut *Aesculus hippocastanum*, beech, poplar *Populus* sp., silver birch and willow *Salix* sp.	0.28ha	5.2
B6 Poor semi-improved grassland	Making up majority of Site A is tussocky 20cm tall grass dominated by perennial rye grass *Lolium perenne*, with frequent white clover *Trifolium repens* species and occasional patches of Timothy *Phleum pratense*, common vetch *Vicia sativa*, broadleaved dock *Rumex obtusifolius*, common daisy *Bellis Perennis* and yarrow *Achillea millefolium*.	3.31ha	61.9
J1.2 Amenity grassland	Heavily managed 10cm tall grass dominated by perennial rye grass and occasional common dandelion *Taraxacum officinale*, creeping buttercup *Ranunculus repens*, and common daisy.	0.16ha	3.0

Phase 1 Habitat	Description	Area / Length	% of Site Area
J4 Bare ground	A narrow track running down the middle of Site A, bordered by two hedgerows.	0.17ha	3.2
J2.1.2 Intact species-poor hedgerow	Heavily pruned hedgerow approximately 2.5m high and 1.5m wide dominated by wild privet, with abundant hawthorn and ivy. The hedgerows surround the footpath and the southern hedge of the field making up 756m.	778m	n/a
TOTAL		5.35ha/ 778m	

Table 6 – Site B Phase 1 habitat areas

Phase 1 habitat	Description	Area / Length	% of Site Area
A1.1.1 Broadleaved semi-natural woodland	A strip of mature woodland is found in the south of Site B with occasional hawthorn, ash, beech and elder *Sambucus nigra*. Pedunculate oak is rare, and bramble and dog rose *Rosa canina* present on the woodland edge. A second section of woodland is found in the south west of Site B, with frequent mature oak and often elder, goat willow and holly.	4.13ha	6.6
A1.1.2 Plantation woodland	A newly planted broadleaved woodland is present in the west of Site B, with frequent pedunculate oak, hazel, hawthorn, holly, willow *Salix* sp. and hornbeam *Carpinus betulus*.	2.50ha	4.0
A2.1 Dense / continuous scrub	Dense/continuous scrub is present near the pond in the east of Site B. It is made up of frequent blackthorn *Prunus spinosa*, holly, and hawthorn; all approximately 3m high.	1.10ha	1.8
A2.2 Scattered scrub	Scattered scrub is present along field edge, adjacent to paved track, containing frequent bramble, hawthorn, common nettle, broad-leaved dock, common dandelion, elder and cleavers.	0.38ha	0.6
B4 Improved grassland	Improved grassland is present in the east of Site B, containing frequent perennial rye grass, occasional spear thistle Cirsium vulgare, creeping thistle *Cirsium arvense*, common nettle and cleavers. All species at grazed sward height of less than 10cm.	15.11ha	24.1
G1 Standing water	A pond is present in the south east of Site B.	0.07ha	0.1
J1.1. Arable	Arable land is present across large sections	38.80ha	62.0
J3.6 Buildings	Buildings are present in the north east of the Site B.	0.22ha	0.4
J4 Bare ground	Bare ground is present in the north east of the Site B.	0.30ha	0.5
G2 Running water	A stream is present through the centre of the Site B.	1,450m	n/a

Phase 1 habitat	Description	Area / Length	% of Site Area
J2.1.1 Intact species-rich hedgerow	All hedgerows are less than 2.5m high and less than 1.5m wide, composed of frequent hawthorn, willow *Salix* sp., dog rose, ivy, pedunculate oak and ash. Bramble is also present in the hedgerow.	2,447m	n/a
J2.1.2 Intact species-poor hedgerow	Heavily pruned hedgerow approximately 2.5m high and 1.5m wide dominated by wild privet, with abundant hawthorn and ivy.	429m	n/a
J2.2.2 Defunct species-poor hedgerow	A defunct hedgerow running though the north of Site B composed of abundant hawthorn and scattered occasional mature pedunculate oak.	678m	n/a
J2.3.1 Hedge with trees species-rich	Mature trees lining a field boundary through the centre of Site B, with scrub below. Tree species of pedunculate oak and elder, with dog rose, hawthorn, bramble and willow *Salix* sp.	469m	n/a
TOTAL		62.61ha/ 5,473m	

Table 7 – Site C Phase 1 habitat areas

Phase 1 habitat	Description	Area/ Length	% of Site Area
A1.1.1 Broadleaved semi-natural woodland	Woodland is present in south of Site C. It is dominated by willow Salix sp., with rare holly, pedunculate oak, and has bramble scrub layer.	0.48ha	6.8
B4 Improved grassland	Perennial rye grass covering the majority of Site C. Previously grazed sward at height of 10cm.	6.54ha	93.2
A3.1 Line of trees	Scattered trees along field boundary in the east, composed of willow *Salix* sp. and elder.	102m	n/a
J2.1.1 Intact species-rich hedgerow	Hedgerow along the south and west of Site C less than 2.5m high and 2m wide made up of often hawthorn, holly, hazel, elder, and larch. Scrub layer at field edge made up of often bramble and willow species, with abundant nettles.	457m	n/a
J2.3.1 Hedge with trees species-rich	A row of recently pruned trees forming the boundary feature in the north west of Site C. Composed of hawthorn, ivy, cleavers and nettles as a ground layer.	198m	n/a
TOTAL		7.02ha/ 757m	

Table 8 – Site D Phase 1 habitat areas

Phase 1 habitat	Description	Area/ Length	% of Site Area
A1.1.1 Broadleaved semi-natural woodland	Strip of broadleaved woodland with footpath running through it. Canopy made of frequent maple *Acer* sp. and alder *Alnus glutinosa*, with hazel rare. Scrub layer comprised of abundant hawthorn, bramble and frequent elder. Ground cover of abundant common nettle, frequent ivy and occasional dogs mercury *Mercurialis perennis*. Young woodland with dense scrub and younger trees present in bulk of the area and mature trees around the peripheries in the north east corner of Site D. Bramble prevented access into area, but hawthorn and pedunculate oak present.	0.81ha	3.6
A2.1 Dense / continuous scrub	Small patch of woodland south west of Site D on the boundary. Composition of abundant bramble, with frequent ivy, occasional cleavers, common nettle, white dead nettle *Lamium album* and cow parsley. Rarely, mature maple *Acer* sp. and hawthorn.	0.15ha	0.7
A2.2 Scattered scrub	Scattered patches of scrub of abundant willow *Salix* sp. and bramble along westerly field boundary.	0.01ha	0.0
C3.1 Tall ruderal	A strip of weedy species adjacent to stream in north east boundary and arable field. Dominated by hemlock *Conium maculatum* with frequent common nettle and bramble, and occasional cow parsley, common hogweed *Heracleum sphondylium*.	0.09ha	0.4
J1.1 Arable	Recently planted arable field in the centre of Site D.	21.59ha	95.3
J2.1.2 Intact species-poor hedgerow	Very tall hedgerow (height unmanaged so now almost trees) creating field boundary through the centre of the Site D. 5m high, 2m wide, dominated by hawthorn, with frequent ivy, and occasional elder. The ground cover is made up of frequent wild carrot Daucus carota, nettles and cleavers.	780m	n/a
J2.2.1 Defunct species-rich hedgerow	Defunct hedgerow more than 2.5m high, 1.5m wide in the north of Site D. Comprised of abundant elder and bramble, with frequent hawthorn and rare hazel.	481m	n/a
J2.3.1 Hedge with trees species-rich	Unmanaged hedgerow in east of Site D, 4m high, 2m wide, scattered rare pedunculate oak and rare poplar *Populus* sp.. Within the hedgerow there is abundant elder, hawthorn, with occasional maple *Acer* sp. and common nettle is dominant in the ground cover.	137m	n/a
TOTAL		22.65ha/ 1398m	

Table 9 – Site E Phase 1 habitat areas

Phase 1 habitat	Description	Area/ Length	% of Site Area
A1.1.1 Broadleaved semi-natural woodland	Small section of broadleaved woodland in south side of Site E comprising frequent pedunculate oak and ash. Frequent bramble and hawthorn make the scrub layer.	0.02ha	0.3
A2.1 Dense / continuous scrub	Unmanaged scrub in the north west edge of Site E comprising occasional gorse *Ulex europaeus*, bramble, willow *Salix* sp. with abundant common nettle.	0.57ha	7.3
J1.1 Arable	Recently planted arable field making up majority of the Site.	6.20ha	92.4
J2.1.1 Intact species-rich hedgerow	Managed hedgerow, 3m high 2m wide, with abundant gorse and willow *Salix* sp.	923m	n/a
J2.2.1 Defunct species-rich hedgerow	Defunct hedgerow more than 2.5m high and 1m wide with abundant hawthorn, occasional elder and wild privet.	99m	n/a
TOTAL		6.79ha/ 1022m	

Table 10 – Site F Phase 1 habitat areas

Phase 1 habitat	Description	Area/ Length	% of Site Area
A1.1.1 Broadleaved semi-natural woodland	Small patch of broadleaved woodland of approx. 20 mature pedunculate oak trees, all with bat roost suitability - split limbs, knot holes, flaky bark etc. Other species present are dominant bramble in the scrub layer, and ground flora of occasional cleavers, lesser celandine *Ranunculus ficaria*, common nettle, with frequent perennial rye grass and broadleaved dock.	0.11ha	0.6
A2.1 Dense / continuous scrub	Scrub strip along field boundaries. Some small saplings of frequent pedunculate oak, with occasional hawthorn, hazel and ash. Ground cover of frequent bramble, with occasional broadleaved dock, dog rose, yarrow, white dead nettle, gorse and bracken, and rare compact rush *Juncus conglomeratus*.	1.64ha	9.0
A2.2 Scattered scrub	Multiple pockets of scattered scrub across the Site made up of dominant bramble with occasional gorse.	0.06ha	0.3
B4 Improved grassland	Tussocky grassland field dominated by perennial rye grass. Sward height approx. 10-15cm. Abundant Yorkshire fog *Holcus lanatus*, with occasional *Geranium* sp., bristly ox-tongue *Helminthotheca echioides* and broadleaved dock.	16.35ha	90.1
TOTAL		18.16ha	

Table 11 – Access Road land Phase 1 habitat areas

Phase 1 habitat	Description	Area/ Length	% of Site Area
A1.1.1 Broadleaved semi-natural woodland	Unmanaged patch of woodland on western boundary, comprised of dominant native and non-native mature oak Quercus sp., with rare silver birch, sycamore, hazel, hawthorn, holly and ivy in the ground cover. A second patch of woodland contains frequent Acer sp., hawthorn and pedunculate oak, with occasional willow Salix sp., ash and hornbeam. Ground layer of frequent cow parsley, with occasional lords-and-ladies, ivy, red dead nettle, and rare wild violet *Viola odorata*, Scrub layer of frequent blackthorn with occasional bramble, *Prunus* sp. and dogwood.	0.69ha	6.3
A1.1.2 Plantation woodland	Comprising ornamental trees along Whitstable Road and within Kent Community Oasis Garden.	0.10ha	0.9
A2.1 Dense / continuous scrub	Unmanaged scrub along field boundary, approx. 3m by 3m, composed of frequent hawthorn, bramble and ivy, occasional hazel and elder with rare maple Acer sp. Scrub strip between row of trees and arable field comprising abundant bramble, frequent common nettle and poplar *Populus* sp., with occasional cleavers, willow *Salix* sp., elder, and square stalked willow herb *Epilobium tetragonum*.	0.15ha	1.4
A2.2 Scattered Scrub	Scattered scrub in the centre of the southern section of the Access Road Land, containing frequent silver birch, frequent hazel, often acer saplings, often bramble and nettles.	0.33ha	3.0
A3.1 Broadleaved parkland / scattered trees	Mature trees within the amenity grassland on the east side of the Access Road Land. Occasional Norway maple *Acer platanoides*, silver birch and ash, with rare horse chestnut. Scattered trees within the amenity grassland on the west side of the Access Road Land including non-native oak Quercus sp., horse chestnut, Norway maple and ash. Row of trees and scrub running parallel to managed hedgerow through the middle of the Access Road Land. Contains frequent cypress and silver birch, with occasional *Prunus* sp. and rare dog rose and sorrel. Semi-mature trees on the amenity grass comprise beech, alder, silver birch, *Sorbus* sp., willow *Salix* sp., oak *Quercus* sp. and *Acer* sp.	0.06ha	0.5
B4 Improved grassland	Less managed grassland of approx. 10cm. Contains frequent red fescue, perennial rye grass, Yorkshire fog, with occasional sorrel *Rumex acetosa*, broadleaved dock, common dandelion and creeping buttercup.	1.42ha	13.0
J1.2 Amenity grassland	Amenity grassland covering the main section of the Access Road Land. The grass is mown and less than 5cm in height.	6.10ha	55.7

Phase 1 habitat	Description	Area/ Length	% of Site Area
	Dominant perennial rye grass with occasional common daisy.		
J3.6 Buildings	Comprising built structures.	0.15ha	1.4
J4 Bare ground	Area of tarmac/bare ground in the southern section of the Access Road Land, with common nettle clumps around the edges and small area of amenity grassland in the middle approx. 10cm high.	0.07ha	0.6
J5 Hardstanding	Allotment/garden area in the north east of the Access Road Land. Contains vegetable patches, ornamental plants and prunus sp.	1.88ha	17.2
J2.1.1 Intact species-rich hedgerow	1x1m well managed hedgerow through the centre of the Access Road land. Comprised of dominant hawthorn, frequent ivy and common nettle, with occasional bramble, lords-and-ladies and cleavers. A second 1m by 1.5m hedgerow is present containing abundant beech, *Cotoneaster* sp. and ivy.	571m	n/a
J2.1.2 Intact species-poor hedgerow	Cypress hedgerow approx. 3m high, 4m wide, in the centre of the Access Road land. Elder and *Acer* sp. also present. Well managed hedge with 1x1m of hawthorn with ivy along the base.	298m	n/a
J2.3.1 Hedge with trees species-rich	Dominant pedunculate oak canopy with holly and hawthorn scrub. Ground layer of non-native bluebell, lords-and-ladies and ivy. Unmanaged hedge with small trees present, containing dominant hawthorn and *Acer* sp., with occasional elder. Dominant common nettle at ground level.	152m	n/a
J2.3.2 Hedge with trees species-poor	Laurel hedge with semi-mature trees of silver birch, *Acer* sp., and ash. Bramble, nettles, and cleavers form the ground cover.	55m	n/a
J2.3.6 Dry ditch	Dry ditch within woodland approx. 50cm deep and 1m wide.	183m	n/a
TOTAL		10.95ha/ 1259m	100

3.2.2. In addition to the above, the Dismantled Railway Site comprises 2.2ha of broadleaved semi-natural woodland dominated by pedunculate oak trees. The scrub layer included occasional dog rose, wild privet, hazel, elder and rhododendron. Ground cover comprised occasional ivy, common nettle, cleavers and lords-and-ladies. The entrance to the tunnel has been filled in (Target Note 44)

3.3 PROTECTED AND NOTABLE SPECIES ASSESSMENT

3.3.1. The potential for the Site and its surroundings to support legally protected species and notable species has been assessed using the results of the desk study and observations made during the visit to the survey area. Desk study records were obtained from the KMBRC and have only been considered below if they are recent (from the last 10 years) and/or if they relate to species that may

be supported by habitats within and surrounding the Site. Habitats present are suitable for the following species; further consideration is given below to the likelihood for these species to be present:

- Bats;
- Badger;
- Hazel Dormouse;
- Otter;
- Water Vole;
- Hedgehog;
- Birds;
- Reptiles;
- Great crested newt;
- Notable plants; and
- Invertebrates.

3.3.2. The Site and its surroundings do not provide suitable habitat for other protected or notable species beyond those listed above. However, identification of invasive non-native plants has formed part of the appraisal scope also.

BATS

3.3.3. The desk study data returned by KMBRC comprised 1164 records of bats across 15 species. These records comprised; serotine *Eptesicus serotinus*, alcathoe *Myotis alcathoe*, Bechstein's *Myotis bechsteinii*, Brandt's *Myotis brandtii*, Daubenton's *Myotis daubentonii*, Greater Mouse-Eared *Myotis myotis*, whiskered *Myotis mystacinus*, Natterer's *Myotis nattereri*, Leisler's *Nyctalus leisleri*, noctule *Nyctalus noctula*, Nathusius' Pipistrelle *Pipistrellus nathusii*, common *pipistrelle Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus* and grey long-eared *Plecotus austriacus*. The most recent bat record was of a Daubenton's, which was recorded in February 2019, but accurate location data was not provided. The data showed the area was used for both foraging/commuting and roosting.

3.3.4. The survey area supports habitats suitable for foraging and commuting bats and provides linear features throughout the wider landscape. Foraging habitat includes farmland (arable/pasture), woodland, grassland and ponds that are connected by hedgerows and watercourses. The survey area is considered to be of "High" suitability for foraging and commuting bats with respect to the BCT guidelines (Collins, 2016).

3.3.5. Bat roost assessment to categorise all trees and buildings with regards to their bat roosting suitability was not completed as this was beyond the scope of the appraisal. However, numerous trees within the Survey Area's broadleaved woodland and parkland habitats, and along field margins have suitability to support roosting bats. Suitable trees were located within Site A (Target Note 1 and 2), Site B (Target Notes 3, 4, 6, 9 and 10), Site D (Target Notes 23, 24 and 25) and Site F (Target Notes 31, 32, 33, 34, 35, 36 and 37). Many are mature, and present features such as splits, hazard beams, woodpecker holes and rot holes, all of which could support roosting bats.

3.3.6. Buildings are uncommon within the Sites which mainly comprise undeveloped land but could also support roosting bats where they occur. Buildings with bat roost suitability identified by the survey were at Site B (a church adjacent to the Site; Target Note 6) and the Access Road Site (Target Note 39).

BADGER

3.3.7. KMBRC did not return records of badger due to their requirement for confidentiality. However, the Survey Area provides suitable badger foraging and commuting habitat, and scrub and woodland habitat within and surrounding the Disposal Sites offers a secure place for their setts (burrows in which badgers rest and find shelter).

3.3.8. Evidence of badger presence was found during the survey. Setts were identified within Sites B (Target Note 05), C (Target Note 19) and E (Target Note 20), with the sett in Site B comprising over 15 entrances indicating it may constitute a main sett used as the principal breeding site for a badger clan. In addition, badger dung pits which are used as territorial markers were identified in Site C (Target Note 17 and 18) and E (Target Note 28).

HAZEL DORMOUSE

3.3.9. KMBRC returned 282 records of hazel dormice, populations being located in woodlands surrounding the Survey Area to the west, north and east. Key locations include West Blean Woods, Blean Woods NNR, Cole Wood and Little Hall Wood.

3.3.10. Suitable habitat for dormouse is found within all the Disposal Sites, with woodland, hedgerows and scrub offering opportunities for this species to forage, commuting between different areas of habitat, breed and hibernate. Site B offers the mix of habitats most suitable for this species, with the northern edge of Brotherhood Wood noted as of particular importance (Target Note 16).

OTTER

3.3.11. Otter records returned by KMBRC indicate the presence of this species along the Great Stour and its flood plain to the south of the Survey Area, with 7 records from this area from 2019. The Great Stour is 1.1km to the south of Site A at its closest point, with urban areas of Canterbury between the Survey Area and the river.

3.3.12. The Survey Area is suitable for foraging or commuting otters. However, with only small water courses present and the significant barrier of urban areas in Canterbury between it and the Great Stour it is unlikely to play an important role in supporting local otter populations.

WATER VOLE

3.3.13. Four records of water vole were returned by KMBRC from the Study Area; two from 2010, one from 2014 and one from 2016. Records were centred on areas adjacent close to the river Great Stour. The Survey Area offers limited suitable for foraging and breeding habitat for water voles within Site B. The Sorre Penn stream (Target Note 15) that cuts across this Disposal Site and a drainage channel that feeds into it from the north (Target Note 14) possess aquatic vegetation that could support this species. In addition, a stream runs along the northern edge of Site D (Target Note 26) which could also support this species.

HEDGEHOG

3.3.14. KMBRC returned 22 records of hedgehog *Erinaceus europaeus* from a variety of locations surrounding the Survey Area. This species uses scrub and woodland-edge habitats for foraging and commuting, and is frequently associated with hedgerows. The Survey Area offers extensive suitable habitat for this mammal species.

BREEDING BIRDS

3.3.15. Notable bird species were identified within 2km, defined as those which are protected under Schedule 1 of the Wildlife and Countryside Act 1981 and/or listed as SPIs on Section 41 of the Natural Environment and Rural Communities Act 2006 or the Birds of Conservation Concern (BoCC) red or amber lists[7]. KMBRC returned over 22,000 records of birds across 179 species. Records of seabirds, gulls and waders comprised a large part of the data, but the Survey Area does not provide suitable habitat for such species, the records coming from areas adjacent to the Thames estuary and North Sea which lie to the north. Some records were of vagrant species passing through the UK on migration, and do not breed within the UK. These data show that the landscape around Canterbury and the Survey Area is used but a wide variety of bird species during different stages of their annual cycle, with breeding, passage migrant and wintering species present.

3.3.16. The trees and habitats present within the Survey Area have the potential to support common and widespread species of breeding birds. In addition, arable land and pasture could support yellowhammer and corn bunting, and other farmland birds such as skylark. These three species were identified in the records returned by KMBRC. This farmland bird community is of conservation importance due to steep population declines in the UK due to changes in agricultural practices and land use; corn bunting in particular are BoCC Red listed and are the subject of conservation efforts in the UK to reverse this change (Robinson, 2005; Perkins et al, 2011).

REPTILES

3.3.17. KMBRC returned 137 records of reptiles across three species; grass snake (16 records), common lizard (31 records) and slow-worm (90 records). The records were from a wide variety of locations surrounding the Survey Area. The mixture of grassland, scrub and woodland habitats, along with arable field margins and amenity grassland associated with development offer a wide variety of foraging habitat for reptiles within the Survey Area. In addition, a rubble pile located within Site B (Target Note 12) and log piles at the Access Road Site (Target Note 43) offer hibernacula for reptiles.

GREAT CRESTED NEWT

3.3.18. One hundred and fifty-four records of great crested newt were identified, with records of this species occurring with the data every year between 2013 and 2020. Records show that this species is present within the University of Kent Campus, and previous work has been undertaken by WSP to support development at this site.

3.3.19. The mixture of grassland, scrub and woodland habitats, along with arable field margins and habitats associated with development offer a wide variety of terrestrial foraging habitat opportunities for great crested newt within the Survey Area. Ponds suitable for breeding are common and 6 were identified during field surveys; 2 within Site B (Target Notes 7 and 8), 1 within Site C (Target Note 21), 1 within Site D (Target Note 27), 1 within Site E (Target Note 30) and 1 within Site F (Target Note 38). In addition, a rubble pile located within Site B (Target Note 12) and log piles at the Access Road Site (Target Note 43) offer hibernacula for great crested newt.

[7] The Birds of Conservation Concern (BoCC) commonly referred to as the UK Red List for birds is an assessment based on the most up-to-date evidence available and criteria include conservation status at global and European levels and, within the UK: historical decline, trends in population and range, rarity, localised distribution and international importance.

NOTABLE PLANTS

3.3.20. KMBRC returned a single notable plant record. This was of knot grass *Acronicta rumicis* from Blean Woods to the west of the Survey Area. The agricultural land uses that dominate habitats in the Survey Area, being mainly arable, restrict the its ability to support notable plant species. They could however grow along field margins and in wetland areas (i.e. along water courses and around ponds).

INVERTEBRATES

3.3.21. Two-hundred and forty-one records of protected and/or notable invertebrate species were returned for the Study Area by KMBRC of 13 species. These comprised:

- Four species of butterfly - heath fritillary *Melitaea athalia*, small heath *Coenonympha pamphilus*, wall brown *Lasiommata megera* and white admiral *Limenitis Camilla*. Records are mainly associated with woodlands surrounding the Survey Area (e.g. Blean Woods).
- Five species of moth - broom-tip *Chesias rufata*, cinnabar *Tyria jacobaeae*, shaded broad-bar *Scotopteryx chenopodiata*, white ermine *Spilosoma lubricipeda* and white-spotted sable *Anania funebris*. Records from a variety of locations
- One bumblebee – large garden bumblebee *Bombus ruderatus*. Record from within Canterbury.
- One dragonfly – Norfolk aeshna *Anaciaeschna isosceles*. Record from Blean village.
- Stag beetle *Lucanus cervus* – represented by a single record from the south of the Study Area in Canterbury.
- One millipede – boring millipede Polyzonium germanicum. Records from Clowes Wood to the north.

3.3.22. The HPIs within the Survey Area are likely to provide some suitable habitat for protected and notable invertebrates such as the woodland and good quality semi-improved grassland. The remaining lower value habitats are likely to support common and widespread invertebrates only.

NON-NATIVE INVASIVE PLANT SPECIES

3.3.23. KMBRC did not return records of non-native and/or invasive plants from the Study Area. However, during the field survey a species of *Cotoneaster* within a managed hedgerow was identified at the Access Road Site (Target Note 40).

4 DISCUSSION AND RECOMMENDATIONS

4.1 STATUTORY DESIGNATED SITES

4.1.1. The Habitats Regulations provide strict protection to sites of European and/or international importance; also known as National Network sites. This includes requiring projects or plans to be screened for likely significant effects upon SPA, SAC and candidate SACs (cSACs). Guidance also requires that potential SPAs (pSPAs) and Ramsars are subject to the same assessment.

4.1.2. There are six National Network sites within the desk study area; Blean Complex SAC, Stodmarsh SAC/SPA/Ramsar, The Swale SPA/Ramsar, Tankerton Slopes and Swalecliffe SAC, Thanet Coast & Sandwich Bay SPA/Ramsar and Outer Thames Estuary SPA. Most are some distance from the Survey Area, but Blean Complex SAC is close-by, 278m to the west of Site B. The National Network sites identified should be subject to screening under the Habitats Regulations by the competent authority (in this case the Local Planning Authority) to determine whether any potentially significant effects are likely to result from the development of the Disposal Sites. Provision of a screening assessment is recommended to confirm that no effects pathways link the National Network sites and proposed development and to confirm there would be no significant adverse effects on these sites.

4.1.3. SSSIs are subject to strict protection under the Wildlife and Countryside Act 1981 (as amended). This requires landowners to maintain these sites in favourable condition and that any works within these sites are managed by the appropriate national statutory body via the consent process. Certain operations within SSSIs are listed as operations likely to damage (OLDs) the specific interest of the site and require consent from Natural England; these are specific to each SSSI.

4.1.4. Several SSSIs are close to the Disposal Sites, with West Blean and Thornden Woods SSSI directly adjacent to Site F, but none are within them. Degradation due to run-off, disturbance due to increases in population density and other effects could result from impacts of development on these SSSIs. Their presence therefore presents a potentially significant constraint to development. Consultation with Natural England should be undertaken at an early stage to engage with this stakeholder on potential effects on SSSIs.

4.1.5. It should be noted that Blean Woods NNR is within the boundary of Church Woods, Blean SSSI 200m to the west of Site B and may represent an additional level of constraint during the consent process.

4.2 NON-STATUTORY DESIGNATED SITES

4.2.1. There are seven LWS within the desk study area. CA15 Blean Pastures LWS lies within Site B and would be directly affected by its development. CA14 Tyler Hill Pastures LWS and CA18 Little Hall and Kemberland Woods and Pasture LWS are directly adjacent to Site D and F respectively, with CA34 Blean Woods, Harbledown to Dunkirk and CA16 Clowes Wood and Marley Wood more distant at between 650m and 700m away. All of these LWSs could be subject to degradation effects due to run-off, disturbance due to increases in population density and other indirect impacts of development.

4.2.2. AS27 Great Stour, Ashford to Fordwich and CA52 St Augustine's Abbey, Canterbury lie to the south of the Survey Area on the other side of Canterbury, separating the Disposal Sites from them by areas of residential, commercial and industrial development and transport infrastructure; thus they are unlikely to be affected by development of the Disposal Sites.

4.3 HABITATS

4.3.1. The ecological importance of habitats present has been assessed with consideration to designations such as listing as HPI, and their potential to support protected or notable species. In particular, the NERC Act requires public bodies (including planning authorities) to '*in exercising its functions, have regard so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity*'.

4.3.2. The following HPI were identify within the Study Area using Natural England's online database:

- **Deciduous woodland**: There are patches of broadleaved semi-natural woodland identified as HPI within Site A, Site B and along the Dismantled Railway Site. They are considered intrinsically important as they provide supporting habitat for a wide variety of animals and plants. Further patches of deciduous woodland not identified by the Natural England database, but that may be of HPI quality, are found within Site D and Site E.
- **Good quality semi-improved grassland**: Lying across Tile Kiln Hill (A290) to the west of Site B and associated with Church Woods, Blean SSSI. These grasslands support a diverse community of grasses and forb species, over and above that found in more heavily grazed or managed grasslands elsewhere.
- **Traditional orchard**: Comprising traditionally managed fruit trees that support other species of ecological importance.

4.3.3. Good quality semi-improved grassland and traditional orchard HPI would not be directly affected by development of the Disposal Sites are they lie outside their boundaries. They could be subject to degradation effects due to run-off, disturbance due to increases in population density and other indirect impacts of development however.

4.3.4. Design proposals should seek to avoid effects on deciduous woodland HPI due to their intrinsic importance, but where this is not possible mitigation and compensation measures should be put in place to offset potential losses. It should be noted that within the context of Biodiversity Net Gain, HPI loss is considered significant and would prevent the scheme from achieving a net gain for biodiversity.

4.3.5. It should be noted that patches of woodland discussed above are also identified as ancient woodland, with this type of woodland being located within the Survey Area (Site B) and the wider area around the Disposal Sites.

4.3.6. Other habitats found within the survey area are common and widespread within the United Kingdom and do not have intrinsic ecological importance and therefore they are not considered a constraint to the Proposed Scheme. However, they may support protected or notable species and thus have been discussed below with reference to their roles within the lifecycle of species of importance.

4.4 PROTECTED AND NOTABLE SPECIES

4.4.1. The results of the desk study and Phase 1 habitat survey highlighted the potential presence of several protected species or species of conservation concern within the Survey Area, or within its immediate surroundings. These include bats, badger, dormouse, otter, water vole, hedgehog, breeding birds, reptiles, great crested newt, notable plants and invertebrates. The legal protection afforded to these species is outlined below and, where appropriate, the requirement for further survey and/or mitigation measures is identified.

BATS

Legislative Context

4.4.2. All species of bats recorded within the UK are protected from killing, injury and disturbance[8] and their roosts protected from damage or destruction under the Habitats Regulations. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.

4.4.3. Certain species of bats, including Bechstein's bat, noctule, brown long-eared bat and soprano pipistrelle are also listed as Species of Principal Importance (SPI) for the conservation of biodiversity in England in accordance with Section 41 of the NERC 2006. Section 40 obliges public bodies (including local planning authorities) to have regard for the conservation of biodiversity (including SPI) when discharging their duties (including determining planning applications).

4.4.4. Bats are European Protected Species (EPS) and both individual animals and their roosts are afforded protection under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended).

Roosting Bats

4.4.5. The survey identified trees that could support roosting bats within Sites A, B, D, and F, and buildings that could support roosting bats associated with Sites B and the Access Road Site. Although the church identified in Target Note 6 at Site B is not within the Disposal Site itself, it's proximity and likely importance as a roosting site warrant its consideration. However, the field survey undertaken as part of the PEA did not extend to cataloguing all suitable roosting structures due to the extensive area the Disposal Sites collectively cover, and further trees which could support roosting bats are likely present.

4.4.6. Further surveys are recommended to determine the suitability of trees to support roosting bats as they could present a constraint to development. Where such trees are identified and would be removed, they should be surveyed to determine whether active roosts are present.

Foraging / Commuting Bats

4.4.7. The woodland, grassland, scrub, and water course habitats throughout the Survey Area provide suitable commuting and foraging opportunities for bats. Given the wider environment which is largely urban to the south and a mixture of farmland and woodland to the north, west and east, the Survey Area may function as a potentially important green wildlife corridor used by bats at the landscape scale. Development of the Disposal Sites may fragment, or isolate habitat used by foraging and commuting bats as proposals would likely involve loss of habitat and creation of new barriers to bat flight lines. Development could also affect bat foraging areas and commuting routes through changes in the lighting regimes during the construction and operational phases, and through the loss of habitat to facilitate access or construction works.

[8] Disturbance is defined within the Habitats Regulations as that which is likely to impair a species ability to survive, breed or reproduce, hibernate or migrate or to significantly affect the local distribution or abundance of the species.

BADGER

4.4.8. The Protection of Badgers Act 1992 makes it illegal to wilfully kill, injure or take any badger, or attempt to do so. It also makes it an offence to intentionally or recklessly damage, destroy or obstruct access to any part of a badger sett. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.

4.4.9. Badger presence has been confirmed within the Survey Area during the Phase 1 habitat survey. Although setts were identified, the scope of field work did not extend to a complete badger survey across all of the Disposal Sites. Further surveys are recommended to determine the locations of setts and whether this species presents a constraint to development.

HAZEL DORMOUSE

4.4.10. Hazel dormice are protected from killing, injury and disturbance[9] and their places of rest or shelter (occupied habitat) protected from damage or destruction under the Habitats Regulations. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.

4.4.11. Hazel dormice are also listed as SPI in accordance with Section 41 of the NERC Act 2006. Public bodies have an obligation under Section 40 to have regard for these species when carrying out their functions, which is enacted locally under Policy CS12 of the Gravesham Local Plan Core Strategy.

4.4.12. Suitable habitat within the Survey Area and an abundance of records from the wider Study Area indicate that hazel dormouse is a potential constraint to development. Further surveys to determine whether this species is present within the Survey Area, and in which habitats, are recommended.

OTTER

4.4.13. Otters are protected from killing, injury and disturbance[8] and their place of rest or shelter (holts) are protected from damage or destruction under the Habitats Regulations. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.

4.4.14. Otters are also listed as SPI in accordance with Section 41 of the NERC Act 2006. Public bodies have an obligation under Section 40 to have regard for these species when carrying out their functions.

4.4.15. Aquatic habitats provide foraging opportunities but the nearest such suitable habitat is the river Great Stour 1.1km to the south of Site A and across the barrier of Canterbury. There are limited holt-building and ‘laying-up’ opportunities for otters within the Survey Area due to the distance from significant water courses that would provide a corresponding food resource. Additionally, the levels

[9] Disturbance is defined within the Habitats Regulations as that which is likely to impair a species ability to survive, breed or reproduce, hibernate or migrate or to significantly affect the local distribution or abundance of the species.

of disturbance from the public and from adjacent farming operations make habitat less favourable for otter holt creation and for use by otters in general.

4.4.16. Further survey to determine whether otter present a constraint to development should be undertaken combined with surveys for water vole (see below).

WATER VOLE

4.4.17. Water vole are protected from killing and injury and their place of rest or shelter (burrows) are protected from damage, destruction or obstruction under the Wildlife and Countryside Act 1981 (as amended). Additional protection from disturbance is extended to individuals occupying places of rest or shelter. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.

4.4.18. Water vole is also listed as SPI in accordance with Section 41 of the NERC Act 2006. Public bodies have an obligation under Section 40 to have regard for these species when carrying out their functions.

4.4.19. The Sorre Penn stream and other watercourses, including drainage ditches, are considered to provide suitable foraging and burrowing opportunities given the presence of aquatic plants and their soft embankments. Searches for this species were undertaken during the field survey found no evidence of water vole but were brief as a detailed survey was outside the scope of the PEA.

4.4.20. Further survey is recommended, covering streams and drainage ditches within the Survey Area, to determine whether water voles and present or absent, and to estimate the size of the population if present.

HEDGEHOG

4.4.21. Hedgehog is listed as SPI in accordance with Section 41 of the NERC Act 2006, and is therefore a Material Consideration in the planning process, and a potential constraint to development. Clearance of vegetation within the Disposal Sites to facilitate development may result in the killing or injury of hedgehog, as this species is considered likely to be present within woodland, scrub and arable field margins. Recommendations for sensitive vegetation clearance, to minimise the risk of killing or injury to hedgehog, are proposed.

BIRDS

4.4.22. The Habitat Regulations 2017 Part 1 Regulation 10(2) & (3) state that local authorities '*must take such steps in the exercise of their functions as they consider appropriate to contribute to…the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the UK including by means of the upkeep, management and creation of such habitat…*'. The legislation continues to state that economic and recreation requirements must be taken into account when considering which measures are appropriate.

4.4.23. Under the Wildlife and Countryside Act 1981 (as amended) all wild birds are protected from killing and injury, and their nests and eggs protected from taking, damage and destruction whilst in use. Additional protection is extended to species listed under Schedule 1 of the Act, meaning it is also an offence to disturb these species at or near the nest, or whilst they have dependent young. Measures to prevent disturbance and destruction of nests during the breeding season are proposed as general control measures for risks associated with breeding birds.

4.4.24. The presence of a farmland bird community could mean development would contribute to the decline seen by these species in the UK. Further surveys to determine the composition of the breeding bird community in the Survey Area are recommended.

REPTILES

4.4.25. Native widespread reptile species (common lizard, adder, grass snake and slow worm) are partially protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This includes protection from killing and injury. All reptile species are also listed as SPI in accordance with Section 41 of the NERC Act 2006. Public bodies have an obligation under Section 40 to have regard for these species when carrying out their functions.

4.4.26. Suitable habitat for native widespread reptile species is found throughout the Survey Area and ecological records indicate the presence of a variety of species. Further survey is recommended to determine the presence or absence of reptiles, and the species composition of the community within the Disposal Sites.

GREAT CRESTED NEWT

4.4.27. Great crested newts are protected from killing, injury and disturbance[8] and their places of rest or shelter (occupied habitat) protected from damage or destruction under the Habitats Regulations. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.

4.4.28. Great crested newt are also listed as SPI in accordance with Section 41 of the NERC Act 2006. Public bodies have an obligation under Section 40 to have regard for these species when carrying out their functions.

4.4.29. There are recent records of great crested newt from within and surrounding the University of Kent including the Survey Area itself. In addition, previous work undertaken by WSP at the University of Kent confirms that a population of great crested newts is present on the main university campus. Ponds which could support breeding great crested newt are present within the Disposal Sites along with suitable terrestrial habitat and hibernacula. As such, with all the evidence considered it is likely that great crested newt will pose a constraint to development.

4.4.30. Two potential courses of action are available to offset this constraint:

- Further work to determine the extent to which great crested newts constrain the development. This would firstly involve identifying ponds within the wider landscape to 250m from the Survey Area and in addition to those already identified within the Disposal Sites, followed by field surveys to determine the presence or absence of breeding great crested from those ponds. Survey should comprise eDNA sampling in the first instance with follow-up direct pond survey (torch light counts, bottle trapping, netting and/or egg searching) to determine the presence or absence of great crested newts, and allow estimation of the population size present. Habitat Suitability Index scores (Oldham, 2001) should also be collected for all ponds identified.
- Alternatively, as Kent and Medway is operating a District Level Licensing (DLL) scheme for great crested newts, consultation should be undertaken with Natural England to determine if this scheme could be utilised rather than pursuing surveys and any licensing that may result. This

would offer a more manageable and cost-effective alternative to delivering a solution to this constraint.

4.4.31. It is recommended that District Licensing is pursued as the first option, with consultation being undertaken to determine whether this approach is applicable to the development of the Disposal Sites. If not applicable, surveys for great crested newt should be undertaken to inform the planning consent process.

INVERTEBRATES

4.4.32. Several invertebrate species are protected under the Wildlife & Countryside Act 1981 (as amended), and further species are included as SPI under the NERC Act 2006 as well as Local BAP species, however none of these records are located within the Survey Area.

4.4.33. The Proposed Scheme could result in the loss of deciduous woodland HPI habitat. Further survey work for protected and notable invertebrate species is recommended.

NOTABLE PLANTS

4.4.34. Further surveys to characterise botanical communities in woodlands, on arable field margins and in grasslands are recommended to determine the extent of effects on notable plants habitats. National Vegetation Classification (NVC) surveys are recommended to meet this need, covering areas of HPI woodland primarily, with consideration also given to grasslands and the borders or fields within the Survey Area to characterise and evaluate them.

4.5 FURTHER SURVEY REQUIREMENTS

4.5.1. Potential ecological constraints for which further surveys are required to ensure legal and planning policy compliance are listed in Table 12.

Table 12 – Key Ecological Constraints and Further Survey Requirements

Ecological Receptor	Potential Constraints	Further Survey Requirements	Survey Seasonal Constraints
Bats	Demolition of buildings and felling of trees with suitable roost spaces may result in the damage to/destruction of a bat roosts. The tunnel structure may also support roosting bats. Vegetation clearance, construction activities and new lighting regimes may result in a loss or disturbance of foraging/commuting habitat.	A Preliminary Bat Roost Assessment (PBRA) survey of trees, buildings and the tunnel structure to map these features and determine their suitability as roosting sites should be undertaken. It may be possible to determine the presence, potential presence or absence of roosting bats at these locations during the PBRA by direct inspection of suitable roost spaces (e.g. via the use of an endoscope), but additional surveys of suitable roost sites will likely be required also. The PBRA would comprise a ground level inspection of trees, an external (and internal, where possible) inspection of buildings and the tunnel to search for evidence of roosting bats, and to identify potential roosting features. These features will be assigned a level of suitability to support roosting bats which would then inform the need for further presence/absence surveys; buildings by emergence/return survey and trees by climbed inspection or emergence/return survey depending on their condition. Access should be sought for buildings which could not be accessed during the Phase 1 habitat survey. It is recommended that further bat activity surveys are undertaken across the Disposal Sites. The design of this survey should enable the identification of bat species using the	PBRA surveys can been undertaken at any time of year, in accordance with good practice guidance (Collins (ed.), 2016) Emergence/re-entry or climbed inspection surveys, if required following the PBRA should be undertaken in the active season for bats (May to September inclusive), in accordance with good practice guidance (Collins (ed.), 2016). The activity surveys should be undertaken during the active season (May to September inclusive), in accordance with good practice guidance (Collins (ed.), 2016).

Ecological Receptor	Potential Constraints	Further Survey Requirements	Survey Seasonal Constraints
		Disposal Sites for commuting/foraging purposes, as well as identifying indicative movement patterns. The activity survey should be repeated across multiple months to identify changes in bat activity across the Disposal Sites throughout the active season, following guidance issued by the Bat Conservation Trust (Collins (ed.), 2016).	
Badger	Vegetation clearance and construction activities within or adjacent to the Disposal Sites may result in the killing or injury to badger, and the damage or destruction of setts. However, the extent of badger occupation of these areas is unknown at present, field signs having been identified during the Phase 1 habitat survey.	A badger survey should be undertaken covering suitable habitat across the Disposal Sites, including Site B, C and the Dismantled Railway Site which are the most likely to support badger. It should be noted that gaining access to the Dismantled Railway Site may require selective/targeted vegetation clearance to permit surveyor access in areas of particularly dense vegetation. The badger survey would comprise a walkover of suitable habitats to search for and record evidence of badger presence, including setts, mammal runs, latrines and footprints.	Badger surveys can be undertaken at any time of year but are optimal in winter-early spring, when dense vegetation has died back.
Dormouse	Removal of hazel dormouse nesting habitat and food resource during habitat clearance works, killing or injuring individuals.	Surveys of suitable habitat for hazel dormice within the Site should be undertaken to determine their presence or absence.	Survey should cover the active period for this species which is between April (when they emerge from hibernation to feed and breed) and November (when they return to hibernation for the winter).
Otter and water vole	Vegetation clearance in Site B and D may result in the killing or injury of otter and water vole, and the damage	An otter/water vole survey of Site B and D, surrounding vegetated habitat and the pond in the northeast of Site B is required to identify presence or absence from these habitats.	At least one of the otter/water vole survey visits should be conducted in spring (e.g. March to May inclusive), when water levels are typically lower, to increase the likelihood of detecting evidence (Natural England, 2019).

Ecological Receptor	Potential Constraints	Further Survey Requirements	Survey Seasonal Constraints
	or destruction of holts/burrows.	It is recommended that the survey is conducted on two separate occasions to increase the likelihood of detecting evidence of otter/water vole presence.	
Hedgehog	Vegetation clearance within Disposal Sites may result in killing or injury of this species.	None, constraint to be offset by mitigation prior to vegetation clearance	N/A.
Breeding birds	Vegetation clearance may result in the damage or destruction of bird nests, including nests of farmland birds, Schedule 1 species and SPI.	It is recommended that a breeding bird survey of the Disposal Sites is undertaken, to identify the presence or absence of farmland birds, Schedule 1 species and, SPI. The breeding bird survey would comprise a walked transect of the Disposal Sites, repeated six times between early-April and mid-July with visits spreads evenly across this period. The aim of the survey should be to confirm species present and their breeding status. The survey methodology should incorporate methods to survey for corn bunting and yellowhammer (which breed late in the season so extending the survey period into July), with nightingale also considered (by extending the survey duration to include the period around sunrise).	The breeding bird surveys should be conducted at regular intervals between early-April and mid-July.
Reptiles	Vegetation clearance may result in the killing or injury of reptiles.	A reptile survey of areas of suitable habitat should be undertaken to determine the presence or absence of reptiles within the Disposal Sites. Desk study data records slow worm, grass snake, and common lizard in the Study Area.	The deployment of artificial refugia and subsequent survey visits should be appropriately spaced during the active season for reptiles, typically April to September inclusive. The suitability of July and August for reptile surveys is dependent on suitable weather conditions

Ecological Receptor	Potential Constraints	Further Survey Requirements	Survey Seasonal Constraints
		The reptile survey would comprise the deployment of artificial refugia (typically 0.5m x 0.5m squares of roofing felt) within areas of suitable habitat. After a 'bedding down' period of approximately two weeks, the artificial refugia would then be checked over seven separate survey visits to record the presence or otherwise of reptile species.	(i.e. temperatures between 10ºC and 20ºC) (Edgar *et al*., 2010).
Great crested newts	Vegetation clearance and/or removal of water bodies and associated terrestrial habitat may result in killing or injury of great crested newt and the damage or destruction of suitable terrestrial/aquatic habitat.	Explore possibility of using the District Licensing system, which is available for this species through consultation with Natural England. *However*, if the District Licensing system cannot be used and surveys are necessary, Habitat Suitability Index (HSI) assessments should be undertaken on waterbodies. Subsequently, population size class estimate surveys should be undertaken in the selected suitable waterbodies to identify the likely population size class range of great crested newt in each waterbody. Population size class estimate surveys comprise six visits to each waterbody to deploy bottle traps which are left overnight and collected the following morning. The waterbodies would also be visually inspected by torchlight and marginal vegetation inspected for great crested newt eggs on each survey visit. Upon completion of the surveys, peak counts are used to estimate the population size class (e.g. low, medium or high population size) of great crested newt.	Population size class estimate surveys should be completed between March and June, with at least three visits completed in the period mid-April to mid-June (English Nature, 2001).

Ecological Receptor	Potential Constraints	Further Survey Requirements	Survey Seasonal Constraints
Notable plants	Clearance of vegetation may result in the loss of notable plant species not recorded during the Phase 1 habitat survey, particularly within Site A, B and F.	A notable plant survey should be conducted within suitable areas of habitat within the Disposal Sites. This survey would comprise a walkover targeting open and wetland areas (along water courses and around ponds), to identify and map the presence of notable plant species and classify botanical communities using the NVC system. The survey should be conducted on two occasions throughout the botanical survey season to capture the different flowering periods of notable species.	The walkover survey should be conducted between May and August inclusive, to cover the main flowering period.
Invertebrates	Clearance of vegetation may result in the loss of notable plant species not recorded during the Phase 1 habitat survey, particularly within Sites A, B, D, F and the Dismantled Railway Site.	An invertebrate survey should be conducted within suitable areas of habitat within the Disposal Sites. Following a scoping walk-over survey appropriate survey techniques would be used to assess the relevant habitats. Desk study data identified records of important species in the Study Area, including stag beetle and Norfolk aeshna.	Surveys for terrestrial insects and other invertebrates should be carried out between April and September, with adjustment for local weather conditions. A number of visits should be scheduled within this period if different groups of species are being surveyed. A site between 10 and 50 hectares should have between three and seven days of field work, and three and seven days of identification (Natural England, 2006).

4.6 PRELIMINARY AVOIDANCE, MITIGATION AND COMPENSATION MEASURES

4.6.1. To enable compliance with relevant legislation and planning policy, as described above within Section 4.1, 4.2, 4.3 and 4.4, the following avoidance, mitigation and compensation measures set out in should be designed in to the Proposed Development. These will be refined following completion of further survey recommended in Table 12 above.

4.6.2. A range of additional mitigation and compensation measures may be required. However, these cannot be defined until further survey work and assessments have been completed. The following account should be taken as a provisional list of avoidance, mitigation and compensation requirements.

Table 13 – Avoidance, mitigation and compensation

Ecological receptor	Likely effects	Recommendations
HPI and LWS within Disposal Sites, designated sites and HPI close to the Site. Designated sites (SAC, SSSI, LWS) and HPI close to the Disposal Sites.	Partial or complete loss of LWS within Site B, HPI and habitats which support protected. Indirect effects on nearby designated sites and HPI.	Where possible, woodland, hedgerows, grassland, and watercourse habitats should be retained as part of the final designs, to avoid direct effects on the LWS in Site B and HPI. Retained habitats within Disposal Sites, and nearby designated sites and HPI should be protected from indirect effects through adherence to good practice construction methods set out in Section 4.5.3. Where partial or complete removal of habitats is required to facilitate development, they should be replaced through compensatory planting to avoid a net loss of biodiversity. It is recommended that a BNG assessment of the Proposed Development is undertaken to identify the extent of habitat compensation required to achieve a net gain of biodiversity.
Commuting/foraging bats	Any new temporary or permanent lighting associated with development may result in disturbance of roosting bats, if present, and may deter commuting/ foraging bats.	In order to avoid effects on bats commuting/foraging after dark, night works and artificial lighting during the construction phase of development should be avoided where possible. Lighting used within the development should be low level where possible with luminaires or other directional light accessories affixed to ensure that light is focussed and light spillage onto surrounding habitats is avoided or minimised (BCT, 2014). Motion activated lighting and or timing lighting to remain on for a certain period would also help mitigate potential adverse impacts on local bat populations.
Hedgehog	Killing or injury as a result of vegetation clearance	It is recommended that any clearance of vegetation that could be used by hedgehog (scrub, hedgerows etc) is undertaken sensitively using hand tools or otherwise under ecological supervision, to minimise the risk of killing or injury to this species.
Breeding birds	Death or injury to adults and young, and destruction of nests as a result of vegetation clearance.	Any necessary removal of vegetation and trees should occur outside the typical bird nesting season (it is preferable for clearance to take place from October to February inclusive) to minimise the risk of damaging or destroying active bird nests. If vegetation removal outside

Ecological receptor	Likely effects	Recommendations
		the typical bird nesting season is not practical, it is recommended that a suitably experienced ecologist search for active nests in advance of the works to confirm the absence of nests. Should an active nest be found, works should not take place within an appropriate area around the nest until it is no longer active (i.e. the chicks have fledged).

ENVIRONMENTAL BEST PRACTICE

4.6.3. In addition, general environmental protection measures must be implemented during the construction phase of the proposed scheme. Such measures include best environmental practice guidance outlined in the Environment Agency's Pollution Prevention for Business guidance (see NetRegs.org.uk[10]) and those outlined by the Construction Industry Research and Information Association guidance (CIRIA, 2015). The following minimum standards should be adhered to prevent ecological impacts beyond the Site boundary:

- Measures must be taken to prevent dust and other emissions from construction affecting land beyond the Site.
- Chemicals and fuels must be stored in secure containers located away from watercourses or water bodies. Spill kits must be available.
- Excavations must be covered or securely fenced (with no potential access points beneath fencing) when the Site is closed (e.g. overnight) to prevent entrapment of animals.
- Retained trees must be protected in accordance with BS5837;
- Noise and vibration must be controlled and kept to the minimum necessary.

4.7 ECOLOGICAL ENHANCEMENT OPPORTUNITIES

4.7.1. The National Planning Policy Framework (NPPF) (2019) states that at an overview level the 'planning system should contribute to and enhance the national and local environment by… minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures'.

4.7.2. To encourage compliance with planning policy the following measures are recommended for inclusion within development of the Disposal Sites:

- The Disposal Sites could be enhanced for nesting birds through the provision of additional nesting opportunities on retained mature/semi-mature trees on site or on newly constructed buildings. A number of designs of bird boxes are commercially available.
- Invertebrate boxes could be included within new areas of habitat to provide additional shelter. Many designs are commercially available, and it is recommended that models are targeted towards invertebrate taxon that the landscaping designs could support, for example, lacewings, ladybirds and solitary bees. Provision of a range of boxes would increase the target species. Boxes should be sited in sheltered locations as much as possible, surrounded by vegetation.

[10] http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/

- The creation of log piles (using arisings from tree pruning/felling) within any retained areas of scrub on the edges of the Disposal Sites would provide foraging habitats a variety of saproxylic (deadwood dependant) species. In order to maximise benefit for this species, logs should be partially buried in soil in shady areas. These structures would also provide a sheltering resource for other fauna (amphibians, reptiles and small mammals).

5 CONCLUSIONS

5.1.1. The Survey Area comprises Disposal Sites that the University of Kent intends to release for development. The Disposal Sites are located to the north of Canterbury and comprises a mixture of arable farmland, woodland, scrub, grassland and amenity habitats associated with development. Hedgerows and watercourses are also present. Designated sites including SACs, SPAs and Ramsar sites, along with several SSSIs and LNRs, and one NNR are present in the wider area, alongside HPI in the form of deciduous woodland, good quality semi-improved grassland and traditional orchard.

5.1.2. The proximity of National Network sites to the Survey Area, the closest being Blean Complex SAC ~200m to the west of Site B, necessitates the recommendation of HRA screening to determine whether development would lead to significant adverse effects on them. The proximity of other statutory designated sites including Blean Woods NNR, Church Woods, Blean SSSI and CA15 Blean Pastures LWS may also pose a constraint to development.

5.1.3. Suitable habitat is present for protected and notable species and further survey is recommended for bats, badger; hazel dormouse; otter; water vole, breeding birds (focussing on farmland bird species), reptiles, great crested newt, notable plants and invertebrates. No surveys are recommended for hedgehog, but instead precautionary methods of working have been recommended to avoid effects on this species.

5.1.4. Retention of important habitats, including those designated as CA15 Blean Pastures LWS in Site B and HPI more widely, is recommended. Where important habitats are to be removed compensatory habitat creation would be required to offset losses and achieve biodiversity net gain. Implementation of recommendations within this report for avoidance, mitigation and enhancement measures would allow development of the Disposal Sites to proceed in compliance with relevant biodiversity legislation and planning policy, although it should be noted that the findings of further surveys will likely highlight further such requirements.

6 REFERENCES

- Biodiversity by Design/Studio Engleback, 2018. Volume 2 Preliminary Ecological Appraisal and Guidance. University of Kent / Framework Masterplan: Supporting Documents. Pages 205 – 284.
- Robinson, R.A. (2005) BirdFacts: profiles of birds occurring in Britain & Ireland. BTO, Thetford (http://www.bto.org/birdfacts, accessed on 14 May 2021).
- Perkins, A. J. et al. (2011) 'Adaptive management and targeting of agri-environment schemes does benefit biodiversity: A case study of the corn bunting Emberiza calandra', Journal of Applied Ecology, 48(3), pp. 514–522.
- Chartered Institute of Ecology and Environmental Management (CIEEM) (2017a). Guidelines for Preliminary Ecological Appraisal. CIEEM, Winchester.
- CIEEM (2017b). Guidelines for Ecological Report Writing. CIEEM, Winchester.
- Joint Nature Conservation Committee (JNCC) (2010). Handbook for Phase 1 habitat survey – a technique for environmental audit. JNCC, Peterborough.
- JNCC Biodiversity Reporting and Information Group (2008). UK Biodiversity Action Plan.
- BSI (2013) Biodiversity code of practice for planning and development: BS42020. BSI. London.
- Stace, C., 2019. New Flora of the British Isles. 4th ed. Cambridge: Cambridge University Press.
- Gilbert, G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods: A Manual of Techniques for Key UK Species. RSPB.
- Bibby C.J, Burgess N.D, Hill D.A, Mustoe S.H. (2000) Bird Census Techniques. Second Edition. Elsevier Ltd.
- Gent, A. and Gibson, S. (2003). Herpetofauna Workers Manual. JNCC. Peterborough.
- English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough.
- English Nature (2006). The Dormouse Conservation Handbook. 2nd Edition. Natural England. Peterborough.
- Froglife (1999) Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice sheet 10. Froglife, Halesworth.
- Harris S, Cresswell P and Jefferies D (1991) (Report) Surveying Badgers. The Mammal. Society, Bristol.
- Mitchell- Jones, A.J (2004) Bat Mitigation Guidelines. English Nature.
- Chanin P (2003). Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.
- Collins J. (ed.) (2016) Bat Surveys for Professional Ecologists, Good Practice Guidelines (3rd Edition). The Bat Conservation Trust, London.
- Drake CM, Lott DA, Alexander KNA and Webb J (2007). Surveying terrestrial and freshwater invertebrates for conservation evaluation. Natural England Research Report NERR005. Natural England, Peterborough.
- Kirby, P. (2001). Habitat Management for Invertebrates: A Practical Handbook. RSPB Management Guides.
- CIEEM, 2019. Advice Note on the Lifespan of Ecological Reports and Surveys, Winchester: CIEEM.
- Dean, M., Strachan, R., Gow, D. and Andrews R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds. Fiona Matthews and Paul Chanin. The Mammal Society, London.

- CIRIA (2015) Environmental good practice on site (fourth edition) (C741) Charles, P., Edwards, P (eds). CIRIA, London.

7 FIGURES

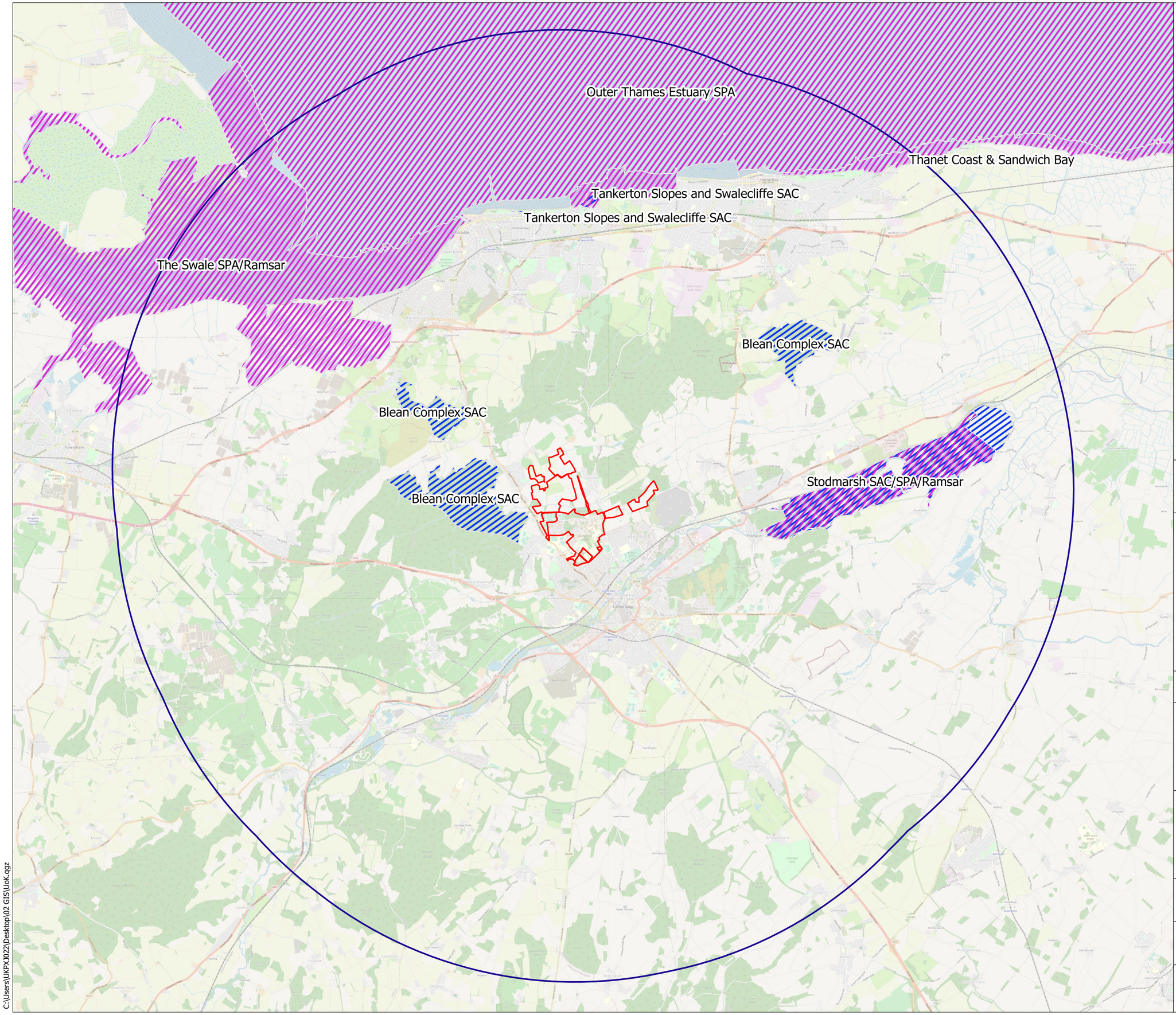
Figure 1a – Statutory Designated Sites: International Importance

Figure 1b – Statutory Designated Sites: National and Local Importance

Figure 1c – Non-statutory Designated Sites

Figure 2 – Habitats of Principal Importance and Ancient Woodland

Figure 3 – Phase 1 Habitat Survey



LEGEND:

- Site Boundary
- 10km Study Area
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Ramsar Site

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

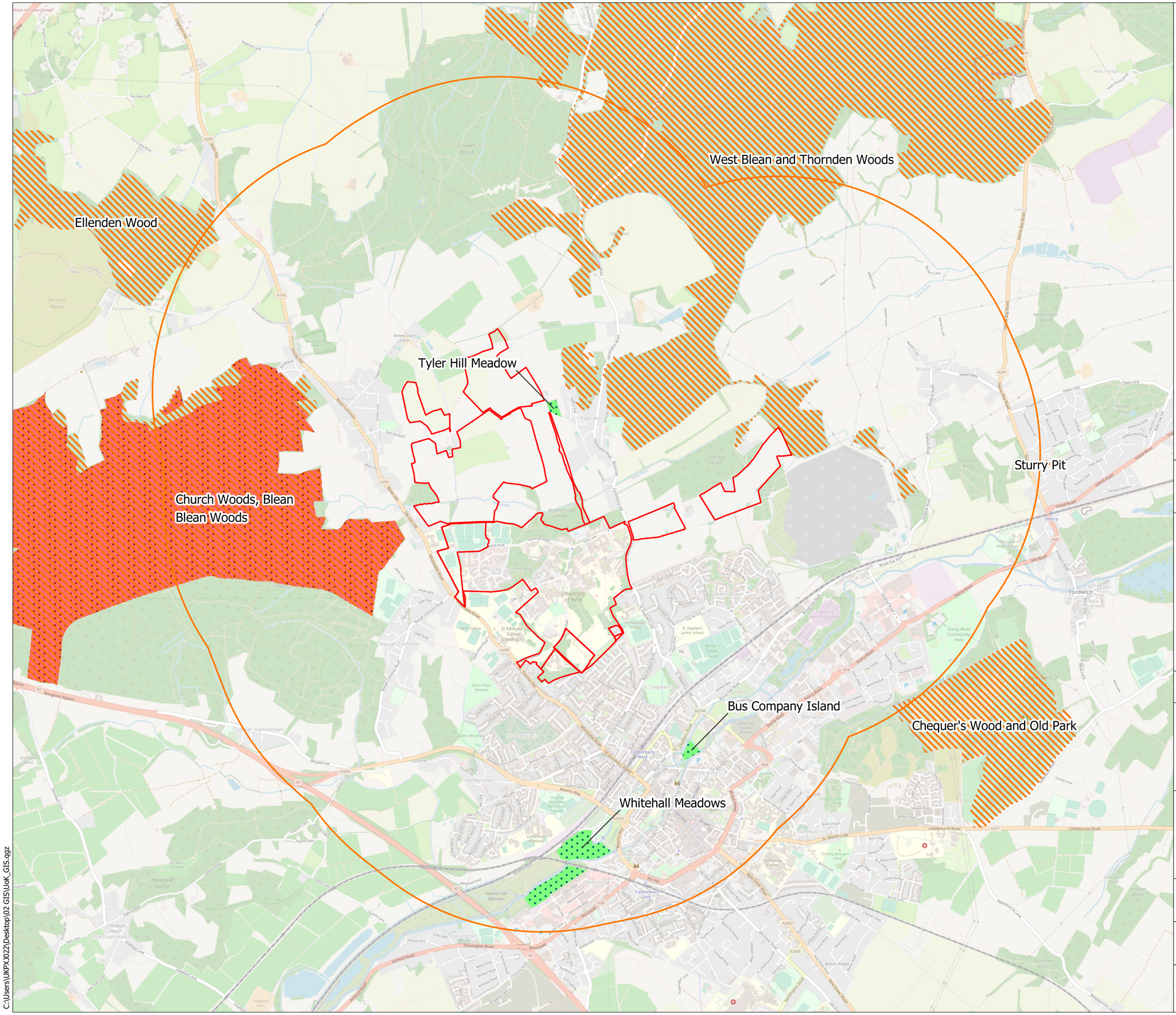
CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Statutory Designated Sites: International Importance

SCALE @A3:	DRAWN:	APPROVED:
1:135,000	GB	PJ
VERSION:	DATE:	DATE:
1	29/04/21	10/05/21
PROJECT No:	DRAWING No:	
70080896	Figure 1a	

C:\Users\UKPX3022\Desktop\02 GIS\UoK.qgz



LEGEND:

- Site Boundary
- 2km Study Area
- Local Nature Reserve (LNR)
- National Nature Reserve (NNR)
- Site of Special Scientific Interest (SSSI)

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

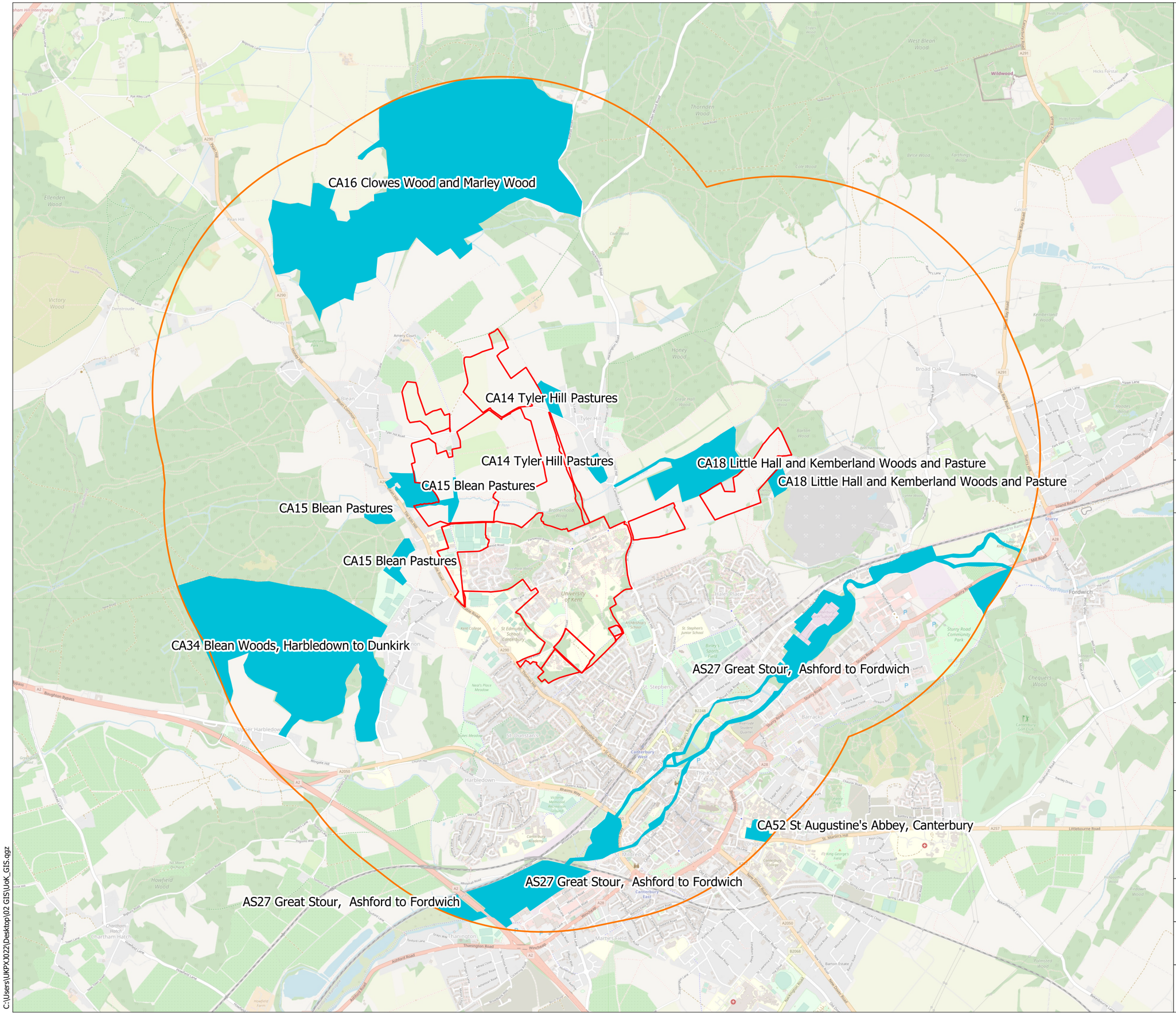
CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Statutory Designated Sites: National and Local Importance

SCALE @A3:	DRAWN:	APPROVED:
1:45,000	GB	PJ
VERSION: 1	DATE: 29/04/21	DATE: 18/05/21
PROJECT No: 70080896	DRAWING No: Figure 1b	

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz



LEGEND:

- Site Boundary
- 2km Study Area
- Local Wildlife Sites (LWS)

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

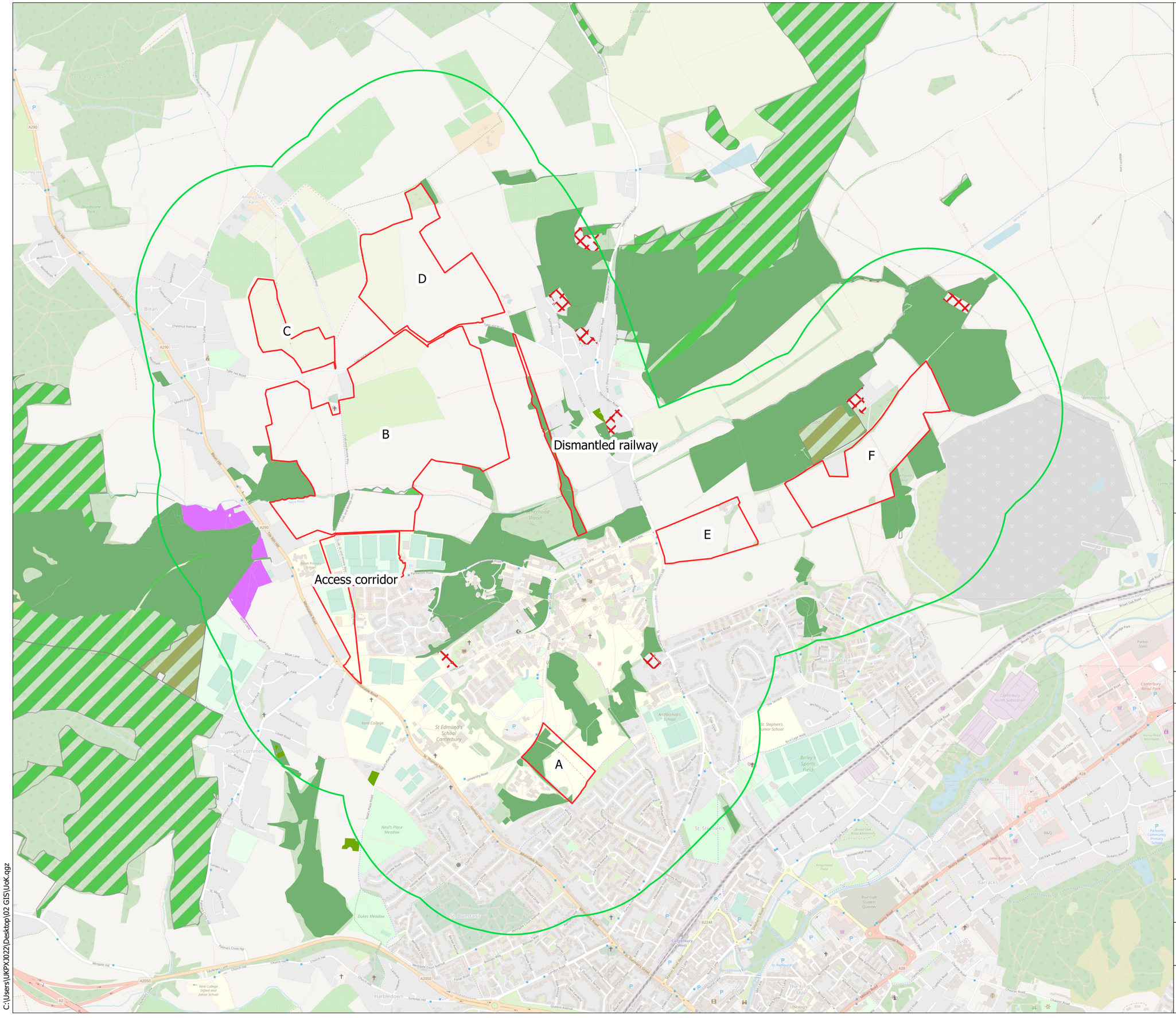
CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Non-statutory Designated Sites

SCALE @A3:	DRAWN:	APPROVED:
1:45,000	GB	PJ
VERSION: 1	DATE: 29/04/21	DATE: 12/05/21
PROJECT No: 70080896	DRAWING No: Figure 1c	

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz



LEGEND:

- Site Boundary
- 500m Study Area

Ancient Woodland

- Ancient and Semi-Natural Woodland
- Ancient Replanted Woodland

Habitats of Principal Importance

- Deciduous woodland
- Good quality semi-improved grassland
- Traditional orchard
- No main habitat but additional habitats present

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Habitats of Principal Importance and Ancient Woodland

SCALE @A3:	DRAWN:	APPROVED:
1:25,000	GB	PJ
VERSION: 1	DATE: 29/04/21	DATE: 10/05/21
PROJECT No: 70080896	DRAWING No: Figure 2	

C:\Users\UKPXJ022\Desktop\02 GIS\UoK.qgz

LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- A3.3 - Mixed Parkland/scattered trees
- B6 - Poor semi-improved grassland
- J1.2 - Cultivated/disturbed land - amenity grassland
- J4 - Bare ground
- J2.1.2 - Species-poor Intact Hedgerow
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: A

SCALE @A3:	DRAWN:	APPROVED:
1:2,199	GB	PJ
VERSION:	DATE:	DATE:
1	29/04/21	13/05/21
PROJECT No:	DRAWING No:	
70080896	Figure 3, Page 1	

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz

LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- A1.1.2 - Broadleaved woodland - plantation
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- B4 - Improved grassland
- G1.1 - Standing water - eutrophic
- J1.1 - Cultivated/disturbed land - arable
- J3.6 - Buildings
- J4 - Bare ground
- G2 - Running Water
- J2.1.1 - Species-rich Intact Hedgerow
- J2.1.2 - Species-poor Intact Hedgerow
- J2.2.2 - Species-poor Defunct Hedgerow
- J2.3.1 - Species-rich Hedgerow with Trees
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: B

SCALE @A3:	DRAWN:	APPROVED:
1:5,792	GB	PJ
VERSION: 1	DATE: 29/04/21	DATE: 13/05/21
PROJECT No: 70080896	DRAWING No: Figure 3, Page 2	

C:\Users\UKPX7022\Desktop\02 GIS\UoK_GIS.qgz

LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- B4 - Improved grassland
- A3.1 - Linear Scattered Trees
- J2.1.2 - Species-poor Intact Hedgerow
- J2.3.1 - Species-rich Hedgerow with Trees
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

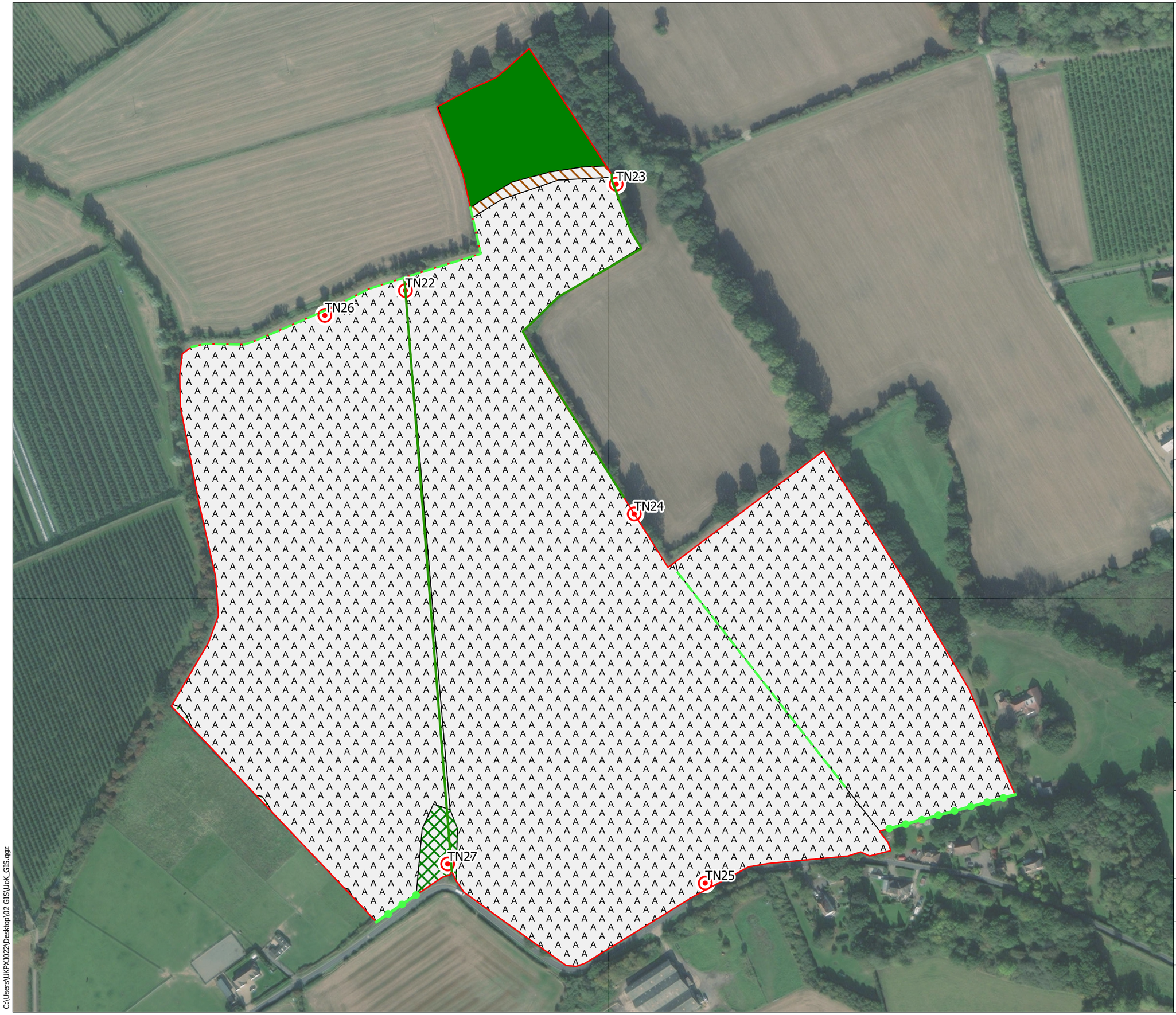
CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: C

SCALE @A3:	DRAWN:	APPROVED:
1:2,569	GB	PJ
VERSION:	**DATE:**	**DATE:**
1	29/04/21	13/05/21
PROJECT No:	**DRAWING No:**	
70080896	Figure 3, Page 3	

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz



LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- C3.1 - Other tall herb and fern - ruderal
- J1.1 - Cultivated/disturbed land - arable
- J2.1.2 - Species-poor Intact Hedgerow
- J2.2.1 - Species-rich Defunct Hedgerow
- J2.3.1 - Species-rich Hedgerow with Trees
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: D

SCALE @A3:	DRAWN:	APPROVED:
1:4,325	GB	PJ
VERSION:	DATE:	DATE:
1	29/04/21	13/05/21
PROJECT No:	DRAWING No:	
70080896	Figure 3, Page 4	

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz

LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- A3.1 - Broadleaved Parkland/scattered trees
- J1.1 - Cultivated/disturbed land - arable
- J3.6 - Buildings
- J2.1.1 - Species-rich Intact Hedgerow
- J2.2.1 - Species-rich Defunct Hedgerow
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

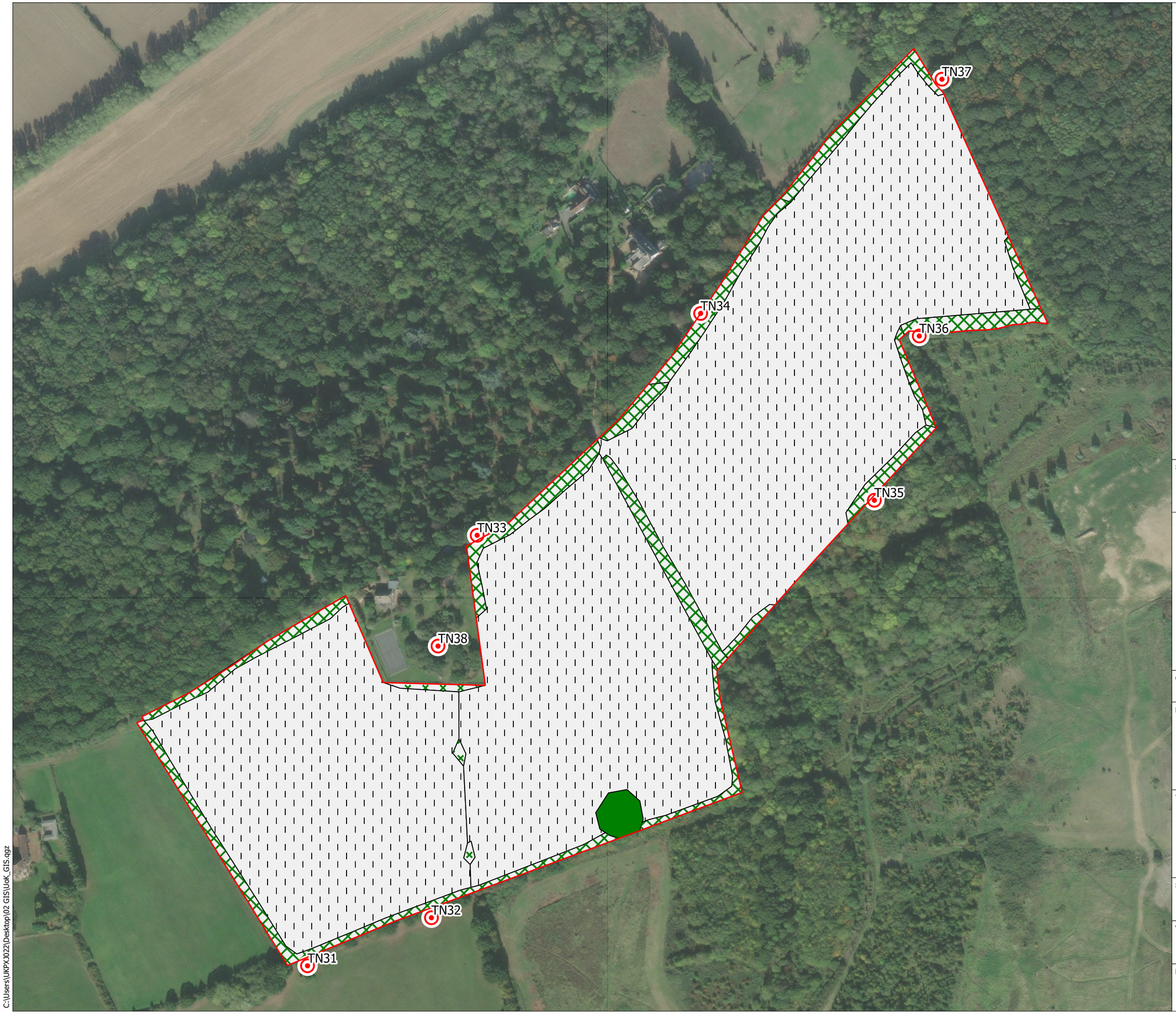
CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: E

SCALE @A3:	DRAWN:	APPROVED:
1:2,420	GB	PJ
VERSION: 1	DATE: 29/04/21	DATE: 13/05/21
PROJECT No: 70080896	DRAWING No: Figure 3, Page 5	

C:\Users\UKPX7022\Desktop\02 GIS\UoK_GIS.qgz



LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- B4 - Improved grassland
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: F

SCALE @A3:	DRAWN:	APPROVED:
1:4,539	GB	PJ

VERSION:	DATE:	DATE:
1	29/04/21	13/05/21

PROJECT No:	DRAWING No:
70080896	Figure 3, Page 6

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz

LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

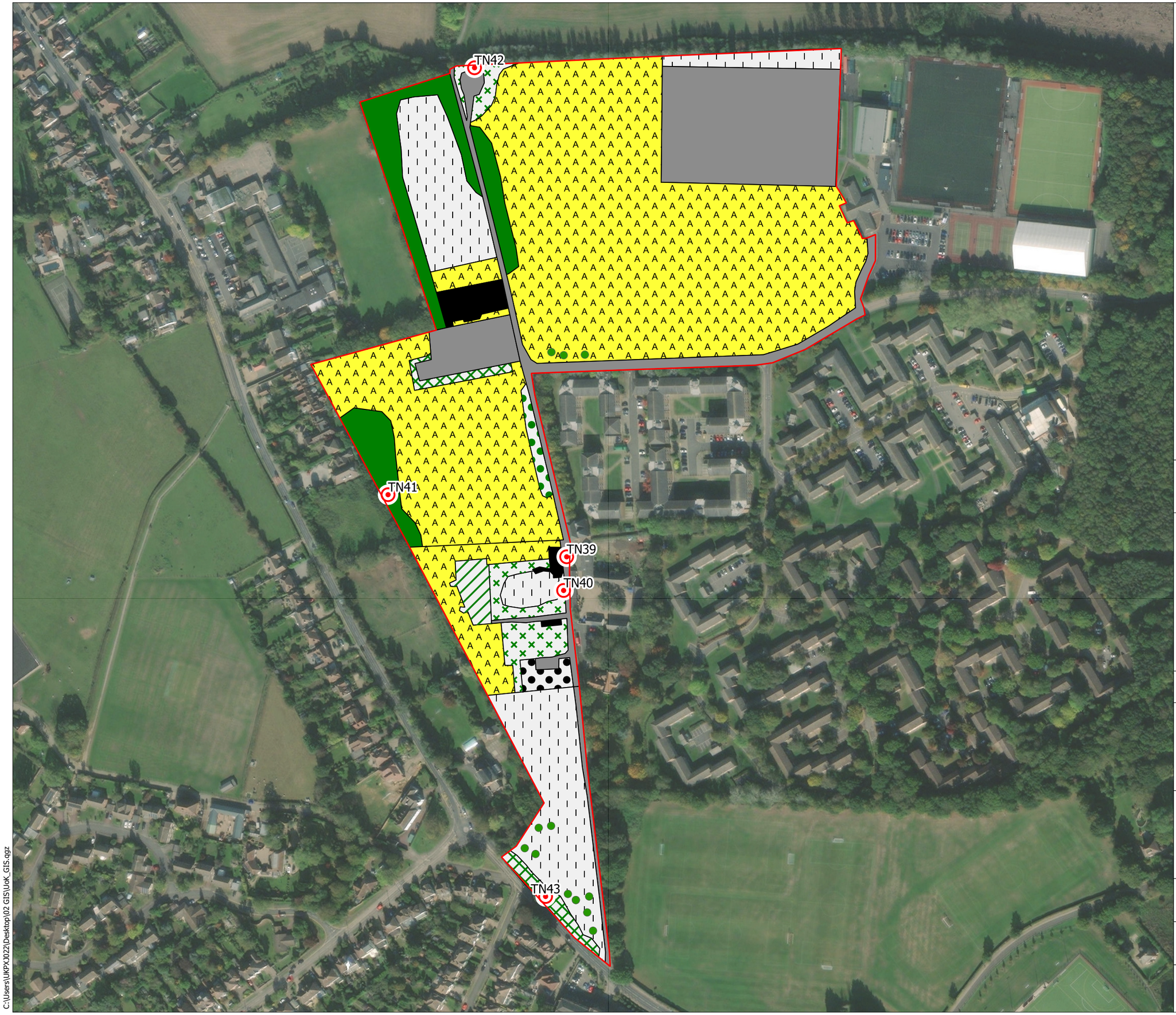
CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: Dismantled railway

SCALE @A3:	DRAWN:	APPROVED:
1:5,515	GB	PJ
VERSION: 1	DATE: 29/04/21	DATE: 13/05/21
PROJECT No: 70080896	DRAWING No: Figure 3, Page 7	

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz



LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- A1.1.2 - Broadleaved woodland - plantation
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- A3.1 - Broadleaved Parkland/scattered trees
- B4 - Improved grassland
- J1.2 - Cultivated/disturbed land - amenity grassland
- J3.6 - Buildings
- J4 - Bare ground
- J5 - Hard standing
- Target Note
- Scattered Broadleaved Trees

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: Access corridor

SCALE @A3:	DRAWN:	APPROVED:
1:4,142	GB	PJ
VERSION:	DATE:	DATE:
1	29/04/21	13/05/21
PROJECT No:	DRAWING No:	
70080896	Figure 3, Page 8	

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz

Appendix A

LEGISLATION AND POLICY CONTEXT

CONFIDENTIAL

LEGISLATION AND POLICY CONTEXT

This report has been compiled with reference to relevant wildlife legislation, planning policy and the UK Biodiversity Framework. An overview and context of relevant legislation is provided, with the relevant protection each species groups or species receives summarised in Table 1.

The Wildlife and Countryside Act 1981, (as amended) (WCA)

Protected birds, animals and plants are listed under Schedules 1, 5, 8 respectively of the WCA, while Schedule 9 lists non-native and/or invasive species the spread of which in the wild is prohibited by the WCA. A description of these Schedules and their meaning is provided below.

Under the WCA all birds, their nests and eggs (with exception of species listed under Schedule 2) are protected. It is an offence to:

- Intentionally kill, injure, or take any wild bird,
- Take or destroy an egg of any wild bird.
- Damage or destroy the nest of any wild bird (whilst being built, or in use). Under the WCA the clearance of vegetation within the survey area boundary, or immediately adjacent to the survey area during the bird nesting season could result in an offence occurring by the disruption or destruction of nest sites. The bird breeding season can be taken to occur between March - August inclusive, although is subject to variations based on species, geographical and seasonal factors.

Schedule 1

Birds listed under Schedule 1 of the WCA[1] are afforded additional protection with regard to intentional or reckless disturbance whilst nest-building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Schedule 5

Species listed in Schedule 5 can either be fully protected or be partially protected under Section 9, which makes it unlawful to intentionally:

- Part 1: kill, injure or take;
- Part 2: possess or control (live or dead animal, part or derivative);
- Part 4 (a): damage or destruct any structure used for shelter or protection;
- Part 4 (b): disturb them in a place of shelter or protection;
- Part 4 (c): obstruct access to place of shelter or protection;
- Part 5 (a): sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative);
- Part 5 (b): advertise for buying or selling.

Schedule 8

The Act makes it an offence (subject to exceptions) to pick, uproot, trade in, or possess (for the purposes of trade) any wild plant listed in Schedule 8, and prohibits the unauthorised intentional uprooting of such plants.

[1] To view the current list of Schedule 1 listed birds, visit: http://www.legislation.gov.uk/ukpga/1981/69/schedule/1 [Accessed 14/05/21].

Schedule 9

Invasive species listed under Schedule 9 are prohibited from release into the wild and the Act prohibits planting or "causing to grow" in the wild of any plant species listed in Schedule 9. It should be noted that certain bird species listed on Schedule 1 of the WCA are also listed on Schedule 9 to prevent release of non-native and captive individuals, this includes barn owl, red kite, goshawk and corncrake.

Countryside Rights of Way Act 2000 (CRoW Act)

The CRoW Act has amended the WCA in England and Wales strengthening the protection afforded to Sites of Special Scientific Interest (SSSI) and the legal protection for threatened species. It adds the word 'reckless' to the wording of the offences listed under Section 9(4) of the WCA. This alteration makes it an offence to recklessly commit an offence, where previously an offence had to be intentional to result in a breach of legislation.

Natural Environment and Rural Communities (NERC) Act 2006

Species and Habitats of Principal Importance in England are listed under Section 41 respectively of the NERC Act. The Section 41 list details species that are of principal importance for the conservation of biodiversity in England, and should be used to guide decision-makers such as local and regional authorities when implementing their duty to have regard for the conservation of biodiversity in the exercise of their normal functions – as required under Section 40 of the NERC Act 2006.

The Protection of Badgers Act (1992)

It is an offence to wilfully take, kill, injure, possess or ill-treat a badger. Under the Act their setts are protected against intentional or reckless interference. Sett interference includes damaging or destroying a sett, obstructing access to any part of the sett, or disturbance of a badger whilst it is occupying a sett. The Act defines a badger sett as 'any structure or place, which displays signs indicating the current use by a badger' and Natural England (NE) takes this definition to include seasonally used setts that are not occupied but that show sign of recent use by badgers (Natural England, 2009[2]).

If impacts to badgers or their setts are unavoidable then authorised sett disturbance requires a licence.

The UK Post-2010 Biodiversity Framework (2011-2020) (JNCC and DEFRA, 2012)

This Framework lists the UK's most threatened species and habitats and sets out targets and objectives for their management and recovery. The UK Biodiversity Action Plan (BAP) process is delivered nationally, regionally and locally and should be used as a guide for decision-makers to have regards for the targets set by the framework and the goals they aim to achieve. The UK BAP has now been replaced by the UK Post-2010 Biodiversity Framework, however, it contains useful

[2] Natural England, June 2009, Protection of Badgers Act 1992 (as amended), Guidance on 'Current Use' in the definition of a Badger Sett WMLG17, Natural England, Peterborough.

information on how to characterise important species assemblages and habitats which is still relevant (UK Post-2010 Biodiversity Framework, 2012[3]).

The Conservation of Habitats and Species Regulations 2017 (as amended)

The Conservation of Habitats and Species Regulations 2017 (as amended) consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations came into force on 30th November 2017, and extend to England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters). In Scotland, the Habitats Directive is transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the Conservation (Natural Habitats &c.) Regulations 1994. The Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) transpose the Habitats Directive in relation to Northern Ireland.

All species listed under Annex IV of the Habitats Directive require strict protection and are known as European Protected Species (EPS). Under Regulation 42 of the Habitats Regulations it is unlawful to:

- Deliberately kill, capture or disturb;
- Deliberately take or destroy the eggs of; and
- Damage or destroy the breeding site/resting place of any species protected under this legislation.

If the Ecologist determines that impacts to an EPS are unavoidable then the works may need to be carried out under a site specific mitigation licence from Natural England (NE). Low Impact Class licences are also available for bats and great crested newts. This enables Registered Low Impact Consultants to undertake certain low impact activities reducing the EPS application paperwork and process length.

Certain EPS are also listed under Annex II of the Habitats Directive and are afforded protection by the establishment of core areas of habitat known as Special Areas of Conservation. This means these species are a relevant consideration in a Habitats Regulations Assessment (HRA).

The Birds Directive seeks to maintain populations of all wild bird species across their natural range (Article 2). All bird species listed under Annex I[4] of the Birds Directive are rare or vulnerable and afforded protection by the classification of Special Protection Areas (SPAs), these are also designated under all regularly occurring migratory species, with regard to the protection of wetlands of international importance (Article 4). This means these bird species and communities are a relevant consideration in HRA.

[3] JNCC and Defra (on behalf of the Four Countries' Biodiversity Group), July 2012, UK Post-2010 Biodiversity Framework, Available from: http://jncc.defra.gov.uk/pdf/UK_Post2010_Bio-Fwork.pdf [Accessed 14/05/21].

[4] To view birds listed under Annex I visit: http://ec.europa.eu/environment/nature/conservation/wildbirds/threatened/index_en.htm [accessed 14/05/21]

Table A1 - Key Species and National Wildlife Legislation, Policy and Biodiversity Framework Applicable in England

Key Species and National Wildlife Legislation, Policy and Biodiversity Framework Applicable in England

Species	Legislation, Planning Policy and UK Biodiversity Framework							
	Wildlife and Countryside Act 1981 (as amended), (WCA)				The Conservation of /Habitats and Species Regulations 2017 (as amended) (Habitats Regulations) - Regulation 41	Natural Environment and Rural Communities (NERC) Act 2006	The Protection of Badgers Act 1992	The UK Post-2010 Biodiversity Framework 2011-2020 (JNCC and DEFRA, 2012)
	Sch. 1	Sch. 5	Sch. 8	Sch. 9	European Protected Species (Annex IV of the EC Habitats Directive),			
Badger							✓	
Bats		✓ [5](part)			✓[6]	✓[7]		✓[8]
Hazel Dormouse		✓ 5(part)			✓	✓		✓

[5] These species are partially protected under section 9(4)(b), (4)(c) and (5).

[6] Only Barbastelle *Barbastella barbastellus*, Bechstein's bat *Myotis bechsteinii*, greater horseshoe bat *Rhinolophus ferrumequinum* and lesser horseshoe bat *Rhinolophus hipposideros* are listed on Annex II of the Habitats Directive.

[7] Greater horseshoe bat, lesser horseshoe bat, Bechstein's bat, noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus* and barbastelle are listed as Species of Principal Importance in England.

[8] Barbastelle bat, Bechstein's bat, noctule, soprano pipistrelle, brown long-eared bat, greater horseshoe bat, lesser horseshoe bat are listed as UK BAP species of bat.

Key Species and National Wildlife Legislation, Policy and Biodiversity Framework Applicable in England

Species	Legislation, Planning Policy and UK Biodiversity Framework							
Otter		✓ 5(part)			✓	✓		✓
Water vole		✓[9](full)				✓		✓
Birds	✓			✓[10]		✓[11]		✓[12]
Reptiles		✓[13](part)		✓[9]	✓[14]	✓[15]		✓[16]

[9] Class Licences are available to Registered Consultants to intentionally disturb, damage or destroy water vole burrows or to displace water voles from their burrows in relation to a development proposal where the licensed action provides a conservation benefit for water voles. Certain displacement operations may be carried out under a Class licence by a registered person in England.

[10] To view plants and animals listed on Schedule 9 Part 1 visit http://www.legislation.gov.uk/ukpga/1981/69/schedule/9 [accessed 6 April 2017]

[11] There are 49 species of birds listed as Species of Principal Importance in England in Section 41 of the NERC Act 2006 http://www.legislation.gov.uk/ukpga/2006/16/contents.

[12] To view the current list of UK BAP priority birds visit: http://jncc.defra.gov.uk/page-5163 [Accessed 14/05/21].

[13] The four common reptile species, Adder *Vipera berus*, Grass snake *Natrix natrix*, Common lizard *Zootoca vivipara* and Slow worm *Anguis fragilis* are offered partial protection under section 9(5). The rarer UK reptile species (Smooth snake *Coronella austriaca* and Sand lizard *Lacerta agilis*) are partially protected under section 9(4)(b) and (c) and (5).

[14] Smooth snake and Sand lizard are the only reptiles to be designated as European Protected Species.

[15] All 6 reptile species are listed as Species of Principal Importance in England listed under Section 41 of the NERC Act 2006.

[16] To view the current list of UK BAP priority herptile species visit: http://jncc.defra.gov.uk/page-5166 [Accessed 14/05/21].

Key Species and National Wildlife Legislation, Policy and Biodiversity Framework Applicable in England

Species	Legislation, Planning Policy and UK Biodiversity Framework							
Amphibians		✓[17](part)		✓[18]	✓[19,20]	✓[21]		
Invertebrates		✓[22](full/part)		✓	✓[23,24]	✓[25]		✓[26]

[17] The four common reptile species, Adder, Grass snake, Common lizard and Slow worm are offered partial protection under section 9(5). The rarer UK reptile species (Smooth snake and Sand lizard) are partially protected under section 9(4)(b) and (c) and (5).

[18] Common frog *Rana temporaria*, Common toad *Bufo bufo*, Smooth newt *Lissotriton vulgaris* and Palmate newt *Lissotriton helveticus* are offered partial protection under section 9(5). Great crested newt *Triturus cristatus* and Natterjack toad *Epidalea calamita* are offered partial protection under section 9(4)(b) and (c) and (5). Pool frog *Pelophylax lessonae* is offered partial protection under section 9(4)(b) and (c)(1) only.

[19] Great crested newt, Natterjack toad and Pool frog are the only amphibians to be designated European Protected Species.

[20] Great crested newt is the only amphibian listed on Annex II of the Habitats Directive.

[21] Great crested newt, Natterjack toad and Common toad are listed as Species of Principal Importance in England in Section 41 of the NERC Act 2006.

[22] To view the current list of invertebrates that are protected under this Act either in part or full visit: http://www.legislation.gov.uk/ukpga/1981/69/schedule/5 [Accessed 14/05/21].

[23] The Large blue butterfly *Maculinea arion*, Fisher's estuarine moth *Gortyna borelii lunata* and Lesser whirlpool ram's-horn snail *Anisus vorticulus* are the only invertebrates to be designated European Protected Species.

[24] There are currently twelve invertebrates listed in Annex II of the Habitats Directive; White-clawed crayfish *Austropotamobius pallipes*, Southern damselfly ***Coenagrion mercuriale***, Marsh fritillary butterfly ***Eurodryas aurinia***, Violet click beetle ***Limoniscus violaceus***, Stag beetle ***Lucanus cervus***, Freshwater pearl mussel ***Margaritifera margaritifera***, Narrow-mouthed whorl snail ***Vertigo angustior***, Round-mouthed whorl snail ***Vertigo genesii***, Geyer's whorl snail ***Vertigo geyeri***, Desmoulin's whorl snail ***Vertigo moulinsiana***, Lesser whirlpool ram's-horn snail *Anisus vorticulus* and Fisher's estuarine moth *Gortyna borelii lunata*.

[25] There are currently 379 invertebrate species (not including marine species) listed as Species of Principal Importance in England http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&ved=0ahUKEwivvu7J9trSAhXiCsAKHX4TBGcQFggvMAM&url=http%3A%2F%2Fpublications.naturalengland.org.uk%2Ffile%2F6518755878240256&usg=AFQjCNEpiUWYuOqhVcfSDvi_3iK2TJytfQ. [Accessed 14/05/21]

[26] To view the current list of UK BAP priority invertebrates visit: http://jncc.defra.gov.uk/page-5169 [Accessed 14/05/21].

Key Species and National Wildlife Legislation, Policy and Biodiversity Framework Applicable in England

Species	Legislation, Planning Policy and UK Biodiversity Framework							
Plants			✓[27]	✓[9]	✓[28,29]	✓[30]		✓[31]

[27] To view the current list of Schedule 8 listed plants visit: http://www.legislation.gov.uk/ukpga/1981/69/schedule/8 [Accessed 14/05/21].

[28] There are nine plant species designated as European Protected Species. To view the current list visit: http://www.legislation.gov.uk/uksi/2010/490/schedule/5/made [Accessed 14/05/21].

[29] To view the current list of plant species on Annex II of the Habitats Directive visit: http://jncc.defra.gov.uk/page-1523 [Accessed 14/05/21].

[30] There are currently 152 vascular plants listed as Species of Principal Importance in England listed under Section 41 of the NERC Act.

[31] To view the current list of UK BAP priority plants visit: http://jncc.defra.gov.uk/page-5171 and http://jncc.defra.gov.uk/page-5168 [Accessed 14/05/21].

Appendix B

TARGET NOTES

CONFIDENTIAL

Site A	TN01	Mature tree with bat roost suitability
Site A	TN02	Mature tree with bat roost suitability
Site B	TN03	Two large mature trees with bat roost suitability
Site B	TN04	Two large mature trees, one dead, both with bat roost suitbility
Site B	TN05	Badger sett; 16+ entrances, hair on nearby fence, paths, latrines
Site B	TN06	Church building and yew tree with bat roost suitability
Site B	TN07	Large pond in private garden; potential GCN breeding site
Site B	TN08	Large water body; potential GCN breeding site
Site B	TN09	Mature tree with bat roost suitability
Site B	TN10	Mature trees in hedgerow with bat roost suitability
Site B	TN11	Rabbit warren
Site B	TN12	Rubble pile; potential GCN/reptile hibernaculum
Site B	TN13	Scattered trees (hawthorn)
Site B	TN14	Shallow stream flowing south, 0.5m wide
Site B	TN15	Stream flowing east
Site B	TN16	Suitable dormouse habitat
Site C	TN17	Badger fresh dung pit
Site C	TN18	Badger fresh dung pit
Site C	TN19	Badger sett entrance with recent activity, dug pit, spoil
Site C	TN20	Large badger sett entrance with spoil pile
Site C	TN21	Standing water; potential GCN breeding site, nearby hibernaculum.
Site D	TN22	Large rabbit warren
Site D	TN23	Mature tree with bat roost suitability
Site D	TN24	Mature tree with bat roost suitability
Site D	TN25	Mature tree with bat roost suitability
Site D	TN26	Stream flowing east
Site D	TN27	Pond within scrub; potential GCN breeding site
Site E	TN28	Badger latrines
Site E	TN29	Large rabbit warren in scrub
Site E	TN30	Pond between the two fields; potential GCN breeding site
Site F	TN31	Mature tree with bat roost suitability
Site F	TN32	Mature tree with bat roost suitability
Site F	TN33	Mature tree with bat roost suitability
Site F	TN34	Mature tree with bat roost suitability
Site F	TN35	Mature tree with bat roost suitability
Site F	TN36	Mature tree with bat roost suitability
Site F	TN37	Mature tree with bat roost suitability
Site F	TN38	Large pond; potential GCN breeding site
Access Road	TN39	Buildings with bat roost suitability
Access Road	TN40	Cotoneaster within managed hedgerow
Access Road	TN41	Large rabbit warren
Access Road	TN42	Large rabbit warren
Access Road	TN43	Log pile near dense scrub, potential reptiles and GCN hibernaculum
Dismantled Railway	TN44	Entrance to filled in tunnel

6 Devonshire Square
London
EC2M 4YE

wsp.com

CONFIDENTIAL

APPENDIX G

Biodiversity Net Gain Initial Assessment

University of Kent

UNIVERSITY OF KENT DISPOSAL SITES

Biodiversity Net Gain Assessment

70080896-005
JUNE 2021

INTERNAL

University of Kent

UNIVERSITY OF KENT DISPOSAL SITES

Biodiversity Net Gain Assessment

TYPE OF DOCUMENT (VERSION) INTERNAL

PROJECT NO. 70080896
OUR REF. NO. 70080896-005

DATE: JUNE 2021

QUALITY CONTROL

Issue / revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	For Client comment			
Date	June 2021			
Prepared by	Katie Johnson			
Signature				
Checked by	Hattie Spray			
Signature				
Authorised by	Richard Gowing			
Signature				
Project number	70080896-005			
Report number	V1			
File reference	\\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\EC Ecology\08 BNG			

CONTENTS

EXECUTIVE SUMMARY 1

1 INTRODUCTION 3

1.1 PROJECT BACKGROUND 3

1.2 BIODIVERSITY NET GAIN 3

1.3 RELEVANT LEGISLATION AND POLICY 4

1.4 SCOPE OF REPORT 4

2 METHODOLOGY 6

2.2 DATA SOURCES 6

2.3 BNG ASSESSMENT 6

2.4 LIMITATIONS AND ASSUMPTIONS 7

3 RESULTS 10

3.1 BASELINE BIODIVERSITY- QUANTITATIVE ASSESSMENT 10

3.2 SUMMARY OF OVERALL BASELINE BIODIVERSITY UNITS 10

3.3 POST-DEVELOPMENT BIODIVERSITY 13

3.4 BIODIVERSITY NET GAIN PRINCIPLES - QUALITATIVE ASSESSMENT 14

4 DISCUSSION 18

4.1 SUMMARY OF RESULTS – QUANTITATIVE BNG ASSESSMENT 18

4.2 SUMMARY OF RESULTS – QUALITATIVE BNG ASSESSMENT 19

4.3 RECOMMENDATIONS 19

REFERENCES 21

TABLES

Table 2-1 – Quantitative Outcomes of BNG Calculations 7

Table 2-2 - Translation of Phase 1 Habitats to UKHab Descriptions 8

Table 3-1 – Summary of the AHBU and HBU for Site A 10

Table 3-2 - Summary of the AHBU and HBU for Site B 11

Table 3-3 - Summary of the AHBU and HBU for Site C 11

Table 3-4 - Summary of the AHBU and HBU for Site D 11

Table 3-5 - Summary of the AHBU and HBU for Site E 12

Table 3-6 - Summary of the AHBU for Site F 12

Table 3-7 - Summary of the AHBU and HBU for the Access Road Site 12

Table 3-8 - Summary of the AHBU for the Dismantled Railway Site 12

Table 3-9 – Example Habitat Enhancement and Creation Options 13

Table 3-10 – Evidence of Project Compliance with BNG Good Practice Principles 14

Table 4-1 - Biodiversity Baseline Value for Individual Proposed Disposal Sites 18

APPENDICES

APPENDIX A

CIEEM, CIRIA AND IEMA GOOD PRACTICE PRINCIPLES

APPENDIX B

BASELINE AND POST-DEVELOPMENT HABITAT MAPS

APPENDIX C

BIODIVERSITY NET GAIN POLICY AND LEGISLATION

APPENDIX D

BIODIVERSITY NET GAIN ASSESSMENT METHODOLOGY

APPENDIX E

BIODIVERSITY NET GAIN ASSESSMENT CALCULATIONS

APPENDIX F

PRINCIPLES AND RULES FOR USE WITH THE BIODIVERSITY METRIC 2.0

EXECUTIVE SUMMARY

As part of the emerging Canterbury Local Plan review, Avison Young (the Client), on behalf of the University of Kent (UoK), commissioned WSP to undertake a Biodiversity Net Gain (BNG) baseline assessment of multiple areas of land within UoK's ownership. The land under assessment comprises six separate land parcels within and adjacent to the retained main campus (Sites A, B, C, D, E and F), alongside land proposed for an access road (the 'Access Road Site') and a disused railway line (formerly the Crab and Winkle Railway Line) to be developed as a cycleway (the 'Dismantled Railway Site'). These eight land parcels will hereafter be referred to as the 'Proposed Disposal Sites'.

BNG is the desired result of a process applied to development so that overall, there is a positive outcome for biodiversity. The process itself follows the mitigation hierarchy, which sets out that action must be taken to firstly avoid, secondly minimise and thirdly compensate for unavoidable impacts on wildlife on or off site. To demonstrate a positive biodiversity outcome using this process, the project is assessed against the Construction Industry Research and Information Association (CIRIA), the Chartered Institute of Ecology and Environmental Management (CIEEM), and the Institute of Environmental Management and Assessment (IEMA) Biodiversity Net Gain Good Practice Principles (hereafter referred to as 'the Principles').

This report uses the BNG good practice principles and the Natural England Biodiversity Metric 2.0 (Natural England, 2019) metric to produce an assessment report that:

1. Establishes the total number of baseline biodiversity units within the Proposed Disposal Sites, both at an individual Site level, and as a whole;
2. Provides indicative post-development calculations for sites A, E and F to provide a preliminary view on the number of biodiversity units they may generate;
3. Assesses whether the Proposed Development is aligned with the biodiversity net gain Principles; and
4. Provides recommendations, where necessary, for amendments to the design that can be implemented to promote a Site-wide biodiversity net gain.

Habitats on the Proposed Disposal Sites were appraised using existing Phase 1 habitat survey data and desk study information. Irreplaceable habitat, notably ancient woodland was identified and excluded from BNG baseline calculations. Within the Proposed Disposal Sites, non-irreplaceable area-based habitats total 134.14 ha and generate 389.49 Area Habitat Biodiversity Units (AHBU) while linear hedgerow habitats total 9.15km and generate 88.07 Hedgerow Biodiversity Units (HBU).

Within Site B there is 2.57 ha of ancient woodland, an irreplaceable habitat. It is important to note that biodiversity net gain or no net loss cannot be achieved for the development as a whole if there is a negative impact on an irreplaceable habitat.

As the final design or landscape plan for the Proposed Disposal Sites has yet to be developed, example habitat enhancement and habitat creation calculations have been provided to assist with

the development design. It is recommended that a full BNG assessment is undertaken on completion of final detailed landscape masterplan.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1. As part of the emerging Canterbury Local Plan review, Avison Young (the 'Client'), on behalf of the University of Kent (UoK), has requested provision of Environmental Consultancy Services to support the delivery of a planning and disposal strategy. As part of these services WSP was commissioned to undertake a Biodiversity Net Gain (BNG) baseline assessment. The planning and disposal strategy is aimed at surplus land within UoK's ownership, in and around its Canterbury Campus. It comprises six separate land parcels within and adjacent to the retained main campus (Sites A, B, C, D, E and F), alongside land proposed for an access road (the 'Access Road Site') and a disused railway line (formerly the Crab and Winkle Railway Line) to be developed as a cycleway (the 'Dismantled Railway Site'). These eight land parcels will hereafter be referred to as the 'Proposed Disposal Sites'.

1.1.2. The UoK is located to the north of Canterbury city centre, Kent (approximate grid reference: TR130602). Indicative boundaries of the Proposed Disposal Sites are shown in Figure 1, **Appendix B**. A Phase 1 habitat survey of the Proposed Disposal Sites was undertaken in April 2021 as part of a Preliminary Ecological Appraisal (PEA)[1]. The Proposed Disposal Sites total approximately 137.20 ha, and are made up of urban residential areas, scattered trees/ornamental planting, agricultural fields and woodland, including ancient woodland.

1.1.3. Communications with the UoK have identified that development works may take place at Proposed Disposal Sites B, C and D, the Access Road Site and the Dismantled Railway Site, while Proposed Disposal Sites A, E, F may potentially be used for habitat enhancement or creation. This high-level proposal will hereafter be referred to as the 'Proposed Development'.

1.2 BIODIVERSITY NET GAIN

1.2.1. BNG is the end result of a process applied to development so that overall, there is a positive outcome for biodiversity. The process itself follows the mitigation hierarchy, which sets out that action must be taken to firstly avoid, secondly minimise and thirdly restore / rehabilitate losses of biodiversity on site. Only as a last resort, residual losses are compensated for using biodiversity offsets, which are distinguished from other forms of mitigation in that they are off the development site. BNG assessment reports are intended to provide a detailed insight into the adherence of a Proposed Development to the BNG good practice principles (**Appendix A**).

1.2.2. The benefit of undertaking a BNG assessment at this early stage in the planning process is that results can be used to:

- Inform the ongoing design of ecological and landscape mitigation;
- Identify whether current proposed development designs will likely achieve a net gain, net loss, or no net loss (NNL) for biodiversity; and

[1] WSP report produced for University of Kent

- Demonstrate policy compliance in support of any decision-making.

1.2.3. Furthermore, should the Client decide to set the objective of NNL or biodiversity net gain for any proposed development, early identification of risks and opportunities will be instrumental in helping achieve this aspiration.

1.2.4. Adopting a BNG approach can account for biodiversity losses not fully covered by legal and planning systems. Whilst some species are extensively protected, many are not; with the consequence that development can be 'legally compliant' but still result in biodiversity loss. The BNG approach guards against this, enabling development to contribute towards the national and global target of halting biodiversity loss by 2020 (DEFRA, 2011), and towards local and national strategies (listed below; detail provided in **Appendix C**) for conserving and enhancing wildlife. BNG assessments allow the Client to demonstrate their adherence to national legislation and local policy concerning biodiversity.

1.3 RELEVANT LEGISLATION AND POLICY

1.3.1. This appraisal has been compiled with reference to the following relevant nature conservation legislation, planning policy and the UK Biodiversity Framework (JNCC, 2012) from which the protection of sites, habitats and species is derived in England. Further details of the legislation, policy and strategic documents relevant to the Proposed Disposal Sites are provided in **Appendix C** and are summarised below:

- UK Government's 25 Year Environmental Plan (DEFRA, 2018);
- Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services (DEFRA, 2011);
- National Planning Policy Framework (NPPF) (MHCLG, 2019);
- National Policy Statement for National Networks (NPSNN) (Department for Transport, 2014);
- The Natural Environment and Rural Communities (NERC) Act (HMSO, 2006);
- Canterbury District Local Plan, adopted 2017; and
- Canterbury District Green Infrastructure Strategy 2018-2031;

1.3.2. Although not currently a legal obligation for UK development, the updated National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2019) makes clear the expectations for development to achieve biodiversity net gain in England.

1.3.3. In addition, on the 14th March 2019, Her Majesty's Treasury confirmed that, following consultation, the government will use the forthcoming Environment Bill to mandate BNG for development in England, ensuring that the delivery of much-needed infrastructure and housing is not at the expense of vital biodiversity. Additionally, the 25 Year Environment Plan states the UK Government intention to "*seek to embed a 'net environment gain' principle for development to deliver environmental improvements*".

1.3.4. Despite not being a mandatory requirement across the UK, there has been an increased commitment by the development industry to BNG (CIEEM, undated) and the application of BNG principles (CIEEM, CIRIA & IEMA, 2019) and assessments over the last few years.

1.4 SCOPE OF REPORT

1.4.1. This report uses the BNG good practice principles (Appendix A) and the Natural England Biodiversity Metric 2.0 (Natural England, 2019) to produce an assessment report that:

1. Establishes the total number of baseline biodiversity units within the Proposed Disposal Sites, both at an individual Site level, and as a whole;
2. Provides indicative post-development calculations for sites A, E and F to provide a preliminary view on the number of biodiversity units they may generate;
3. Assesses whether the Proposed Development is aligned with the biodiversity net gain Principles; and
4. Provides recommendations that could be included in the Proposed Development design and landscape masterplan that could be implemented to promote a scheme-wide biodiversity net gain.

1.4.2. Only land within the Proposed Disposal Sites has been considered at this baseline assessment stage. If there is additional land required for temporary use resulting from, for example, compound sites or access routes used during the construction phase, these will need to be addressed at a later stage.

1.4.3. It is important to recognise that the quantification of biodiversity is one of a number of factors to be considered when assessing the impact of the Proposed Development on biodiversity. Please note that this BNG assessment report does not cover potential impacts of the Proposed Development on protected species and designated sites. These are covered within the PEA report (WSP, 2021).

2 METHODOLOGY

2.1.1. A summary of the BNG assessment methodology and details of project-specific data sources, assessment limitations, and assumptions are provided in the following methodology section. The full BNG assessment methodology is detailed in **Appendix D.**

2.2 DATA SOURCES

2.2.1. The BNG assessment is informed by:

1. A Phase 1 habitat survey undertaken in March 2021 by an experienced and suitably qualified WSP ecologist following best practice guidelines (JNCC, 2010). This survey provided a baseline habitat database which details the habitat types present on Site, their area in hectares (ha) and their geographic distribution (**Appendix B,** Figure 1).
2. A habitat condition assessment (HCA) (Natural England, 2010) of the habitat areas identified during the Phase 1 habitat survey was undertaken concurrently with the habitat survey.
3. Publicly available Open Source Natural England datasets for Habitats of Principal Importance (HPI), ancient woodland (classed as irreplaceable habitat), and statutory designated sites for nature conservation.

2.3 BNG ASSESSMENT

2.3.1. This BNG assessment uses the following industry recognised best practice methodologies:

- CIEEM, IEMA & CIRIA (2016). Biodiversity Net Gain: Good Practice Principles for Development (Appendix A);
- Natural England (2019). The Biodiversity Metric 2.0: auditing and accounting for biodiversity user guide (Beta Version);
- Natural England (2010). Higher Stewardship, Farm Environment Plan (FEP) Manual, 3rd Edition; and
- BRE (2018). GN36 – Building Research Establishment Environmental Assessment Method (BREEAM), Civil Engineering Environmental Quality Assessment and Award Scheme (CEEQUAL) and Home Quality Mark (HQM) Ecology Calculation Methodology – Route 2.

2.3.2. Although this BNG assessment only establishes the total number of baseline biodiversity units within the Proposed Disposal Sites, applying these standardised methods within a full BNG assessment results in the calculation of: a baseline biodiversity value; a post-development biodiversity value; and a net change in biodiversity value associated with the Proposed Development.

2.3.3. Once the final design or landscape plan for the Proposed Disposal Sites has been developed, the quantitative outcomes of full BNG assessment calculation (presented in Area Habitat Biodiversity Units (AHBU) and Hedgerow Biodiversity Units (HBU)) can then be categorised as achieving one of the outcomes listed in Table 2-1. The quantitative outcome awarded to the Proposed Development will be dependent on the biodiversity unit value with the lowest net percentage change value.

Table 2-1 – Quantitative Outcomes of BNG Calculations

Post-development biodiversity value	Predicted Scheme-wide outcome
Less than 95% of the baseline value	Net loss (NL) of biodiversity
95% - 104% of baseline value	No net loss (NNL) of biodiversity
105% or more of baseline value	Biodiversity net gain (BNG)

2.3.4. The quantitative outcomes of the calculations are one component of the BNG assessment and associated good practice principles (**Appendix A**). A BNG assessment also requires the collation of qualitative evidence on the application of the mitigation hierarchy, stakeholder engagement and post-development habitat management. Collectively, these quantitative outcomes and qualitative evidence are used to inform the outcomes of the scheme wide BNG assessment.

2.4 LIMITATIONS AND ASSUMPTIONS

2.4.1. The following limitations and assumptions have been applied when using the above methodologies.

BASELINE BIODIVERSITY

2.4.2. Details of the baseline habitat types, including the distinctiveness and condition scores which were used in the baseline biodiversity unit calculations are provided in **Appendix E** – Biodiversity Net Gain Assessment Calculations.

2.4.3. The PEA did not provide a comprehensive audit of the age of trees within the Proposed Disposal Sites, or their precise location, due to the extensive area of the land surveyed, however, veteran tree do exist in blocks of woodland and in hedgerows within the Proposed Disposal Sites. The retention of any irreplaceable veteran trees found within the Proposed Disposal Sites will allow for Principle 2 of the BNG good practice principles to be met (**Appendix A**).

2.4.4. A watercourse is present within Site B, however this habitat has been excluded from the quantitative baseline assessment due to the lack of data available to accurately assess the condition of the watercourse and the reliability of the assessment tool available. The watercourse biodiversity value has instead been attributed to the habitats forming the banks of the watercourse. Avoiding impacts on the watercourse will allow for Principle 2 of the BNG good practice principles to be met (**Appendix A**).

Habitat translations

2.4.5. The Phase 1 habitat data and respective Geographical Information Systems (GIS) mapping was converted into the UK Habitat Classification (hereafter 'UKHab') descriptions (Table 2-2) as required for use within the Biodiversity Metric 2.0. The UKHab descriptions will be referred to instead of the Phase 1 habitat descriptions throughout this report hereafter.

Table 2-2 - Translation of Phase 1 Habitats to UKHab Descriptions

Phase 1 habitat type	UKHab habitat type
Semi-natural Broadleaved Woodland (A1.1.1)	Woodland and forest - Other woodland; broadleaved
Plantation Broadleaved Woodland (A1.1.2)	Woodland and forest - Other woodland; broadleaved
Coniferous Plantation Woodland (A1.2.2)	Woodland and forest - Other coniferous woodland
Scrub- Dense/continuous (A2.1)	Heathland and shrub- Mixed scrub
Scattered scrub (A2.2)	Heathland and shrub- Mixed scrub
Line of trees (A3.1)	Line of trees
Broadleaved parkland / scattered trees (A3.1)	Woodland and forest - Other woodland; broadleaved
Mixed parkland/scattered trees- mixed (A3.3)	Woodland and forest- Other woodland; mixed
Improved grassland (B4)	Grassland - Modified grassland
Poor semi-improved grassland (B6)	Grassland - Modified grassland
Tall ruderal (C3.1)	Sparsely vegetated land - Ruderal/Ephemeral
Standing water (G1)	Lakes - Ponds (Non- Priority Habitat)
Cultivated/disturbed land- amenity grassland (J1.2)	Urban- Amenity grassland
Arable (J1.1)	Cropland - Cereal crops
Introduced shrub (J1.4)	Urban- Introduced shrub
Intact species-rich hedgerow (J2.1.1)	Native Species Rich Hedgerow
Intact species-poor hedgerow (J2.1.2)	Native Hedgerow
Defunct species-rich hedgerow (J2.2.1)	Native Species Rich Hedgerow
Hedge with trees species-rich (J2.3.1)	Native Species Rich Hedgerow with trees
Hedge with trees species-poor (J2.3.2)	Native Hedgerow with trees
Dry ditch (J2.3.6)	Excluded from the linear calculations due to lack of UKHab equivalent
Buildings (J3.6)	Urban- Developed land; sealed surface
Bare ground (J4)	Urban- Vacant/derelict land/bare ground
Other habitat- hardstanding (J5)	Urban- Developed land; sealed surface

Connectivity and Distinctiveness

2.4.6. In the Biodiversity Metric 2.0, distinctiveness is preassigned for each habitat based upon the UK habitat classification system. The Biodiversity Metric 2.0 technical supplement default assumptions were implemented for habitat connectivity scores, and were assigned as follows:

- high and very high distinctiveness habitats- medium connectivity (1.1 multiplier score); and

- medium, low and very low distinctiveness habitats- low connectivity (1 multiplier score).

Strategic significance

2.4.7. The Canterbury City Council Green Infrastructure Strategy 2018 – 2031 sets out a strategic network of green infrastructure across Canterbury District, along with an assessment of needs and opportunities, strategic priorities and future actions. Canterbury's green infrastructure strategy supports Canterbury's Local Plan which was adopted in 2017. The evidence report for the Infrastructure Strategy specifically highlights actions involving the connection of woodlands and open spaces around the UoK to buffer ancient woodland and to increase connectivity from Rough Common to Tylers Hill/Barton Down and link The Blean Biodiversity Opportunity Area to the city. A long-term objective of the Infrastructure Strategy is to connect and protect woodlands at the UoK and around the urban area and promote increased woodland management.

2.4.8. As the UoK is within an area formally identified in local strategy a high strategic significance was selected for the Proposed Disposal Sites.

POST-DEVELOPMENT BIODIVERSITY

2.4.9. At the current time WSP has not been commissioned to undertake a post-development BNG assessment, therefore post-development AHBU calculations are not included within this report. Once the Proposed Development masterplan has been created it is recommended that post-development BNG calculations are undertaken in order to provide confirmation the Proposed Development will result in a BNG for the Site.

2.4.10. Communications with the UoK have identified that as part of the Proposed Development, Proposed Disposal Sites A, E, F may potentially be used for habitat enhancement or creation. Therefore, indicative calculations of post-development habitat types have been provided as examples to indicate how biodiversity net gain may be achieved. Information regarding the habitat distinctiveness and condition scores, are provided in Appendix E – Biodiversity Net Gain Assessment Calculations alongside the risk multipliers applied to the post-development habitat calculations.

2.4.11. The various biodiversity change scenarios (creation/recreation, habitat restoration/enhancement and accelerated habitat succession) carry different levels of risk and the multipliers in the Biodiversity Metric 2.0 represent this.

3 RESULTS

3.1 BASELINE BIODIVERSITY- QUANTITATIVE ASSESSMENT

3.1.1. The biodiversity baseline for the Proposed Disposal Sites is based on habitat types and areas, their distinctiveness and condition scores, and the number of biodiversity units each type of habitat generates **(Appendix E**, Tables E1 and E2). The baseline biodiversity map showing the Phase 1 habitats across the Proposed Disposal Sites is included in **Appendix B** (Figure 1).

3.1.2. Within the Proposed Disposal Sites, irreplaceable habitats (ancient woodland) total approximately 2.57 ha. This 2.57 ha area has been excluded from the baseline calculations.

3.1.3. Within the Proposed Disposal Sites, non-irreplaceable area-based habitats total 134.14 ha and generate 389.49 AHBU (Appendix E, Table E-1) while linear hedgerow habitats total 9.15km and generate 88.07 HBU (Appendix E, Table E-2).

3.1.4. The non-irreplaceable area-based habitats on the Proposed Disposal Sites comprise:

- Cropland - Cereal crops- 49.44%
- Grassland - Modified grassland- 31.26%
- Woodland and forest - Other woodland; broadleaved- 9.06%
- Urban - Amenity grassland- 4.58%
- Heathland and shrub - Mixed scrub- 3.29%
- Urban - Developed land; sealed surface- 1.65%
- Urban - Vacant/derelict land/ bareground- 0.40%
- Woodland and forest - Other woodland; mixed- 0.20%
- Sparsely vegetated land - Ruderal/Ephemeral- 0.07%
- Lakes - Ponds (Non- Priority Habitat)- 0.05%

3.2 SUMMARY OF OVERALL BASELINE BIODIVERSITY UNITS

3.2.1. Tables 3-1 to 3-7 summarise the results of the baseline BNG assessment and provide the baseline biodiversity units in Proposed Disposal Sites A-F.

Table 3-1 – Summary of the AHBU and HBU for Site A

Broad Habitat Category	Baseline Area (ha)	Baseline AHBU
Woodland and forest - Other woodland; broadleaved	1.30	10.67
Woodland and forest- Other woodland; mixed	0.28	3.86
Heathland and shrub - Mixed scrub	0.13	1.20
Grassland - Modified grassland	3.31	7.61
Urban- Amenity grassland	0.16	0.37
Urban- Vacant/derelict land/bare ground	0.17	0.39
Total	**5.35**	**24.10**
Broad Habitat Category	**Baseline length (km)**	**Baseline HBU**
Native Hedgerow	0.78	5.38

Total	**0.78**	**5.38**

Table 3-2 - Summary of the AHBU and HBU for Site B

Broad Habitat Category	Baseline Area (ha)	Baseline AHBU
Woodland and forest - Other woodland; broadleaved (this baseline does not include the 2.57 ha of ancient woodland with Site B)	4.00	25.30
Heathland and shrub- Mixed scrub	1.48	13.62
Grassland - Modified grassland	15.11	34.75
Lakes - Ponds (Non- Priority Habitat)	0.07	1.59
Cropland - Cereal crops	38.80	89.24
Urban- Developed land; sealed surface	0.22	0.00
Urban- Vacant/derelict land/bare ground	0.30	0.69
Total	**59.98**	**165.19**
Broad Habitat Category	**Baseline length (km)**	**Baseline HBU**
Native Species Rich Hedgerow	2.45	33.81
Native Hedgerow	1.11	4.53
Native Hedgerow with trees	0.47	4.32
Total	**4.03**	**42.66**

Table 3-3 - Summary of the AHBU and HBU for Site C

Broad Habitat Category	Baseline Area (ha)	Baseline AHBU
Woodland and forest - Other woodland; broadleaved	0.48	2.21
Grassland - Modified grassland	6.54	15.04
Total	**7.02**	**17.25**
Broad Habitat Category	**Baseline length (km)**	**Baseline HBU**
Native Species Rich Hedgerow	0.46	6.35
Native Species Rich Hedgerow with trees	0.2	1.84
Line of trees	0.1	0.46
Total	**0.76**	**8.65**

Table 3-4 - Summary of the AHBU and HBU for Site D

Broad Habitat Category	Baseline Area (ha)	Baseline AHBU
Woodland and forest - Other woodland; broadleaved	0.81	7.45
Heathland and shrub- Mixed scrub	0.16	0.74
Sparsely vegetated land - Ruderal/Ephemeral	0.09	0.21
Cropland - Cereal crops	21.59	49.66
Total	**22.65**	**58.06**
Broad Habitat Category	**Baseline length (km)**	**Baseline HBU**

Native Hedgerow	0.78	5.38
Native Species Rich Hedgerow	0.48	4.42
Native Species Rich Hedgerow with trees	0.14	1.56
Total	**1.40**	**11.36**

Table 3-5 - Summary of the AHBU and HBU for Site E

Broad Habitat Category	Baseline Area (ha)	Baseline AHBU
Woodland and forest - Other woodland; broadleaved	0.08	1.01
Heathland and shrub- Mixed scrub	0.57	3.13
Cropland - Cereal crops	7.20	16.56
Total	**7.85**	**20.70**
Broad Habitat Category	**Baseline length (km)**	**Baseline HBU**
Native Species Rich Hedgerow	1.02	13.62

Table 3-6 - Summary of the AHBU for Site F

Broad Habitat Category	Baseline Area (ha)	Baseline AHBU
Woodland and forest - Other woodland; broadleaved	0.11	0.51
Heathland and shrub- Mixed scrub	1.69	7.77
Grassland - Modified grassland	16.35	37.61
Total	**18.15**	**45.89**

Table 3-7 - Summary of the AHBU and HBU for the Access Road Site

Broad Habitat Category	Baseline Area (ha)	Baseline AHBU
Woodland and forest - Other woodland; broadleaved	0.85	6.40
Heathland and shrub- Mixed scrub	0.47	4.24
Grassland - Modified grassland	1.42	3.27
Urban- Amenity grassland	6.10	14.03
Urban- Developed land; sealed surface	2.03	0.00
Urban- Vacant/derelict land/bare ground	0.07	0.16
Total	**10.94**	**28.10**
Broad Habitat Category	**Baseline length (km)**	**Baseline HBU**
Native Species Rich Hedgerow	0.63	2.90
Native Species Rich Hedgerow	0.17	1.60
Native Hedgerow	0.24	1.10
Native Hedgerow	0.06	0.41
Native Hedgerow with trees	0.06	0.41
Total	**1.16**	**6.42**

Table 3-8 - Summary of the AHBU for the Dismantled Railway Site

Broad Habitat Category	Baseline Area (ha)	Baseline AHBU
Woodland and forest - Other woodland; broadleaved	2.19	30.22

3.3 POST-DEVELOPMENT BIODIVERSITY

3.3.1. Communications with the UoK have identified that habitat enhancement or habitat creation may take place at Proposed Disposal Sites A, E, F. Post-development habitat types have been provided as examples. These examples are provided for guidance and to help provide recommendations for the future landscape masterplan that can be implemented to promote a scheme-wide biodiversity net gain.

3.3.2. For the purpose of these provisional calculations the following habitat enhancements and creations have been considered:

- Site A: existing area of Grassland - Modified grassland habitat (currently in Poor Condition), enhanced to Grassland - Lowland meadows in Good Condition;
- Site E: existing area of Cropland - Cereal crops habitat (currently in Poor Condition), removed to create Grassland- Lowland meadow habitat in Good Condition; and
- Site F: existing area of Grassland - Modified grassland habitat (currently in Poor Condition), removed to create a Woodland and forest- Other woodland in Good Condition.

3.3.3. The change in AHBU for these example habitat enhancements/ creation are provided in Table 3-9. The risk factors, distinctiveness and condition scores, are provided in **Appendix E**, Table E3. It is important to note that the creation of the example habitats provided- lowland meadows and woodland habitats in good condition, is a relatively resource intensive process, with a time to target condition of 15 and 32+ years respectively. Therefore, on-going management would need to be a significant consideration.

3.3.4. If these example habitat enhancement and creation options are implemented at the Proposed Disposal Sites, they will provide an increase in AHBU for the Proposed Development. However, these results would need to be balanced with any habitat lost to development within the other Proposed Disposal Sites.

Table 3-9 – Example Habitat Enhancement and Creation Options

Proposed Disposal Site	Area (ha)	Baseline habitat	Baseline AHBU	Post-development Habitat	Post-development AHBU	Change in AHBU
A	3.31	Grassland - Modified grassland	7.61	Grassland- Lowland meadows	44.59	+36.98
E	7.2	Cropland - Cereal crops	16.56	Grassland- Lowland meadows	42.27	+25.71
F	16.35	Grassland - Modified grassland	37.61	Woodland and forest- Other woodland; broadleaved	48.34	+10.73

3.4 BIODIVERSITY NET GAIN PRINCIPLES - QUALITATIVE ASSESSMENT

3.4.1. Table 3-10 discusses adherence of the Proposed Development to each of the BNG good practice principles. The 'Current Outcome' column in Table 3-10 is based on the current stage in the BNG process. Adherence of the Proposed Development to these principles is potentially achievable, providing appropriate steps are taken as outlined in Table 3-10.

Table 3-10 – Evidence of Project Compliance with BNG Good Practice Principles

Principle	Description	Evidence	Current Outcome
1. Apply the mitigation hierarchy	Action should be taken to first avoid and then minimise impacts on biodiversity. Only as a last resort, and in agreement with external decision-makers where possible, compensate for losses that cannot be avoided. If compensating for losses within the development footprint is not possible or does not generate the most benefits for nature conservation, then offset biodiversity losses by gains elsewhere.	None as yet. A landscape masterplan should be created for the Proposed Development at the next stage. This should adhere to the mitigation hierarchy: · Avoids impacts to existing biodiversity value by avoiding areas of high distinctiveness habitats where possible; · Compensates for negative impacts by creating new, biologically valuable habitats on-site. Where habitats are temporarily lost to development, the habitats are replaced like-for-like or better. · Enhances moderate and poor condition retained habitats. Habitats to be retained on-site should initially be identified to reduce the baseline loss, before compensation and enhancement is considered.	Not yet achieved. *However, this could be addressed in the next phase of the Proposed Development's progression.*
2. Avoid losing biodiversity that cannot be offset by gains elsewhere	Avoid impacts on irreplaceable biodiversity – these impacts cannot be offset to achieve No Net Loss or Net Gain.	None as yet. A landscape masterplan should be created for the Proposed Development at the next stage which should include a commitment to avoid impacts on ancient woodland.	Not yet achieved. *However, this could be addressed in the next phase of the Proposed Development's progression.*
3. Be inclusive and equitable	Engage stakeholders early, and involve them in designing, implementing, monitoring and evaluating the approach to Net Gain. Achieve Net Gain in partnership with stakeholders where	None as yet. The BNG assessment report should be included as part of the wider stakeholder engagement for the Proposed Development.	Not yet achieved. *However, this could be addressed in the next phase of the Proposed*

Principle	Description	Evidence	Current Outcome
	possible and share the benefits fairly among stakeholders.		*Development's progression.*
4. Address risks	Mitigate difficulty, uncertainty and other risks to achieving Net Gain. Apply well-accepted ways to add contingency when calculating biodiversity losses and gains in order to account for any remaining risks, as well as to compensate for the time between the losses occurring and the gains being fully realised.	The baseline BNG assessment used industry recognised risk multipliers from the Biodiversity Metric 2.0. Once a landscape masterplan for the Proposed Development has been created, a post-development BNG assessment should be undertaken using the industry recognised risk multipliers from the Biodiversity Metric 2.0.	Not yet achieved. *However, this could be addressed in the next phase of the Proposed Development's progression.*
5. Make a measurable Net Gain contribution	Achieve a measurable, overall gain for biodiversity and the services ecosystems provide while directly contributing towards nature conservation priorities.	To date, only a baseline BNG assessment has been undertaken and a landscape masterplan has yet to be developed.	Not yet achieved. *However, this could be addressed in the next phase of the Proposed Development's progression.*
6. Achieve the best outcomes for biodiversity	Achieve the best outcomes for biodiversity by using robust, credible evidence and local knowledge to make clearly justified choices when: · Delivering compensation that is ecologically equivalent in type, amount and condition, and that accounts for the location and timing of biodiversity losses; · Compensating for losses of one type of biodiversity by providing a different type that delivers greater benefits for nature conservation; · Achieving Net Gain locally to the development while also contributing towards nature conservation priorities	To date, only a baseline BNG assessment has been undertaken and a landscape masterplan has yet to be developed.	Not yet achieved. *However, this could be addressed in the next phase of the Proposed Development's progression.*

Principle	Description	Evidence	Current Outcome
	at local, regional and national levels; · Enhancing existing or creating new habitat; · Enhancing ecological connectivity by creating more, bigger, better and joined areas for biodiversity.		
7. Be additional	Achieve nature conservation outcomes that demonstrably exceed existing obligations (i.e. do not deliver something that would occur anyway).	The nature conservation outcomes within the legislation and policy (**Appendix C**) could be met however post-development landscape plan has not yet to be developed. Confirmation that no pre-existing plans for habitat creation within the Proposed Disposal Sites needs to be provided, to ensure any habitat creation associated with the Proposed Development would be novel and additional.	Not yet achieved. *However, this could be addressed in the next phase of the Proposed Development's progression.*
8. Create a Net Gain legacy	Ensure Net Gain generates long-term benefits by: · Engaging stakeholders and jointly agreeing practical solutions that secure Net Gain in perpetuity; · Planning for adaptive management and securing dedicated funding for long-term management; · Designing Net Gain for biodiversity to be resilient to external factors, especially climate change; · Mitigating risks from other land uses; · Avoiding displacing harmful activities from one location to another; · Supporting local-level management of Net Gain activities.	This has not yet been addressed and should be discussed as the Proposed Development progresses. Consideration should be made to secure appropriate management of both retained and created habitats to maintain biodiversity net gain over the long-term.	Not yet achieved. *However, this could be addressed in the next phase of the Proposed Development's progression.*
9. Optimise sustainability	Prioritise Biodiversity Net Gain and, where possible,	This baseline BNG assessment is being used to inform the	Not yet achieved.

Principle	Description	Evidence	Current Outcome
	optimise the wider environmental benefits for a sustainable society and economy.	Proposed Development's design to provide better outcomes for biodiversity. A landscape masterplan should be developed to take into account the BNG requirements, as well as sustainability requirements, and aim to address the two so that they are delivered together where possible.	*However, this could be addressed in the next phase of the Proposed Development's progression.*
10. Be transparent	Communicate all Net Gain activities in a transparent and timely manner, sharing the learning with all stakeholders.	None as yet. The BNG assessment results should be included as part of the wider stakeholder engagement for the Proposed Development.	Not yet achieved. *However, this could be addressed in the next phase of the Proposed Development's progression.*

4 DISCUSSION

4.1 SUMMARY OF RESULTS – QUANTITATIVE BNG ASSESSMENT

4.1.1. The habitats across all Proposed Disposal Sites were found to have a total biodiversity baseline value of 389.49 AHBU and 88.07 HBU. The Sites individual biodiversity baseline values are presented in Table 4-1.

Table 4-1 - Biodiversity Baseline Value for Individual Proposed Disposal Sites

Proposed Disposal Site	Baseline AHBU	Baseline HBU
Site A	24.10	5.38
Site B	165.19	42.67
Site C	17.25	8.65
Site D	58.06	11.36
Site E	20.70	13.62
Site F	45.89	-
Dismantled Railway	30.22	-
Access Road	28.08	6.39
Total	**389.49**	**88.07**

4.1.2. Within the Site B there is also 2.57 ha of ancient woodland, an irreplaceable habitat. It is important to note that biodiversity net gain or no net loss cannot be achieved for the development as a whole if there is a negative impact on an irreplaceable habitat (**Appendix A** - Principle 2). Impacts upon irreplaceable habitats are also contrary to the statements set out in the revised NPPF.

4.1.3. If impacts on this irreplaceable habitat is unavoidable as part of the Proposed Development, any compensation offered to address impacts on irreplaceable habitats should be agreed directly with the relevant statutory nature conservation agency, in this case Natural England.

4.1.4. Unavoidable impacts on irreplaceable habitats should not undermine the BNG assessment process for other habitats. Projects in this situation should still aim to achieve no net loss or net gains for non-irreplaceable habitats.

4.1.5. As well as avoiding a negative impact on the ancient woodland (an irreplaceable habitat) that is within Site B, habitat enhancement and/or creation will need to take place within the Proposed Disposal Sites, or at an off-site location, in order for the Proposed Development to achieve a quantitative scheme-wide biodiversity net gain. The retention or provision of high value habitats within the new Proposed Development is likely to reduce the requirement of habitat enhancement and/or creation off-site. The examples provided in Table 3-9 highlight the changes in AHBU that could be achieved within the Proposed Disposal Sites if different habitats were created or enhanced.

4.1.6. It is important to note that the creation of the example habitats provided- lowland meadows and woodland habitats in good condition, is a relatively resource intensive process, with a time to target condition of 15 and 32+ years respectively. Therefore, on-going management would need to be a significant consideration.

4.2 SUMMARY OF RESULTS – QUALITATIVE BNG ASSESSMENT

4.2.1. The Proposed Development is in the early design stage and therefore, it is not yet possible to demonstrate that all BNG good practice principles are met. This is primarily because a landscape masterplan has not yet been prepared. Once the landscape masterplan is available it is recommended that the qualitative assessment is updated. If the recommendations contained in Table 3-10 are followed, adherence to all key principles is possible.

4.2.2. At this time, there is an area of ancient woodland within Site B that may be affected by the Proposed Development. As noted above, the Proposed Development will need to avoid impacts upon this irreplaceable habitat to achieve BNG.

4.3 RECOMMENDATIONS

4.3.1. For the Proposed Development to achieve both qualitative and quantitative BNG, the recommended next steps are as follows:

- **Use the information presented in this report to inform the Proposed Development designs and landscape masterplan**. This should include:
  - Retention and protection of all ancient woodland (irreplaceable habitat) within the Proposed Disposal Sites (Site B);
  - Habitat enhancement or creation onsite within the Proposed Disposal Sites. The creation of habitats with high biodiversity value, on land currently supporting habitats with low biodiversity value, such as cereal crops, is likely to provide the greatest gain in AHBU, and assist in achieving an overall BNG for the Proposed Development; and
  - Maximised retention of existing hedgerow and trees across all Proposed Disposal Sites.
- **Seek to deliver BNG by applying the mitigation hierarchy** to avoid, mitigate and restore / recreate habitats within the operational footprint of the Proposed Development where possible.
- **Stakeholder engagement**. Communicate with stakeholders to jointly agreeing practical solutions that secure Net Gain in perpetuity and, if applicable, work with stakeholders to gather suggestions to identify candidate offset sites and providers.

4.3.2. For the ancient woodland and watercourse that are present within Site B, consideration should be given to the enhancement of the habitats, as well as the requirement for a buffer area around the woodland and watercourse to ensure no detrimental impacts occur during construction of the Proposed Development. This follows standing advice from Natural England on the protection of trees and woodlands. The inclusion of buffering habitats, including scrub and riparian planting will maximise the BNG benefits in these parts of the Proposed Development.

4.3.3. To maximise the Proposed Development's potential to achieve an overall net gain for biodiversity, the ongoing development of the landscape masterplan should be undertaken in consultation with a BNG spacialist. It is recommended that a full BNG assessment is undertaken on completion of final detailed landscape masterplan. This full BNG assessment should incorporate a Modular River Survey (MoRPh) to ensure condition of the water courses within the Proposed Disposal Sites are correctly accounted for. MoRPh surveys will be a requirement of the upcoming Biodiversity Metric 3.0.

4.3.4. It is important to recognise that a BNG assessment is one method for assessing the impact of the Proposed Development on biodiversity. This BNG report does not cover requirements of the Proposed Development to mitigate potential impacts on protected species and designated sites. This information can be found in the PEA (WSP, 2021).

REFERENCES

- **Business and Biodiversity Offsets Programme (BBOP)** (2012). BBOP Principles on Biodiversity Offsets. Available: http://bbop.forest-trends.org/documents/files/bbop_principles.pdf
- **BRE Group** (2018). GN36 BREEAM, CEEQUAL and HQM Ecology Calculation Methodology – Route. Available: https://bregroup.com/brebreeam/wp-content/uploads/sites/3/2018/06/GN36-v0.0-BREEAM-CEEQUAL-HQM-Ecology-Calculation-Methodology-Route-2.pdf
- **BSI Standards Publication**. (2012). BSI 5837:2012. Trees in relation to design, demolition and construction.
- Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020). UK Habitat Classification – Habitat Definitions V1.1. Available: http://ukhab.org
- **CIEEM, CIRIA & IEMA** (2016). Biodiversity Net Gain: Good practice principles for development. Available: https://www.iema.net/assets/newbuild/documents/IEMA%20Biodiversity%20Net%20Gain.pdf
- **CIEEM, CIRIA & IEMA** (2019). Biodiversity Net Gain: Good practice principles for development. A practical guide. Available: https://cieem.net/wp-content/uploads/2019/02/C776a-Biodiversity-net-gain.-Good-practice-principles-for-development.-A-practical-guide-web.pdf
- **Department for Environment, Food and Rural Affairs (DEFRA)** (2011), Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services. Available: https://www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services
- **Department for Environment, Food and Rural Affairs (DEFRA)** (2012b). Biodiversity Offsetting Pilots: Guidance for offset providers. Available: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69530/pb13742-bio-guide-offset-providers.pdf
- **Department for Environment, Food and Rural Affairs (DEFRA)** (2012c). Biodiversity Offsetting Pilots: Guidance for developers. Available: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69528/pb13743-bio-guide-developers.pdf
- **Department for Environment, Food and Rural Affairs (DEFRA)** (2018). 25 Year Environment Plan. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf
- **Department for Transport** (2014). National policy statement for national networks. Available: https://www.gov.uk/government/publications/national-policy-statement-for-national-networks
- **Natural England** (2019) (b). The Biodiversity Metric 2.0- Technical Supplement- Beta Test. Available: http://publications.naturalengland.org.uk/publication/5850908674228224
- **Natural England** (2019). The Biodiversity Metric 2.0- User Guide- Beta Test. Available: http://publications.naturalengland.org.uk/publication/5850908674228224
- **HMSO** (2006). Natural Environment and Rural Communities Act. HMSO, Norwich. Available: https://www.legislation.gov.uk/ukpga/2006/16/pdfs/ukpga_20060016_en.pdf
- **Her Majesty's Government (2018)**. A Green Future: Our 25 Year Plan to Improve the Environment. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf

- **JNCC** (2010). Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit. JNCC, Peterborough.
- **JNCC** (2011). UK Biodiversity Action Plan Priority Habitat Descriptions. Available: http://jncc.defra.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2011.pdf
- JNCC (2012). UK Post-2010 Biodiversity Framework. Available: https://data.jncc.gov.uk/data/587024ff-864f-4d1d-a669-f38cb448abdc/UK-Post2010-Biodiversity-Framework-2012.pdf
- **Ministry of Housing, Communities and Local Government** (2019). National Planning Policy Framework. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/779764/NPPF_Feb_2019_web.pdf
- **Natural England** (2010). Higher Level Stewardship Farm Environment Plan (FEP) Manual Technical Guidance on the completion of the FEP and identification, condition assessment and recording of HLS FEP features. Third Edition. NE. Peterborough.
- **WSP** (2021). University of Kent Disposal Sites, Preliminary Ecological Appraisal.

Appendix A

CIEEM, CIRIA AND IEMA GOOD PRACTICE PRINCIPLES

INTERNAL

Biodiversity Net Gain

Good practice principles for development

Biodiversity Net Gain is development that leaves biodiversity in a better state than before. It is also an approach where developers work with local governments, wildlife groups, land owners and other stakeholders in order to support their priorities for nature conservation. These ten principles set out good practice for achieving Biodiversity Net Gain and must be applied all together, as one approach.

Principle 1. Apply the Mitigation Hierarchy

Do everything possible to first avoid and then minimise impacts on biodiversity. Only as a last resort, and in agreement with external decision-makers where possible, compensate for losses that cannot be avoided. If compensating for losses within the development footprint is not possible or does not generate the most benefits for nature conservation, then offset biodiversity losses by gains elsewhere.

Principle 2. Avoid losing biodiversity that cannot be offset by gains elsewhere

Avoid impacts on irreplaceable biodiversity - these impacts cannot be offset to achieve No Net Loss or Net Gain.

Principle 3. Be inclusive and equitable

Engage stakeholders early, and involve them in designing, implementing, monitoring and evaluating the approach to Net Gain. Achieve Net Gain in partnership with stakeholders where possible, and share the benefits fairly among stakeholders.

Principle 4. Address risks

Mitigate difficulty, uncertainty and other risks to achieving Net Gain. Apply well-accepted ways to add contingency when calculating biodiversity losses and gains in order to account for any remaining risks, as well as to compensate for the time between the losses occurring and the gains being fully realised.

Principle 5. Make a measurable Net Gain contribution

Achieve a measurable, overall gain[1] for biodiversity and the services ecosystems provide while directly contributing towards nature conservation priorities.

1 Net Gain has been described as a measurable target for development projects where impacts on biodiversity are outweighed by a clear mitigation hierarchy approach to first avoid and then minimise impacts, including through restoration and / or compensation. Adhering to these Net Gain principles (i.e. pursuing all principles together) will help in under-pinning good practice for achieving and sustaining Net Gain.

Principle 6. Achieve the best outcomes for biodiversity

Achieve the best outcomes for biodiversity by using robust, credible evidence and local knowledge to make clearly-justified choices when:

- Delivering compensation that is ecologically equivalent in type, amount and condition, and that accounts for the location and timing of biodiversity losses
- Compensating for losses of one type of biodiversity by providing a different type that delivers greater benefits for nature conservation
- Achieving Net Gain locally to the development while also contributing towards nature conservation priorities at local, regional and national levels
- Enhancing existing or creating new habitat
- Enhancing ecological connectivity by creating more, bigger, better and joined areas for biodiversity

Principle 7. Be additional

Achieve nature conservation outcomes that demonstrably exceed existing obligations (i.e. do not deliver something that would occur anyway).

Principle 8. Create a Net Gain legacy

Ensure Net Gain generates long-term benefits by:

- Engaging stakeholders and jointly agreeing practical solutions that secure Net Gain in perpetuity[2]
- Planning for adaptive management and securing dedicated funding for long-term management
- Designing Net Gain for biodiversity to be resilient to external factors, especially climate change
- Mitigating risks from other land uses
- Avoiding displacing harmful activities from one location to another
- Supporting local-level management of Net Gain activities

Principle 9. Optimise sustainability

Prioritise Biodiversity Net Gain and, where possible, optimise the wider environmental benefits for a sustainable society and economy.

Principle 10. Be transparent

Communicate all Net Gain activities in a transparent and timely manner, sharing the learning with all stakeholders.

2 Biodiversity compensation should be planned for a sustained Net Gain over the longest possible timeframe. For development in the UK, the expectation is that compensation sites will be secured for at least the lifetime of the development (e.g. often 25-30 years) with the objective of Net Gain management continuing in the future.

Appendix B

BASELINE AND POST-DEVELOPMENT HABITAT MAPS

INTERNAL

LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- A3.3 - Mixed Parkland/scattered trees
- B6 - Poor semi-improved grassland
- J1.2 - Cultivated/disturbed land - amenity grassland
- J4 - Bare ground
- J2.1.2 - Species-poor Intact Hedgerow
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: A

SCALE @A3:	DRAWN:	APPROVED:
1:2,199	GB	PJ
VERSION:	DATE:	DATE:
1	29/04/21	13/05/21
PROJECT No:	DRAWING No:	
70080896	Figure 1, Page 1	

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz

LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- A1.1.2 - Broadleaved woodland - plantation
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- B4 - Improved grassland
- G1.1 - Standing water - eutrophic
- J1.1 - Cultivated/disturbed land - arable
- J3.6 - Buildings
- J4 - Bare ground
- G2 - Running Water
- J2.1.1 - Species-rich Intact Hedgerow
- J2.1.2 - Species-poor Intact Hedgerow
- J2.2.2 - Species-poor Defunct Hedgerow
- J2.3.1 - Species-rich Hedgerow with Trees
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: B

SCALE @A3:	DRAWN:	APPROVED:
1:5,792	GB	PJ
VERSION: 1	DATE: 29/04/21	DATE: 13/05/21
PROJECT No: 70080896	DRAWING No: Figure 1, Page 2	

C:\Users\UKPX7022\Desktop\02 GIS\UoK_GIS.qgz

LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- B4 - Improved grassland
- A3.1 - Linear Scattered Trees
- J2.1.2 - Species-poor Intact Hedgerow
- J2.3.1 - Species-rich Hedgerow with Trees
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

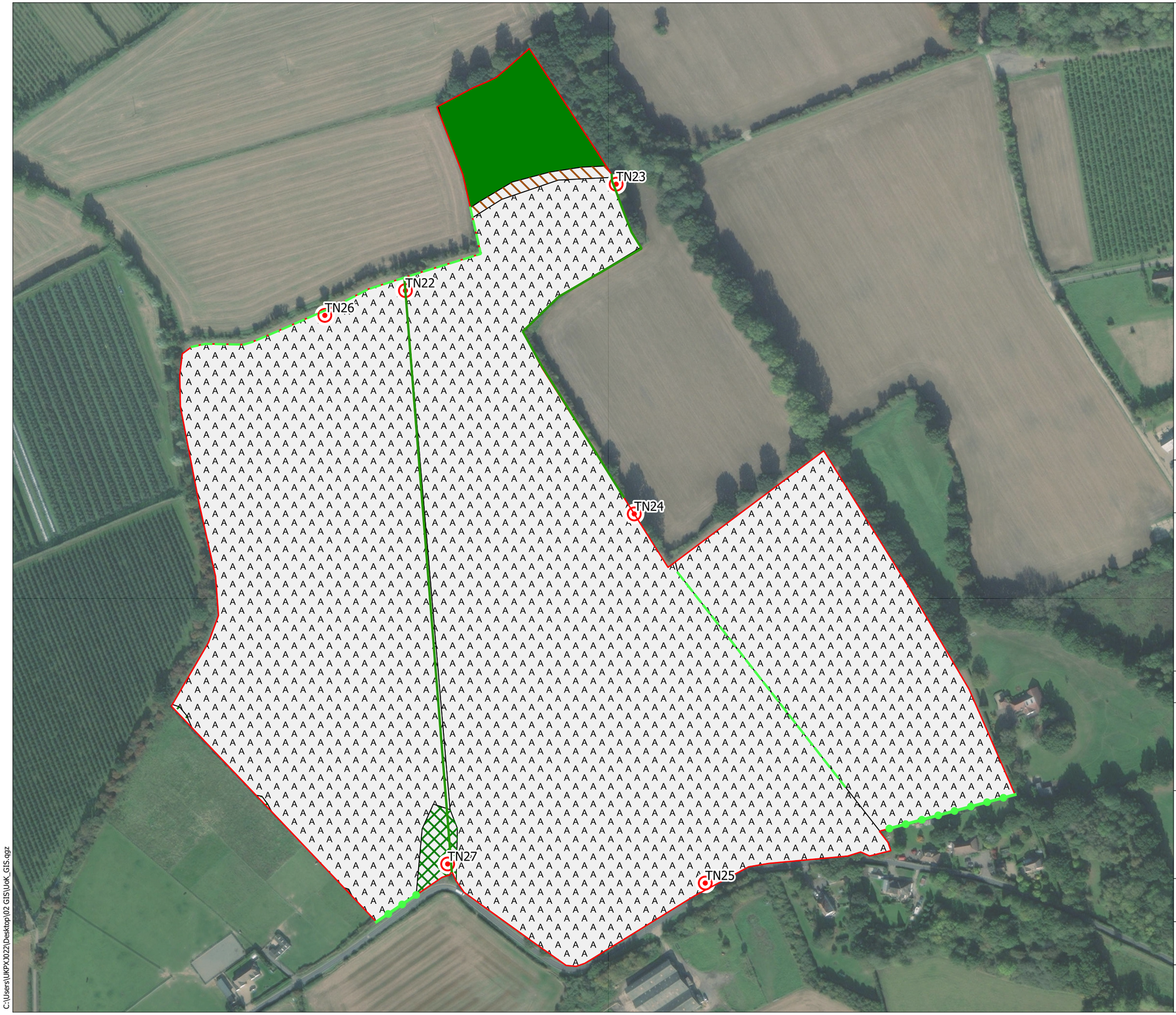
CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: C

SCALE @A3:	DRAWN:	APPROVED:
1:2,569	GB	PJ
VERSION:	**DATE:**	**DATE:**
1	29/04/21	13/05/21
PROJECT No:	**DRAWING No:**	
70080896	Figure 1, Page 3	

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz



LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- C3.1 - Other tall herb and fern - ruderal
- J1.1 - Cultivated/disturbed land - arable
- J2.1.2 - Species-poor Intact Hedgerow
- J2.2.1 - Species-rich Defunct Hedgerow
- J2.3.1 - Species-rich Hedgerow with Trees
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: D

SCALE @A3:	DRAWN:	APPROVED:
1:4,325	GB	PJ
VERSION:	DATE:	DATE:
1	29/04/21	13/05/21
PROJECT No:	DRAWING No:	
70080896	Figure 1, Page 4	

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz

LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- A3.1 - Broadleaved Parkland/scattered trees
- J1.1 - Cultivated/disturbed land - arable
- J3.6 - Buildings
- J2.1.1 - Species-rich Intact Hedgerow
- J2.2.1 - Species-rich Defunct Hedgerow
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

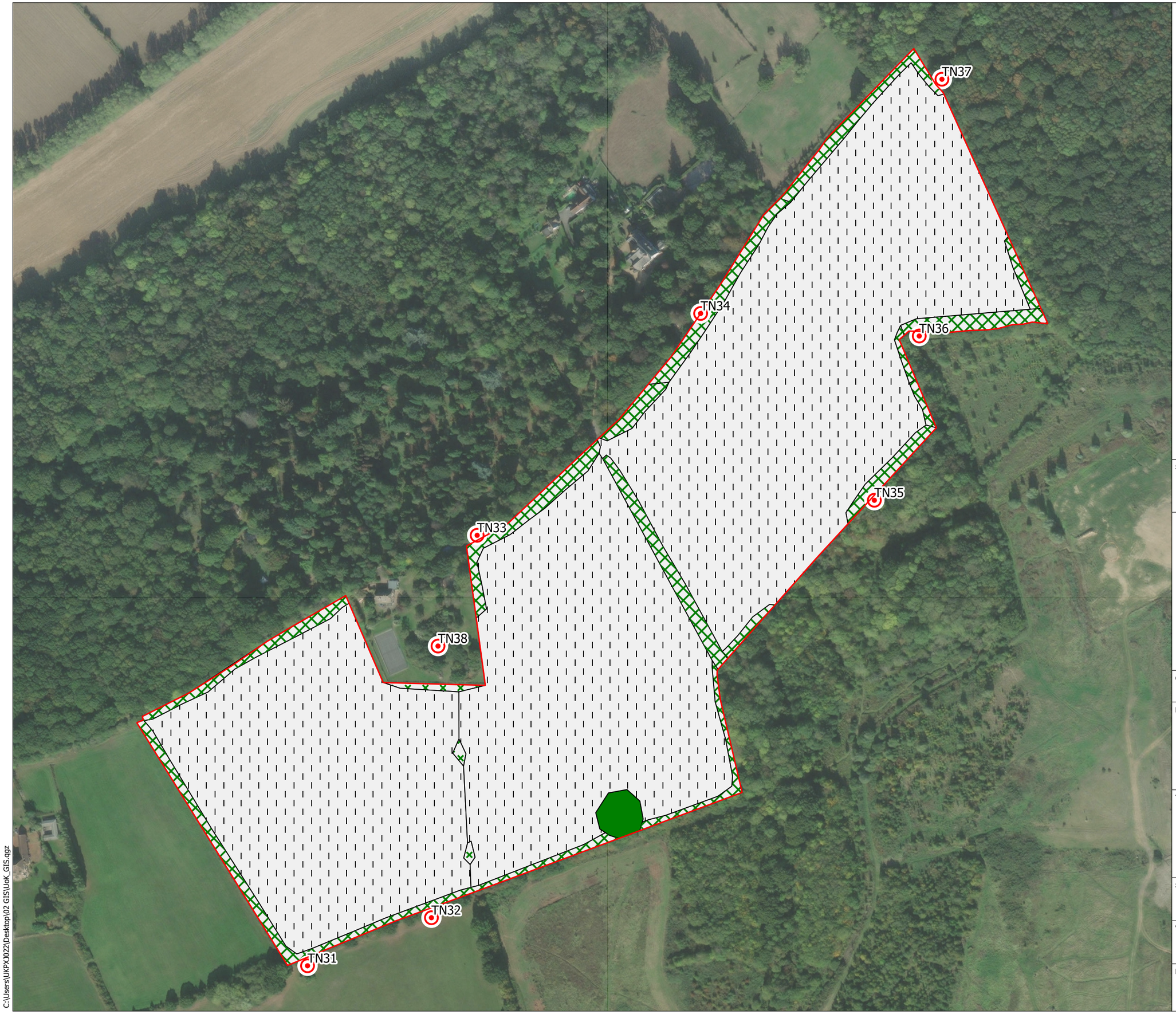
CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: E

SCALE @A3:	DRAWN:	APPROVED:
1:2,420	GB	PJ
VERSION: 1	DATE: 29/04/21	DATE: 13/05/21
PROJECT No: 70080896	DRAWING No: Figure 1, Page 5	

C:\Users\UKPX7022\Desktop\02 GIS\UoK_GIS.qgz



LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- B4 - Improved grassland
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: F

SCALE @A3:	DRAWN:	APPROVED:
1:4,539	GB	PJ
VERSION:	DATE:	DATE:
1	29/04/21	13/05/21
PROJECT No:	DRAWING No:	
70080896	Figure 1, Page 6	

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz

LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- Target Note

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

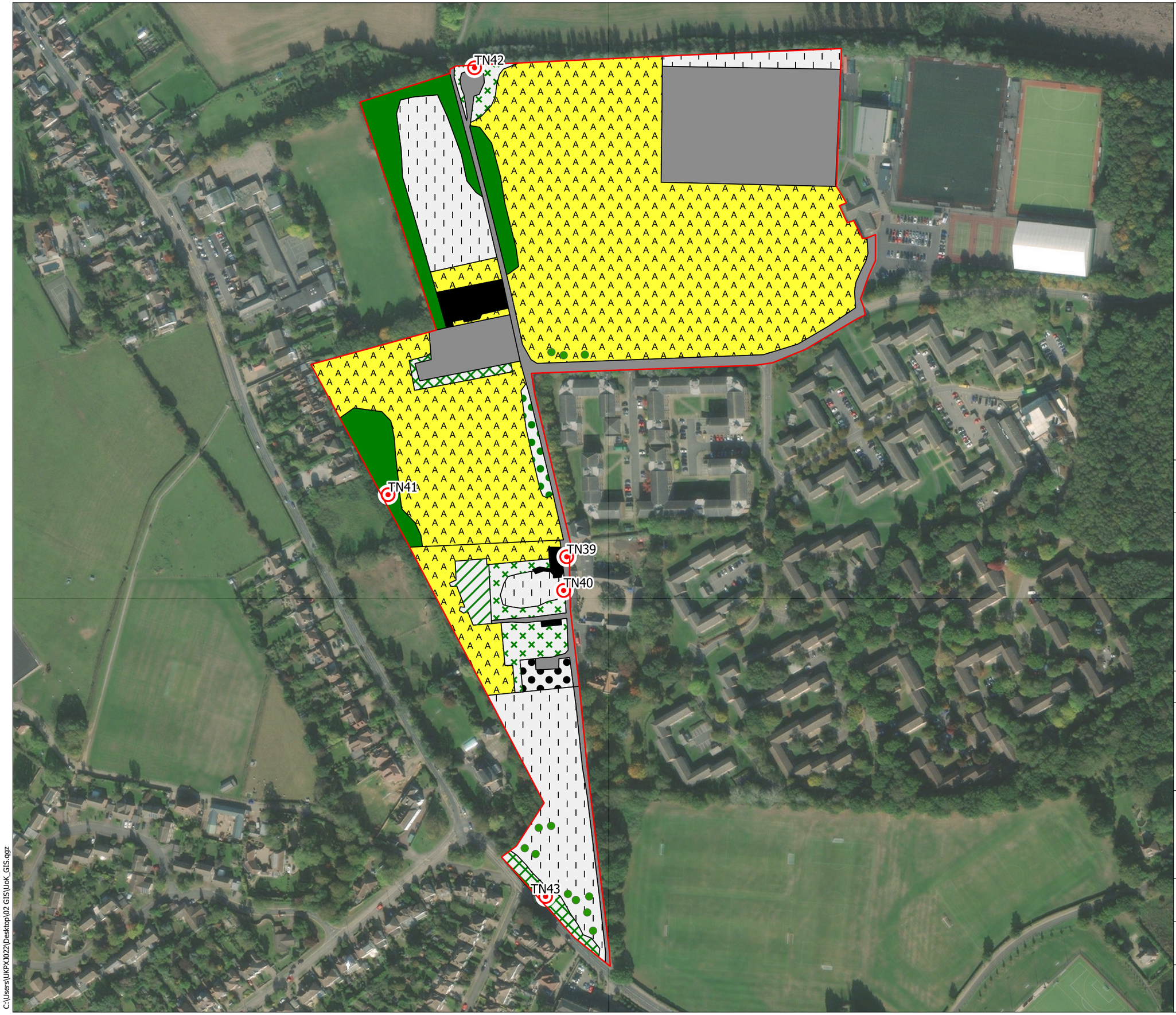
CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: Dismantled railway

SCALE @A3:	DRAWN:	APPROVED:
1:5,515	GB	PJ
VERSION: 1	DATE: 29/04/21	DATE: 13/05/21
PROJECT No: 70080896	DRAWING No: Figure 1, Page 7	

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz



LEGEND:

- Site Boundary
- A1.1.1 - Broadleaved woodland - semi-natural
- A1.1.2 - Broadleaved woodland - plantation
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- A3.1 - Broadleaved Parkland/scattered trees
- B4 - Improved grassland
- J1.2 - Cultivated/disturbed land - amenity grassland
- J3.6 - Buildings
- J4 - Bare ground
- J5 - Hard standing
- Target Note
- Scattered Broadleaved Trees

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

CLIENT: University of Kent

PROJECT: University of Kent Disposal Sites

TITLE: Phase 1 Habitat Survey
Site: Access corridor

SCALE @A3:	DRAWN:	APPROVED:
1:4,142	GB	PJ
VERSION:	DATE:	DATE:
1	29/04/21	13/05/21
PROJECT No:	DRAWING No:	
70080896	Figure 1, Page 8	

C:\Users\UKPX3022\Desktop\02 GIS\UoK_GIS.qgz

Appendix C

BIODIVERSITY NET GAIN POLICY AND LEGISLATION

INTERNAL

BIODIVERSITY NET GAIN POLICY AND LEGISLATION

NATIONAL LEGISLATION

UK GOVERNMENT'S 25 YEAR ENVIRONMENT PLAN

The UK Government's 25 Year Environment Plan (DEFRA, 2018) states a desire to '*embed a 'net environmental gain' principle for development to deliver environmental improvements locally and nationally*' and plans to consult on making Biodiversity Net Gain a mandatory requirement.

On 14th March 2019, Her Majesty's Treasury confirmed that following consultation, the government will use the forthcoming Environment Bill to mandate BNG for development in England, ensuring that the delivery of much-needed infrastructure and housing is not at the expense of vital biodiversity.

BIODIVERSITY 2020: A STRATEGY FOR ENGLAND'S WILDLIFE AND ECOSYSTEM SERVICES

Biodiversity 2020: A strategy for England's wildlife and ecosystem services (DEFRA, 2011) is the national strategy for biodiversity. This sets out an ambition to halt the loss of biodiversity and see an increase in the area of priority habitats by 200,000 ha by 2020. Biodiversity 2020 sets in policy the objectives to improve our wildlife sites, make them bigger, develop more of them and join them up (summarised as 'Bigger, Better, More and Joined').

NATIONAL PLANNING POLICY FRAMEWORK

The revised National Planning Policy Framework (NPPF) (MHCLG, 2019) refers to conserving and enhancing the natural environment. This requires Local Authorities in England to take measures to:

- Conserve and enhance biodiversity;
- Protect the habitats of these species from further decline;
- Protect the species from the adverse effect of development; and
- Refuse planning permission for development, if significant harm resulting from a development cannot be avoided, adequately mitigated, or, as a last resort, compensated for.

Although not currently a legal obligation, the revised NPPF refers to biodiversity and environmental net gains in the following paragraphs:

- Transport Infrastructure
  - Paragraph 102. "*Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:*
    d) the environmental impacts of traffic and transport infrastructure can be identified assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for ***net environmental gains.****"*

- Planning decisions
  - Paragraph 118. "*Planning decisions and planning policy should a) encourage multiple benefits from both urban and rural land … and taking opportunities to* ***achieve net environmental gains - such as developments that would enable new habitat creation****."*

- Paragraph 170. *"Planning policies and decisions should contribute to and enhance the natural and local environment by: … d) minimising impacts on and **providing net gains** for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures."*
- Paragraph 174. "*To protect and enhance biodiversity and geodiversity plans should b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing **measurable net gains for biodiversity***."
- Paragraph 175. "*When determining planning applications, local planning authorities should apply the following principles: a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts) adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; … and d) … opportunities to incorporate biodiversity improvements in and around developments, especially where this can secure **measurable net gains for biodiversity***."

NATIONAL POLICY STATEMENT FOR NATIONAL NETWORKS

The National Policy Statement for National Networks (NPSNN) (Department for Transport, 2014) paragraph 5.23 states that:

- "*The applicant should show how the project has taken advantage of opportunities to **conserve and enhance biodiversity** and geological conservation interests.*"

Maintaining no net loss of biodiversity as a result of the Proposed Development is consistent with the policy aims of Paragraph 5.25 of the NPSNN, which states:

- "*As a general principle, and subject to the specific policies below, development should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives. The applicant may also wish to make use of **biodiversity offsetting** in devising compensation proposals to counteract any impacts on biodiversity which cannot be avoided or mitigated. Where significant harm cannot be avoided or mitigated, as a last resort, appropriate compensation measures should be sought.*"

This sets out that any loss should be compensated for to achieve no net loss or net gain by replacing habitats, exploring the potential for enhancing them, and managing retained features.

NATURAL ENVIRONMENT AND RURAL COUNTRYSIDE ACT

The Natural Environment and Rural Countryside (NERC) Act (HMSO, 2006) requires public bodies, including local authorities, '*to have regard to the conservation of biodiversity in England when carrying out their normal functions'*.

Section 40 sets out that:

- Paragraph 1. *"Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity";* and that
- Paragraph 3. *"Conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat".*

Section 41 sets out that:

- Paragraph 1. *"The Secretary of State must… publish a list of the living organisms and types of habitat … of principal importance for the purpose of conserving biodiversity"* based on consultation with Natural England*;* and
- Paragraph 3a. Every planning authority must *"a) take such steps… to further the conservation of the living organisms and types of habitat included in any list published under this section, or (b) promote the taking by others of such steps".*

LOCAL POLICY

CANTERBURY DISTRICT LOCAL PLAN

The current local planning policy context is incorporated within the Canterbury District Local Plan, adopted 2017. Within the Local Plan, Policy LB9 (Protection, Mitigation, Enhancement and Increased Connectivity for Species and Habitats of Principal Importance), states that

- "*All development should avoid a net loss of biodiversity/nature conservation value and actively pursue opportunities to achieve a net gain*".

The Canterbury City Council Green Infrastructure Strategy 2018 – 2031 supports Canterbury's Local Plan and sets out a strategic network of green infrastructure across Canterbury District, along with an assessment of needs and opportunities, strategic priorities and future actions. The evidence report for the Infrastructure Strategy specifically highlights actions involving the connection of woodlands and open spaces around the UoK to buffer ancient woodland and to increase connectivity from Rough Common to Tylers Hill/Barton Down and link The Blean Biodiversity Opportunity Area to the city. A long-term objective of the Infrastructure Strategy is to connect and protect woodlands at the UoK and around the urban area and promote increased woodland management.

Appendix D

BIODIVERSITY NET GAIN ASSESSMENT METHODOLOGY

INTERNAL

BIODIVERSITY NET GAIN ASSESSMENT METHODOLOGY

OVERVIEW

BNG assessment calculations are separated into four key sections which are used to produce the quantitative outcomes of the assessment. They are:

1. Separating out irreplaceable baseline habitats and any mitigation proposed for impacts to irreplaceable habitats, from the main data set;
2. Quantification of baseline biodiversity units using Phase 1 Habitat data and habitat condition assessment data;
3. Quantification of post-development biodiversity units using Phase 1 Habitat data translated from the post-development landscape mitigation plan; and
4. Assessing the net change in biodiversity value as a result of the Proposed Development.

Collectively these elements of the BNG assessment are used in conjunction with qualitative information relating to the BNG good practice principles (Appendix A) to produce a scheme wide BNG assessment outcome.

IRREPLACEABLE HABITATS

It is important to note that biodiversity net gain or no net loss cannot be achieved for the development as a whole if there is a negative impact on an irreplaceable habitat (Appendix A -Principle 2). Best practice guidance advises that irreplaceable habitats should not be included in any assessment of impacts (CIEEM, IEMA and CIRIA, 2019 and DEFRA, 2012a).

In these situations, any compensation offered to address impacts on irreplaceable habitats should be agreed directly with the relevant statutory nature conservation agency (in this case Natural England)

Unavoidable impacts on irreplaceable habitats should not undermine the BNG assessment process for other habitats. Projects in this situation should aim to achieve no net loss or net gains for non-irreplaceable habitats.

At the time of this report, there is an area of ancient woodland within Site B that may be affected by the Proposed Development.

HABITAT TYPES

The BNG assessment used Phase 1 habitat types to describe the different habitat types.

BASELINE BIODIVERSITY UNIT CALCULATIONS

AREA HABITAT BIODIVERSITY UNIT CALCULATIONS

The biodiversity baseline value of the non-irreplaceable area-based habitats within the Proposed Disposal Sites were quantified in terms of Area Habitat Biodiversity Units (AHBU). Calculation of AHBU for habitat areas was in accordance with the 2019 Biodiversity Metric 2.0- User Guide- Beta Test (Natural England, 2019). This is the standard metric used for calculating AHBU in the UK. Biodiversity Units are calculated using the size of a parcel of habitat and its quality. Where new habitat is created or existing habitat is enhanced, the difficulty and associated risks are taken into account in the metric via risk factors, which are; difficulty of creating or restoring habitat, temporal risk and off-site risk. The location of compensatory action is also taken into account; the metric considers the proximity to the Proposed Disposal Sites via strategic significance. Calculating habitat biodiversity units takes into account four components; distinctiveness, condition, strategic significance and connectivity.

The metric scores each of these elements and multiples each habitat parcel using the scores. An update to the tool will be produced that will calculate connectivity, as well as the development of a simplified approach for smaller sites. Until then (and in the absence of local data to the contrary), the metric (and calculation tool) should be populated with a 'medium' score for high and very high distinctiveness, and a low score for all other habitats.

Distinctiveness, condition, connectivity and strategic significance are given numerical 'scores' within the Biodiversity Metric 2.0 which are multiplied, together with hectares (ha) or length in kilometres (km) of each habitat to give the number of baseline AHBU or HBU:

> **Baseline Area Habitat Biodiversity Units (AHBU) = Area (ha) x Distinctiveness x Condition x Ecological Connectivity x Strategic Significance**
>
> **Hedgerow Biodiversity Units (HBU) = Length (km) x Distinctiveness x Condition x Ecological Connectivity x Strategic Significance**

This calculation was applied to all polygons (AHBU) and polylines (HBU) within the Proposed Development's footprint and then summed by habitat type.

LINEAR HABITATS

The Biodiversity Metric 2.0 splits linear habitats into two distinct categories:

- Hedgerows and lines of trees (measured using length (kilometres), height and condition); and
- Rivers and streams (measured using length (kilometres), type and nearby habitat type).

These habitats must be calculated separately following the Biodiversity Metric 2.0 and must be reported separately.

Hedgerow Units (HBU) is the unit of measurement for hedgerows and lines of trees, separate from other linear and area-based habitats. Hedgerows bounding green lanes and double hedgerows should be treated as two hedgerows rather than a single hedge.

The distinctiveness of the hedgerows or lines of trees are based on their physical structure and species composition of the hedgerow. Hedgerow distinctiveness is calculated using the Hedgerow Survey Handbook.

HABITAT DISTINCTIVENESS

Habitat distinctiveness is defined as a collective measure of biodiversity and includes parameters such as the number and variety of species found within the habitat (richness and diversity), how rare the species are, and how many species the habitat supports that are not common elsewhere.

Habitat distinctiveness is defined as a collective measure of biodiversity and includes parameters such as the number and variety of species found within the habitat (richness and diversity), how rare the species are, and how many species the habitat supports that are not common elsewhere.

Default distinctiveness bands and habitat types were assigned as per **Table D-1** below.

Table D-1 – Habitat Distinctiveness Bands and Scores

Distinctiveness band	Distinctiveness Score	Habitat types included
Very high	8	Priority habitats as defined in Section 41 of the NERC Act that are highly threatened, internationally scarce and require conservation action, e.g. blanket bog
High	6	Priority habitats as defined in Section 41 of the NERC Act that require conservation action, e.g. lowland fens
Medium	4	Other semi-natural habitats that do not fall within the scope of habitats of principle importance definitions i.e. all other areas of woodland (e.g. non-native coniferous plantation), other grassland (e.g. species poor semi-improved), uncultivated field margins, road verges and railways embankments (excluding those that are intensively managed)
Low	2	Improved grassland, arable fields (excluding any uncultivated margins), domestic gardens, verges, and rhododendron scrub associated with transport corridors.
Very Low	0	Little or no biodiversity value e.g. developed land or sealed surface.

HABITAT CONDITION

Condition, in the context of BNG, is defined as the quality of a particular habitat. For example, a habitat is in poor condition if it fails to support the rare or notable species for which it is valued, or if it is degraded as a result of pollution, erosion, invasive species or other factors.

When using the Biodiversity Metric 2.0, identifying the condition of habitats on site is best completed using the UK Habitat Classification System[2]. This system is widely recognised and can be directly input into the biodiversity metric 2.0 calculation tool. If a Phase 1 Habitat survey has been undertaken instead, the results can be translated into UK Habitat Classification System types. A translation table is contained within the calculation tool provided within the Biodiversity Metric 2.0. The condition scores can be seen in the below table. It should be noted that the metric and calculation tool allows for half scores.

Table D-2 – Habitat Condition bands and Scores

Condition Category	Condition Score
Good	3
Moderate	2
Poor	1

STRATEGIC SIGNIFICANCE

The idea of strategic significance works at a landscape scale, taking account of published Nature Recovery Strategies, local biodiversity plans, and local plans for targeting green infrastructure and biodiversity. This component gives extra value to habitats that are located in prioritised locations for biodiversity and other environmental objectives.

As there are both, strong ecological and socio-economic drivers for compensation habitat to be local to where losses occur, it is a rule of this metric that compensation is located in either the same LPA area of the same National Character Area (NCA). In the rare occasions where this is not possible, the strategic significance score is applied to the post-development calculation. **Table D-3** below shows the strategic significance scores.

[2] UK Habitat Classification: http://ecountability.co.uk/ukhabworkinggroup-ukhab/ (Accessed 20/06/2019)

Table D-3 – Habitat Strategic Significance Scores

Category	Strategic Significance	Score
Within area formally identified in local policy	High	1.15
Location ecologically desirable but not in local policy	Medium	1.1
Area/compensation not in local policy/ no local policy	Low	1

CONNECTIVITY

The focus of connectivity in the metric is the relationship of a particular habitat patch to other surrounding similar or related semi-natural habitats facilitating flows of species and ecosystem services. Connectivity is applied to both baseline and post-development biodiversity units. The connectivity risk factors can be found in **Table D-4** below. For this report, low and medium distinctiveness habitats have been scored a connectivity score of 'low' and high and very high distinctiveness habitats have been scored a connectivity score of 'medium'.

Table D-4 - Connectivity risk factors

Score	Description	Risk Factor
Score 57-81	Highly aggregated / connected	1.15
Score 33-56	Moderate aggregation / connectivity	1.1
Score 9-32	Low aggregation / connectivity	1

POST-DEVELOPMENT BIODIVERSITY UNIT CALCULATIONS

4.3.5. At the current time WSP have not been commissioned to undertake a post-development BNG assessment, therefore accurate post-development AHBU calculations are not included within this report. Indicative calculations of post-development habitat types have been provided as examples to indicate how biodiversity net gain may be achieved.

AREA-BASED HABITATS

Post-development biodiversity units were calculated for the habitats listed in Table 3-9. These calculations were carried out using the Biodiversity Metric 2.0 and associated guidance and calculation tool.

Post-development biodiversity units are calculated in a similar way to baseline biodiversity units. However, in addition to the proposed habitats' area, condition, distinctiveness, connectivity and strategic significance, the key risks to delivery are taken into account through incorporation of risk factors. The metric sets out three risk factors: distance from the Proposed Disposal Sites (off-site Risk); time taken for created or enhanced habitats to reach target condition (Temporal Risk); and how difficult it is to create or enhance any given habitat (Difficulty Risk). The specific details and values of these risk factors are listed below (see Post-Development Risk Factors).

To calculate post-development Biodiversity Units for the area-based habitats from creation of new or enhancement of existing habitats, the following equations were used:

t1 Creation AHBU

$$= \{[A^{t1} \times Q_D^{t1} \times Q_C^{t1}] \times [R_D \times R_T] \times [\, Q_{SC}^{t1} \times Q_{SS}^{t1}]\} \times R_{OS}$$

t1 Enhancement AHBU

$$= \Big[[([\{A^{t1} \times Q_D^{t1} \times Q_C^{t1}\} - \{A^{t0} \times Q_D^{t0} \times Q_C^{t0}\}] \times \{R_D \times R_T\}) + \{A^{t0} \times Q_D^{t0} \times Q_C^{t0}\}] \times \{Q_{sc}^{t1} \times Q_{ss}^{t1}\}\Big] \times R_{OS}$$

Where:

A is area of habitat (hectares)

RD is difficulty (a risk factor)

RT is time to target condition (a risk factor)

ROS is off-site Risk

t0 is before intervention

t1 is post intervention

QC is condition (a quality measure)

QD is distinctiveness (a quality measure)

QSC is connectivity (a quality measure)

QSS is strategic Significance (a quality measure)

H1 is area of habitat type before intervention

H2 is area of habitat type post intervention

DISTINCTIVENESS

The distinctiveness band of each habitat is pre-assigned in the 2.0 metric based upon the UK Habitat Classification system.

POST-DEVELOPMENT RISK FACTORS

Delivery Risk

Delivery Risk is the risk associated with the difficulty to create or restore any specific habitat. Values for this risk factor were automatically populated within Biodiversity Metric 2.0 recently released calculator tool. **Table D-5** shows the risk factors assigned to each level of Difficulty Risk for habitats created or enhanced on Site.

Table D-5 – Delivery Risk Factors

Category	Multiplier
Very high	0.1
High	0.33
Medium	0.67
Low	1

Temporal

Temporal risk is considered due to the possibility of a mismatch in the timing of the impact and the delivery of compensation which results in lower levels of biodiversity for that period of time. The biodiversity metric 2.0 uses a 3.5% 'standard discount rate', which is the value recommended in the Treasury Green Book[3]. The metric also employs two assumptions in terms of temporal risk;

- Assumes that there is a quality 'jump' from the baseline condition to the target condition once the relevant number of years have passed. Metric calculations do not need to be redone annually, and;
- Sets a limit on the discount rate used for temporal risk. The metric's multiplier has a limit of x0.320 to take account of temporal risk. This equates to approximately 32 years.

Risk factors were assigned based on the criteria set out in **Table D-6.**

Table D-6 - Temporal Risk Factors

Years to Create	Temporal Risk Factor	Years to create	Temporal risk factor
0	1.000	17	0.546

[3] Trea7sury Green Book Guidance, HM Treasury, 2011

1	0.965	18	0.527
2	0.931	19	0.508
3	0.899	20	0.490
4	0.867	21	0.473
5	0.837	22	0.457
6	0.808	23	0.441
7	0.779	24	0.425
8	0.752	25	0.410
9	0.726	26	0.396
10	0.700	27	0.382
11	0.676	28	0.369
12	0.652	29	0.356
13	0.629	30	0.343
14	0.607	31	0.331
15	0.586	32+	0.320
16	0.566	Not possible	N/A

NET CHANGE IN BIODIVERSITY VALUE AND ASSESSMENT OUTCOME

Once a landscape masterplan for the Proposed Development has been generated, a full BNG assessment can be undertaken. A full BNG assessment allows the baseline and post-development biodiversity units (excluding irreplaceable habitats and their compensation) to be compared, to assess whether the Proposed Development achieves a quantitative biodiversity net gain for non-irreplaceable habitats on site.

The following formula is used to calculate the change in AHBU as a consequence of the Proposed Development:

Net change in biodiversity value =
Post-Development AHBU (retained, enhanced and created) – Baseline BU

If the resulting score is negative, there is a loss in biodiversity for area-based habitats. If the score is close to zero (with the post-development AHBU being within 95%-104% of the baseline AHBU) there is no net loss of biodiversity for area-based habitats. If there is an increase in the AHBU of 5% or more, the project is capable of delivering net gain for biodiversity for the area based habitats. The percentage should be rounded to the nearest whole percentage point (0.5 and above is to be rounded up to 1 and anything below 0.5 should be rounded down). The same formula and process applies to calculating the change in LU.

Subsequently, the quantitative outcomes of the BNG assessment calculations can then be categorised as achieving one of the outcomes listed in Table D-7. The quantitative outcome awarded to the Proposed Development will be based on the AHBU or LU value with the lowest net percentage change value.

Table D-7 - Quantitative Outcomes of BNG Calculations

Calculation Result	Predicted Scheme-wide Outcome
Less than 95% of the baseline value	Net loss (NL) of biodiversity
95% - 104% of baseline value	No net loss (NNL) of biodiversity
105% or more of baseline value	Biodiversity net gain (BNG)

The quantitative outcomes of the assessment are one component of the BNG assessment and associated best practice principles. For a BNG assessment to be completed, the quantitative outcome is in conjunction with qualitative information relating to the other BNG good practice principles (Appendix A).

The difficulty to create and difficulty to enhance risk multipliers have been extracted directly from Appendix C of BRE (2018) GN36 – BREEAM, CEEQUAL and HGM Ecology Calculation Methodology – Route 2, as per best practice guidelines.

The time to target condition risk for each created habitat type present within the Proposed Disposal Sites post-development have been extracted from Appendix C of BRE (2018) GN36 – BREEAM, CEEQUAL and HGM Ecology Calculation Methodology – Route 2. An additional [X] years has been added to reflect the time lag between habitat clearance and habitat creation on Site. The Temporal Risk factors were then extracted based on these adjusted values.

The time to target condition risk for enhanced habitat types present within the Proposed Disposal Sites post-development have been extracted from Appendix C of BRE (2018) GN36 – BREEAM, CEEQUAL and HGM Ecology Calculation Methodology – Route 2, when they are defined. When Appendix C of BRE (2018) GN36 – BREEAM, CEEQUAL and HGM Ecology Calculation Methodology – Route 2 did not have a defined time to target condition for enhancement, a time was defined using expert opinion on habitat type and knowledge of the enhancement regime. The Temporal Risk factors were then extracted based on these values.

As all mitigation for habitat loss is planned to occur on Site, and therefore within the ecological network, the Spatial Risk factor for all habitat types is set as 1 for all habitats and is not given further consideration within this report.

Any amendments to the Proposed Development's landscape mitigation plan that was used to inform this biodiversity net gain assessment will necessitate re-running the biodiversity unit calculations. The landscape mitigation plan used for the post-development BNG calculations was provided on the [Insert full date] and as such any amendments occurring after this have not been captured in this assessment.

Appendix E

BIODIVERSITY NET GAIN ASSESSMENT CALCULATIONS

INTERNAL

Table E-1 – Baseline Area-based Habitat AHBU Calculations

	Habitats and areas			Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Suggested action to address habitat losses	Ecological baseline
Ref	Broad Habitat	Habitat type	Area (ha)	Distinc-tiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier		Total habitat units
A	Woodland and forest	Woodland and forest - Other woodland; broadleaved	1.02	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	9.38
A	Grassland	Grassland - Modified grassland	3.31	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	7.61
A	Urban	Urban - Vacant/ derelict land/ bareground	0.17	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	0.39
A	Heathland and shrub	Heathland and shrub - Mixed scrub	0.13	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	1.20
A	Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.28	Medium	4	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	1.29

	Habitats and areas			Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Suggested action to address habitat losses	Ecological baseline
Ref	Broad Habitat	Habitat type	Area (ha)	Distinc-tiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier		Total habitat units
A	Urban	Urban - Amenity grassland	0.16	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	0.37
A	Woodland and forest	Woodland and forest - Other woodland; mixed	0.28	Medium	4	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	3.86
B	Cropland	Cropland - Cereal crops	38.8	Low	2	N/A - Agricultural	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	89.24
B	Heathland and shrub	Heathland and shrub - Mixed scrub	1.48	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	13.62
B	Woodland and forest	Woodland and forest - Other woodland; broadleaved	2.5	Medium	4	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	11.50

	Habitats and areas			Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Suggested action to address habitat losses	Ecological baseline
Ref	Broad Habitat	Habitat type	Area (ha)	Distinc-tiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier		Total habitat units
B	Grassland	Grassland - Modified grassland	15.11	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	34.75
B	Woodland and forest	Woodland and forest - Other woodland; broadleaved	1.5	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	13.80
B	Urban	Urban - Vacant/ derelict land/ bareground	0.3	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	0.69
B	Urban	Urban - Developed land; sealed surface	0.22	V.Low	0	N/A - Other	0	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Compensation Not Required	0.00
B	Lakes	Lakes - Ponds (Non-Priority Habitat)	0.07	High	6	Good	3	Medium	Moderately connected habitat	1.1	Within area formally identified in local strategy	High strategic significance	1.15	Same habitat required	1.59

	Habitats and areas			Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Suggested action to address habitat losses	Ecological baseline
Ref	Broad Habitat	Habitat type	Area (ha)	Distinc-tiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier		Total habitat units
C	Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.48	Medium	4	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	2.21
C	Grassland	Grassland - Modified grassland	6.54	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	15.04
D	Heathland and shrub	Heathland and shrub - Mixed scrub	0.16	Medium	4	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	0.74
D	Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.81	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	7.45
D	Cropland	Cropland - Cereal crops	21.59	Low	2	N/A - Agricultural	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	49.66

	Habitats and areas			Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Suggested action to address habitat losses	Ecological baseline
Ref	Broad Habitat	Habitat type	Area (ha)	Distinc-tiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier		Total habitat units
D	Sparsely vegetated land	Sparsely vegetated land - Ruderal/ Ephemeral	0.09	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	0.21
E	Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.02	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	0.18
E	Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.06	Medium	4	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	0.83
E	Heathland and shrub	Heathland and shrub - Mixed scrub	0.11	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	1.01
E	Heathland and shrub	Heathland and shrub - Mixed scrub	0.46	Medium	4	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	2.12

	Habitats and areas			Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Suggested action to address habitat losses	Ecological baseline
Ref	Broad Habitat	Habitat type	Area (ha)	Distinc-tiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier		Total habitat units
E	Cropland	Cropland - Cereal crops	7.2	Low	2	N/A - Agricultural	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	16.56
F	Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.11	Medium	4	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	0.51
F	Grassland	Grassland - Modified grassland	16.35	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	37.61
F	Heathland and shrub	Heathland and shrub - Mixed scrub	1.69	Medium	4	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	7.77
Dismantled Railway	Woodland and forest	Woodland and forest - Other woodland; broadleaved	2.19	Medium	4	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	30.22

Ref	Habitats and areas			Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Suggested action to address habitat losses	Ecological baseline
	Broad Habitat	Habitat type	Area (ha)	Distinc-tiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier		Total habitat units
Access Road	Grassland	Grassland - Modified grassland	1.42	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	3.27
Access Road	Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.31	Medium	4	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	1.43
Access Road	Urban	Urban - Amenity grassland	6.1	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	14.03
Access Road	Urban	Urban - Developed land; sealed surface	2.03	V.Low	0	N/A - Other	0	N/A	Assessment not appropriate	1	Within area formally identified in local strategy	High strategic significance	1.15	Compensation Not Required	0.00
Access Road	Heathland and shrub	Heathland and shrub - Mixed scrub	0.13	Medium	4	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	0.60

	Habitats and areas			Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Suggested action to address habitat losses	Ecological baseline
Ref	Broad Habitat	Habitat type	Area (ha)	Distinc-tiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier		Total habitat units
Access Road	Heathland and shrub	Heathland and shrub - Mixed scrub	0.23	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	2.12
Access Road	Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.54	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	4.97
Access Road	Urban	Urban - Vacant/ derelict land/ bareground	0.07	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	0.16
Access Road	Heathland and shrub	Heathland and shrub - Mixed scrub	0.11	Medium	4	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	1.52
		Total area (ha)	134.13											Total baseline	389.49

Table E-2 – Baseline Hedgerow Habitat LU Calculations

UK Habitats - existing habitats			Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance				Ecological baseline
Ref	Hedgerow type	length (KM)	Distinctiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Suggested action to address habitat losses	Total hedgerow units
A	Native Hedgerow	0.78	Low	2	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	5.382
B	Native Hedgerow	0.68	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	1.564
B	Native Species Rich Hedgerow	2.45	Medium	4	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Like for like or better	33.81

B	Native Hedgerow	0.43	Low	2	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	2.967
B	Native Species Rich Hedgerow with trees	0.47	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Like for like or better	4.324
C	Line of Trees	0.1	Low	2	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	0.46
C	Native Species Rich Hedgerow with trees	0.2	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Like for like or better	1.84

C	Native Species Rich Hedgerow	0.46	Medium	4	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Like for like or better	6.348
D	Native Hedgerow	0.78	Low	2	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	5.382
D	Native Species Rich Hedgerow	0.48	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Like for like or better	4.416
D	Native Species Rich Hedgerow with trees	0.1	Medium	4	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Like for like or better	1.38

D	Native Species Rich Hedgerow with trees	0.04	Medium	4	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Like for like or better	0.184
E	Native Species Rich Hedgerow	0.1	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Like for like or better	0.92
E	Native Species Rich Hedgerow	0.92	Medium	4	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Like for like or better	12.696
Access Road	Native Hedgerow	0.24	Low	2	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	1.104

Access Road	Native Species Rich Hedgerow	0.63	Medium	4	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Like for like or better	2.898
Access Road	Native Hedgerow with trees	0.06	Low	2	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	0.414
Access Road	Native Hedgerow	0.06	Low	2	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	0.414
Access Road	Native Species Rich Hedgerow	0.17	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Like for like or better	1.564

	Total length (KM)	9.15											Total baseline	88.07

Table E-3 – Example Post-development Habitat Enhancement AHBU Calculations

Proposed Disposal Site	Baseline JNCC Phase 1 Habitat Type	Baseline Distinctiveness	Baseline Condition	Baseline Area (ha)	Post-development JNCC Phase 1 Habitat type	Post-development Distinctiveness	Target condition	Difficulty to enhance risk multiplier	Time to enhancement risk multiplier	Post-development BU
Site A	Grassland - Modified grassland	Low	Poor	3.31	Grassland- Lowland meadows	V. High	Good	Medium- 0.67	15	44.59

Table E-4 – Example Post-development Habitat Creation AHBU Calculations

Proposed Disposal Site	JNCC Phase 1 Habitat type	Distinctiveness	Target Condition	Difficult to create risk factor	Time to creation risk factor	Area (ha)	Post-development BU
Site E	Grassland- Lowland meadows	V. High	Good	High- 0.33	15	7.2	42.27
Site F	Woodland and forest- Other woodland; broadleaved	Medium	Good	Medium- 0.67	32+	16.35	48.34

Appendix F

PRINCIPLES AND RULES FOR USE WITH THE BIODIVERSITY METRIC 2.0

INTERNAL

PRINCIPLES AND RULES FOR USE WITH THE BIODIVERSITY METRIC 2.0

KEY PRINCIPLES FOR USE WITH THE BIODIVERSITY METRIC 2.0

The following principles and rules are taken directly from the Biodiversity Metric 2.0 and underpin the 2.0 methodology, and should be considered throughout the development process.

Principle 1

The metric does not change the protection afforded to biodiversity. Existing levels of protection afforded to protected species and to habitats are not changed by use of this or any other metric. Statutory obligations will need to be satisfied.

Principle 2

Biodiversity metric calculations can inform decision-making where application of the mitigation hierarchy and good practice principles[4] conclude that compensation for habitat losses is justified.

Principle 3

The metric's biodiversity units are only a proxy for biodiversity. While it is underpinned by ecological evidence the metric is only a proxy for biodiversity and to be of practical use has been kept deliberately simple. The numerical values generated by the metric represent relative, not absolute, values.

Principle 4

The metric focuses on widespread species and typical habitats. Area-based habitats are considered a suitable proxy for widespread species found in typical examples of different habitat types.

- Protected and locally important species needs are not considered through the metric,
- Impacts on protected (e.g. SSSIs) and irreplaceable habitats are not adequately measured by this metric and will likely require separate consideration.

Principle 5

The metric design aims to encourage enhancement, not transformation, of the natural environment. Where possible, habitat created to compensate for loss of a natural or semi-natural habitat should be of the same broad habitat type (e.g. new woodland to replace lost woodland) unless there is a good ecological reason to do otherwise (e.g. to restore a heathland habitat that was converted to woodland for timber in the past).

[4] CIEEM, CIRIA, IEMA. 2016 Biodiversity Net Gain – Good Practice Principles for Development. https://www.cieem.net/data/files/Publications/Biodiversity_Net_Gain_Principles.pdf

Principle 6

The metric is designed to inform decisions. Decisions and management interventions need to take account of available expert ecological advice and not just the biodiversity unit outputs of the metric.

Principle 7

Compensation habitats should seek, where practical, to be local to the impact. They should aim to replicate the characteristics of the habitats that have been lost, taking account of the structure and species composition that give habitats their local distinctiveness. Where possible compensation habitats should contribute to the ecological network by creating more, bigger, better and joined areas for biodiversity.

Principle 8

The metric does not enforce a mandatory minimum 1:1 habitat size ratio for losses and compensation. A difference can occur because of a difference in quality between the site impacted and the compensation provided. For example, if a habitat of low distinctiveness is impacted and is compensated for by the creation of habitat of high distinctiveness, the area needed to compensate for losses can potentially be less than the area impacted. Consideration should be given to whether reducing the size of compensation is an appropriate outcome.

RULES FOR USE WITH THE BIODIVERSITY METRIC 2.0

Table F-1 – Rules for use with the Biodiversity Metric 2.0

Rule Number	Rule
1	Where the metric is used to measure change biodiversity unit values need to be calculated prior to the intervention and post-intervention for all parcels of land/linear features affected.
2	Compensation for habitat losses can be provided by creating new habitat, by restoring or enhancing existing habitats, or by accelerating successional processes. Measures to improve existing habitats must provide a significant and demonstrable uplift in distinctiveness and/or condition to record additional biodiversity units.
3	'Trading down' must be avoided. Losses of habitat are to be compensated for on a 'like-for-like' or 'like for better' basis. Ideally, new or restored should aim to achieve a higher distinctiveness and/or condition than habitats lost.
4	Biodiversity units values generated by biodiversity metric 2.0 are unique to this metric and cannot be compared to unit outputs from the original Defra/Natural England or any other biodiversity metric. Furthermore, the units generated by each module of biodiversity metric 2.0 (for area, hedgerow and river habitats) are unique and cannot be summed.

5	It is not the area of habitat created that determines whether ecological equivalence or better has been achieved but the net change in biodiversity units. Risks associated with enhancing or creating habitats mean that it may be necessary to enhance or create a larger of habitat than lost to fully compensate for impacts on biodiversity.
6	Deviations from the published methodology of the biodiversity metric 2.0 need to be ecologically justified. While the methodology is expected to be suitable in the majority of circumstances it is recognised that there may be exceptions. Any local or project-specific adaptions of the metric must be transparent and fully justified.

4th Floor
6 Devonshire Square
London
EC2M 4YE

wsp.com

INTERNAL

APPENDIX H

Access Strategy Note

TECHNICAL NOTE

DATE:	06 August 2021	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent, Canterbury Campus Access Road Alignment		
PROJECT:	70080896	**AUTHOR:**	Sarah Thomas
CHECKED:	Alan Heatley	**APPROVED:**	Justin Sherlock

INTRODUCTION

WSP has been appointed by the University of Kent (UoK) to provide transport and environmental advice for the development of proposals on land at their Canterbury Campus that has been identified as being surplus to requirement.

Disposal Sites BCD lie to the immediate north of the University Campus with vehicular access currently provided from Tyler Hill Road, a rural single carriageway road that connects Blean and the A290 in the west with Tyler Hill and Canterbury Hill in the east.

This Technical Note provides a summary of the access strategy for Sites BCD and the work undertaken to define the alignment of the access road proposed within the concept masterplan.

ACCESS STRATEGY

When considering vehicular access to Sites BCD the starting point was to investigate where the current sites connect with the public highway. The only existing point of connection to the public highway is Tyler Hill Road. Tyler Hill Road is a single carriageway road that connects the A290 Whitstable Road in the west with the village of Tyler Hill and Hackington Road in the east. In the vicinity of Sites BCD Tyler Hill Road is subject to national speed limit (60mph), varies in width between approximately 4m and 6m, is subject to a 7.5t weight restriction and in places features limited forward visibility.

In its current form Tyler Hill Road is not currently considered suitable to accommodate a significant increase in volumes of traffic. Due to the University's limited frontage onto Tyler Hill Road, constrained highway boundary extents and multiple land ownerships fronting the highway, the University has limited potential within its own land ownership to improve the existing Tyler Hill Road.

Consideration was given to whether access could be achieved through third party land acquisition. However, the multiple land ownerships restrict the ability to achieve this at this early stage (although opportunities may arise in due course). In addition, significantly increasing traffic volumes on this road could result in unacceptable impacts on the neighbouring village of Tyler Hill and upon the two junctions at either end (A290 and Hackington Road) which have been highlighted by Kent County Council during initial discussions as a concern.

On the basis of the above, the access strategy for unlocking Sites BCD recommended developing a new north-south route through the University Campus achieving access onto Whitstable Road. To discourage increased usage of Tyler Hill Road it was recommended that the existing road was downgraded where it passed through University owned land and the highway incorporated into the masterplan where design measures could be incorporated to manage through traffic and limit access from the development out onto the retained sections of road. Further benefits would be the ability to re-prioritise Tyler Hill Road as a

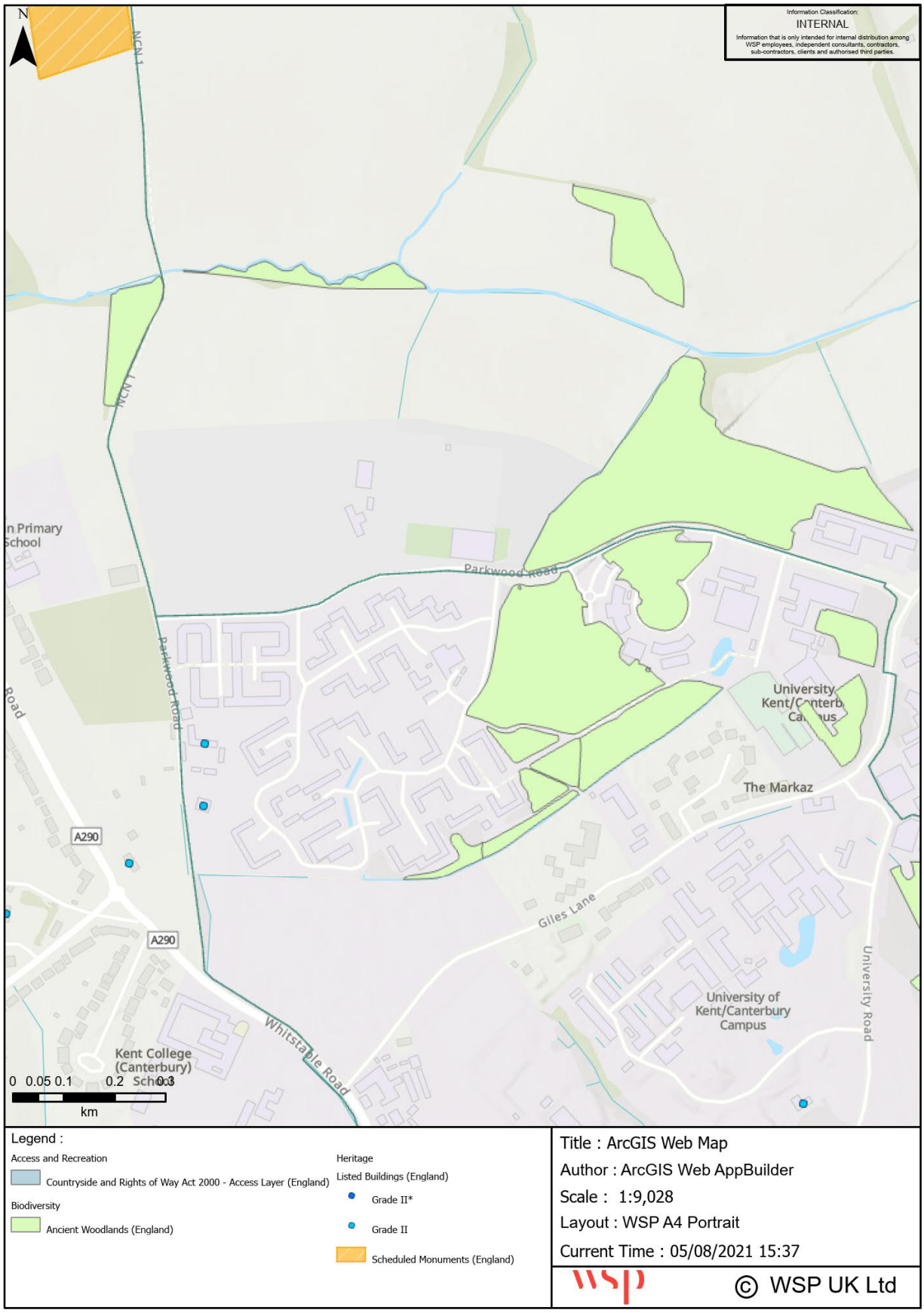
sustainable transport link and improve crossing conditions for the Crab and Winkle Way. Further information on this access strategy is provided within the accompanying WSP Transport Strategy.

ACCESS ROAD CONSTRAINTS

Discussions with the UoK and outputs from the environmental constraints and opportunities analysis informed the constraints to provision of a new north-south access road through the University Campus. The key constraints identified and considered in the alignment options developed were as follows:

- The areas of ancient woodland identified in the south of Site B. Two parcels of ancient woodland were identified from information contained on the Magic Database and are shown in **Figure 1**;
- The Crab and Winkle Way which forms part of National Cycle Route 1;
- The watercourse that runs adjacent to the ancient woodland and would need to be either bridged or culverted to achieve access through Site B;
- The sports pitches on the University Campus which form part of the University of Kent Sports Centre;
- The various buildings and land uses on the University Campus to the south of Park Wood Road that might be impacted by provision of a new access road;
- The Oaks Nursery and adjacent cark park;
- The playing fields to the south of The Oaks Nursery which are identified in the University Masterplan for car and coach parking; and
- The listed buildings of Hothe Court, Barn Adjoining Hothe Court and Blean House.

Figure 1 – Constraints Plan



ACCESS ROAD OPTIONS

Taking account of the constraints identified above a range of alignments were considered for the new access road (**Figure 2**) to determine the potential impacts these may have on the existing University Campus and other constraints identified as part of the environmental studies such as the ancient woodland and watercourse. These access road options are described in more detail below.

Figure 2 – Access Road Alignment Options

OPTION 1

The alignment seeks to utilise the Crab and Winkle Way through the southern part of the University Campus to Park Wood Road where a new junction would be formed. At this point the alignment would head to the east across the University Sports Pitches and into the southern part of Site B. The alignment would enable development parcels both to the west and east on the southern section of Site B before crossing the watercourse. Further north the alignment would cross Tyler Hill Road to enable access to Site D.

OPTION 2

The alignment seeks to avoid the Crab and Winkle Way through the University Campus by following the western boundary of the site and then heading across the playing fields to form a new junction with Park Wood Road. At this point the alignment would head to the east across the University Sports Pitches and into the southern part of Site B. The alignment would enable development parcels both to the west and east on the southern section of Site B before crossing the watercourse. Further north the alignment would cross Tyler Hill Road to enable access to Site D.

OPTION 3

The alignment seeks to follow the Crab and Winkle Way through the University Campus to Park Wood Road where a new junction would be formed. It then continues north on an alignment immediately to the east of the Crab and Winkle Way to minimise impacts on the University Sports Pitches before heading into the southern part of Site B. The alignment would then stay in the west of Site B, maintaining a buffer to the north-south aligned section of ancient woodland known as West Triangle Wood. The road then seeks to cross the east-west section of ancient woodland known as Long Thin Wood in the far west where the woodland is at its thinnest and at a point potentially within the buffer zones of the ancient woodland rather than impacting the ancient woodland itself. North of the watercourse the alignment ties back into that of Option 1 and 2 described above.

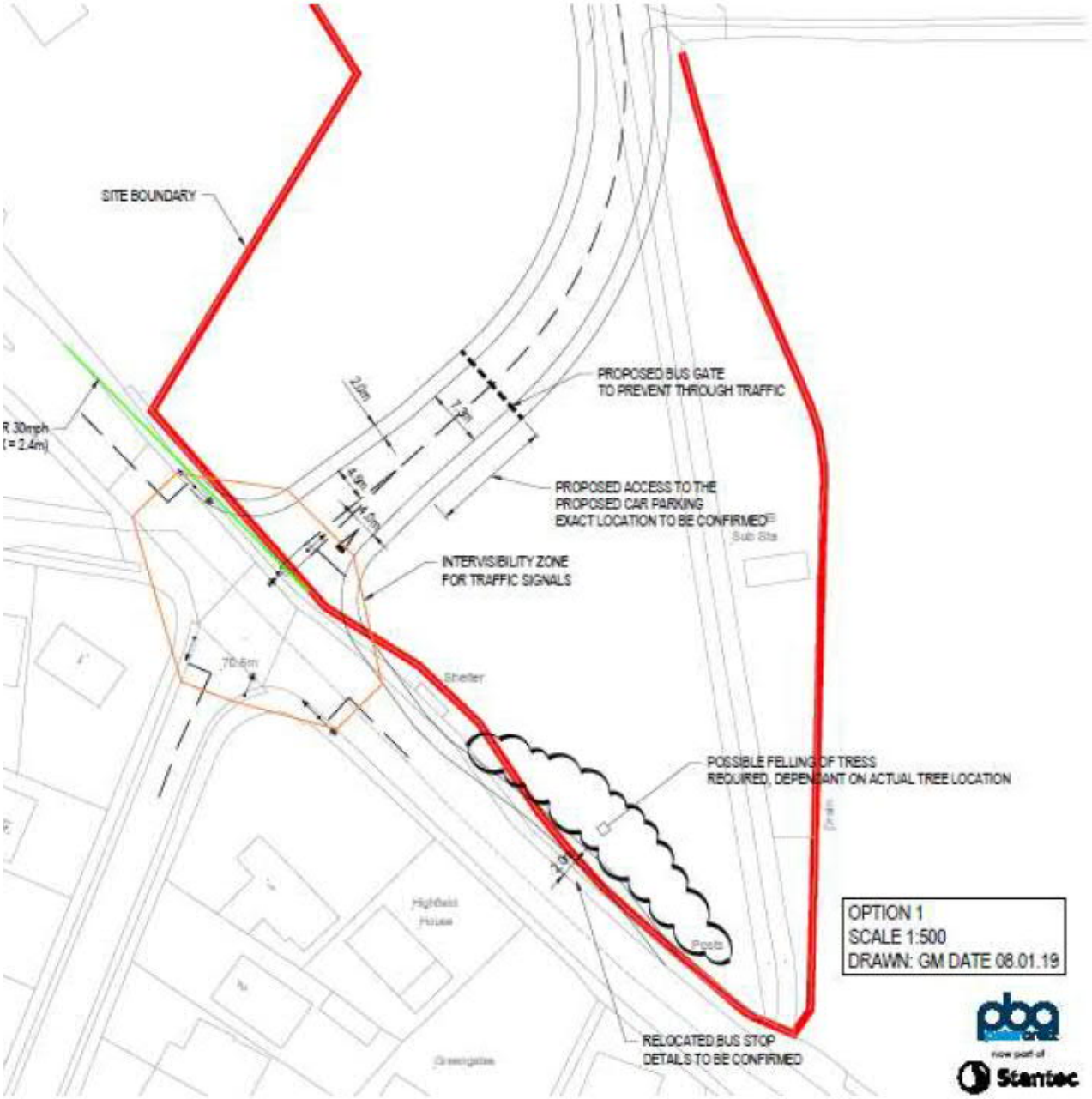
OPTION 4

This option is a variant of Option 1 which seeks to minimise impacts on Long Thin Wood by crossing the watercourse in the west at the approximate location of the Crab and Winkle way. North of the watercourse the alignment ties back into that of Option 1 and 2 described above.

JUNCTION WITH WHITSTABLE ROAD

The access road junction with Whitstable Road would take the form of a traffic signal junction. Proposals for a traffic signal junction were previously developed by Stantec (formerly PBA) as part of the University Masterplan. The proposals for the Whitstable Road junction as previously developed are shown in **Figure 3.**

Figure 3 – Whitstable Road Junction (Source: PBA Access and Movement Study)



IMPACT ON ANCIENT WOODLAND

All of the options identified for the road involved passing through or close to (within the buffer zones of) the area of ancient woodland that runs parallel to the watercourse within Site B (Long Thin Wood). A review of the ancient woodland was undertaken by WSP's Arboriculture and Ecology Teams to identify the potential status of the woodland. This review is contained within **Appendix A**. Whilst their review did not identify any trees that would indicate the woodland was ancient (defined as an area of woodland which has been continuously treed from before 1600AD) several trees were noted to have veteran characteristics, and

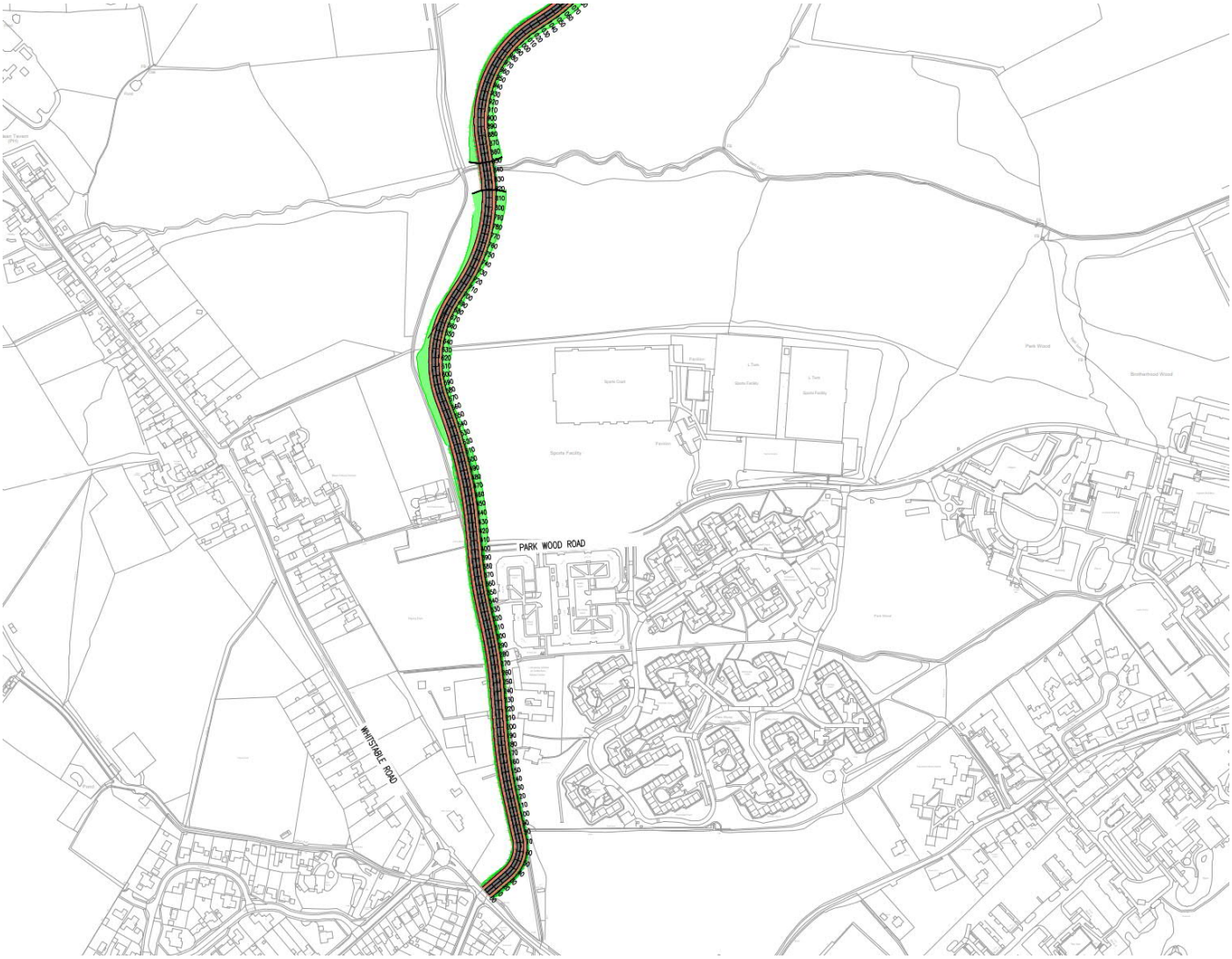
these were located throughout the band of woodland. The alignment of the road was therefore guided towards the narrowest part of the woodland, located close to where the Crab and Winkle Way passes through.

The preferred access road option selected for inclusion within the concept masterplan was Option 3. This alignment was selected for the following reasons:

- Minimised impacts on the University Campus including the Sports Pitches;
- Facilitated the University Masterplan by providing an access from Whitstable Road for provision of new car parks and amended bus routes;
- Minimised potential impacts on listed buildings when compared to other options explored;
- The road alignment, once consideration was given to likely earthworks could maintain a buffer to West Triangle Wood ancient woodland; and
- Through refinement of the design the road could potentially cross through the gap between the West Triangle Wood ancient woodland and the Long Thin Wood ancient woodland. To further minimise impacts in the vicinity of the ancient woodland a bridge could be used rather than a cheaper culvert type solution to narrow the alignment of the highway and potentially prevent any loss of ancient woodland.

Figure 4 shows the proposed preferred alignment of the access road including the indicative location for a bridge crossing the watercourse.

Figure 4 – Site BCD Access Road Option C Alignment



Reproduced from the Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office. Licence no. 100048755. Crown copyright reserved.

Appendix A – Woodland Site Visit Technical Note

TECHNICAL NOTE

DATE:	05 August 2021	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent: Long Thin Wood – Technical Summary		
PROJECT:	70080896	**AUTHOR:**	Howard Booth and Daniel Stewart
CHECKED:	Alan Heatley	**APPROVED:**	Justin Sherlock

INTRODUCTION

WSP has been appointed by the University of Kent (UoK) to provide transport and environmental advice for the development of proposals on land at their Canterbury Campus that has been identified as being surplus to requirement.

The access strategy for the masterplan identifies that an area of potential ancient woodland, referenced as Long Thin Wood could be impacted by the Proposed Development. This Technical Note provides a summary of the findings from a walkover survey undertaken on 16 July 2021 by Howard Booth and Daniel Stewart of WSP to assess the general characteristics of the woodland.

The walkover survey was a general survey of the site without sample plots. Throughout the walkover survey observations were made and evidence of past management such as earthworks were looked for along with recording tree species, size and evidence of tree work. The survey was not detailed and only sizes of the largest trees were recorded.

Long Thin Wood runs east west along the alignment of a stream. Woodland extends both side of the stream. As the woodland area to the south of the stream is potential ancient woodland this area is the main focus of this Technical Note.

LOCATION AND SCOPE OF SURVEY

Figure 1 illustrates the areas of Woodland surrounding and within the University Sites known as BCD. Long Thin Wood is identified as area two on **Figure 1**.

TECHNICAL NOTE

DATE:	05 August 2021	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent: Long Thin Wood – Technical Summary		
PROJECT:	70080896	**AUTHOR:**	Howard Booth and Daniel Stewart
CHECKED:	Alan Heatley	**APPROVED:**	Justin Sherlock

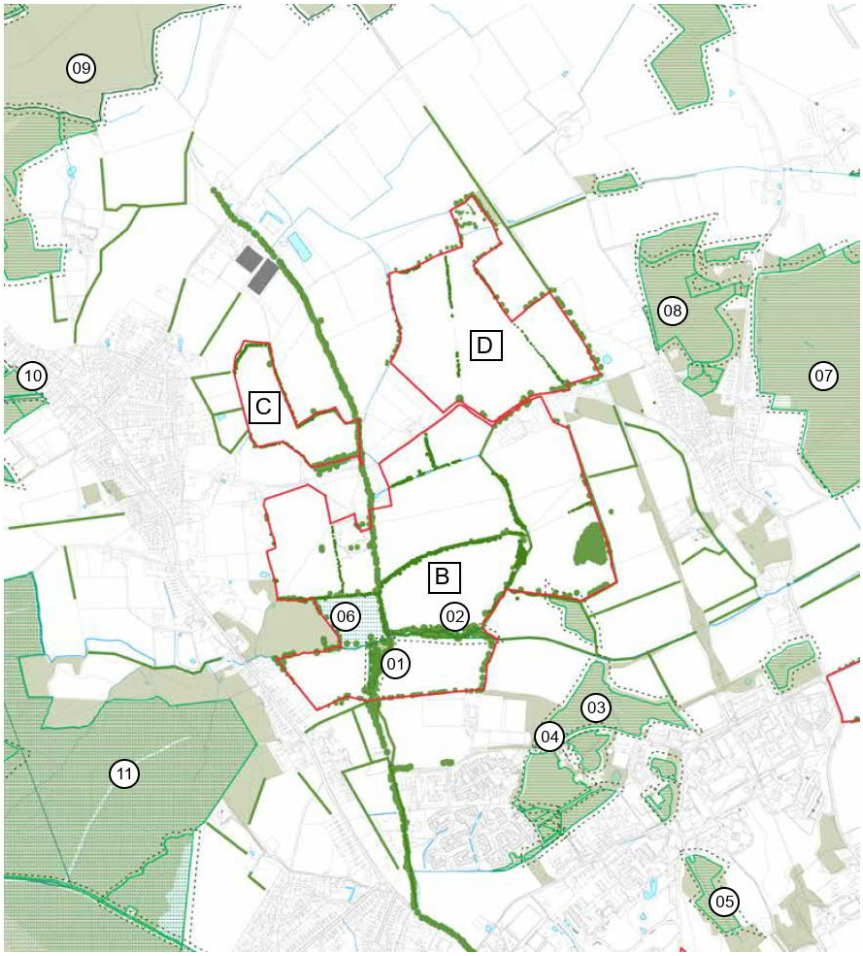


Figure 1: Woodland within vicinity of Site (Source: PRP)

The survey focused on the area of Long Thin Wood within the boundary of Site B only.

TREES

SPECIES

The woodland south of the stream is predominantly oak and ash. Common through the woodland is hazel and holly. Other trees present within the woodland include hawthorn, field maple, wild cherry, sweet chestnut, downy birch, willow, yew and alder.

Woodland north of the stream is dominated by willow and ash, other trees include oak, hazel, poplar, wild cherry, downy birch, hawthorn, field maple and elder.

TECHNICAL NOTE

DATE:	05 August 2021	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent: Long Thin Wood – Technical Summary		
PROJECT:	70080896	**AUTHOR:**	Howard Booth and Daniel Stewart
CHECKED:	Alan Heatley	**APPROVED:**	Justin Sherlock

PAST MANAGEMENT

The oaks are maiden trees with the exception of one that was multi-stemmed at ground level and had probably been coppiced. Several ash trees have been coppiced but not for many years and these trees form part of the closed canopy of the mature woodland.

Along the southern edge of the woodland is evidence of hedge planting. These trees are supressed by the larger woodland and herbaceous weeds from the field perimeter, the relatively small size of these plants and style of planting indicates this hedge is relatively modern.

Within the woodland there are several large trees that have collapsed, typically with root plate failure. Some have fallen across the stream and remain in-situ. There are two areas along the southern edge where wood chips were present within the woodland, it is assumed that these are arisings from branches that fell into the field and may have been in-situ for only a few years.

Along the southern side of the woodland there were two sections where barbed wire was present and attached to trees. No earth banks or mounds indicating historic boundaries or earth work were observed.

The ash trees appear to be infected with ash dieback. One stem of a coppiced tree is dead and other ash have sparse crowns. This disease could cause gaps within the woodland should more ash die or develop secondary infections reducing their safe retention.

Long Thin Wood is included within a Tree Preservation Order (TPO) which was made in 1970 and protects the site with an Area designation. Species scheduled in the TPO are oak, ash, poplar and willow, trees of these species present in 1970 are protected by the TPO. Work to those trees is restricted and would require consent from the local planning authority.

AGE

Establishing the age of trees can accurately be done if there are records of tree planting or core samples taken of the tree. In the absence of accurate information, estimates for age can be made based on the girth (circumference) of the tree. A method developed by Alan Mitchell assumes an average tree increases girth by 25mm each year for an open grown maiden tree. For trees in woodlands that value would be halved as they grow more slowly.

In the southern side of the woodland the oak were the largest diameter trees. The tree that appeared the largest was measured to have a girth at 1.5m above ground of 3420mm. The age of this tree would therefore be between 137 and 274 years old.

As the oak trees in Long Thin Wood typically have full crowns they are not typical of closed canopy woodland trees, that is to say their growth has only been slightly restricted. The nature of the site is such that using the woodland growth rate would overestimate their age, a more likely age range is in the region of 150 to 200 years old.

TECHNICAL NOTE

DATE:	05 August 2021	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent: Long Thin Wood – Technical Summary		
PROJECT:	70080896	**AUTHOR:**	Howard Booth and Daniel Stewart
CHECKED:	Alan Heatley	**APPROVED:**	Justin Sherlock

Establishing the age of coppice stools is complicated by the centre of the stool having decayed away many years ago and unknown coppicing cycles. In his book *Trees and Woodland in the British Landscape* Oliver Rackham references aging of coppice stools. He gives an example of an ash stool on a poor quality waterlogged site being 0.6m diameter and 300 years old whereas an ash on a good site at 300 year old could be 1.5m diameter.

The ash coppice were approx. 1m in diameter, this was estimated as shapes were irregular and vegetation obstructed access around the base. Ground conditions on site appear to be good and based on the examples of Oliver Rackham the age of the ash coppice stools is likely to be much younger than 300 years, potentially younger than 200 years.

Other less common trees with multiple stems from the ground and indicative of coppice management were one sweet chestnut and a field maple. The sweet chestnut and field maple are of a similar size to the ash at approx. 1m diameter and may therefore be of a similar age to the ash.

Other tree species on site, given their sizes, are younger than the oak and ash. For example, a wild cherry is between 43 and 87 years old. Yew trees are particularly slow growing species, the two yew trees have diameters of 50mm and are relatively young.

ANCIENT WOODLAND

Ancient woodland in England is a classification used for an area of woodland that has been in continuous existence from before 1600AD.

Natural England owns the Ancient Woodland Inventory which is publicly accessible on DEFRA's MAGIC website and it was first developed in the 1980s and 1990s. In 2018 Natural England published *Ancient Woodland Inventory Handbook for England* which provides an overview of the inventory, its history and methods for improving its accuracy. At several points through the handbook it is referenced that the inventory is provisional by the nature in which it was compiled. It should therefore not be assumed that because a woodland is in the Ancient Woodland Inventory that it must be ancient and pre-date 1600AD.

Archives such as maps or estate records could be used to establish whether the site was woodland at different points of history.

It should be noted that if the site is confirmed not to be ancient woodland that there are several trees within it, especially the oak and ash that have some characteristics of being veteran trees. Further inspection is required to establish if they are veteran trees.

QUALITY ACROSS THE WOODLAND

Long Thin Wood does not appear in the Forestry Commission's woodland inventory as its area is less than 0.5ha. With regard to the area recorded as potentially ancient woodland, this only covers the south side of the stream and does not extend to the full extent of trees to the west.

TECHNICAL NOTE

DATE:	05 August 2021	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent: Long Thin Wood – Technical Summary		
PROJECT:	70080896	**AUTHOR:**	Howard Booth and Daniel Stewart
CHECKED:	Alan Heatley	**APPROVED:**	Justin Sherlock

The woodland varies in width along its length and this appears to be influenced by the route of the stream. The narrowest part of the woodland is the western end and the widest is towards the middle.

While there is some variation in species and tree size through the woodland the general quality is relatively consistent. Areas of particular note highlighted in Image 1 are:

A- The narrowest point of the woodland, the frequency of trees is reduced with gaps in the woodland canopy on the south of the stream

B- Several coppiced ash with some veteran characteristics but also evidence of decline and disease

C- Area of greatest variety of tree species

It should be noted that throughout the woodland, in areas A, B and C there are trees which have some veteran characteristics. There are several factors that influence whether a tree is a veteran; it is not based solely on size or age. A more detailed inspection of these potentially veteran trees is required to establish whether they should be classified as veteran trees.

Image 1 – Woodland overview

TECHNICAL NOTE

DATE:	05 August 2021	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent: Long Thin Wood – Technical Summary		
PROJECT:	70080896	**AUTHOR:**	Howard Booth and Daniel Stewart
CHECKED:	Alan Heatley	**APPROVED:**	Justin Sherlock

SUMMARY AND CONCLUSIONS

Long Thin Wood has a mixture of native broadleaf trees with ash and oak the dominant species. There is evidence of past management of Long Thin Wood with coppice stools of predominantly ash. A more recent intervention was the planting of a hedge along the southern edge.

There is variation in the size of trees across the site and the largest oak are likely to be between 150 and 200 years old. There are several coppiced ash stools, the age of which is more difficult establish than maiden trees and those present are likely to be much younger than 300 years.

Long Thin Wood is shown in the Ancient Woodland Inventory, an inventory that records sites that have potential of being ancient. An ancient woodland is an area of woodland which has been continuously treed from before 1600AD. None of the trees within the woodland show signs of being in-situ prior to 1600AD. Other evidence such as maps or estate records Would be needed to confirm the status of Long Thin Wood as an ancient woodland.

Irrespective of the status of the woodland as ancient or not it has several trees which have some veteran characteristics. Further assessment of these trees is advised to ensure they are suitably considered in any potential work in or near the woodland.

Long Thin Wood is a mature woodland with typically closed canopy and the woodland varies in width. The western end of the woodland has the lowest frequency of trees relative to the rest of the woodland and includes trees which have some veteran characteristics.

ECOLOGY

Ground flora of the woodland habitat was not very diverse or had much variation throughout the site, mostly made up of ground Ivy. However, ground flora north of the watercourse running across the woodland had greater species diversity and flora cover then the habitat south of the watercourse. Although mostly dominated by ground ivy there were two small sections of Hyacinthoides sp in the south of the woodland. Due to the time of year and the plant not being in flower, it cannot definitely be identified down to species level, with it possibly being Common bluebell Hyacinthoides non-scripta which is an ancient woodland indicator or Spanish bluebell Hyacinthoides hispanica and Hyacinthoides hispanica x non-scripta (the most common hybrid) which have little ecological value as they are not native. Red campion which is also a species which is an ancient woodland indicator was also recorded throughout the Site in all areas. In addition to this another ancient woodland indicator Guelder rose was located on the woodland border on the south of the Site in very small quantities.

Throughout most of the habitat and at the woodland edge bramble and cleavers were present while garlic mustard was seen closer to the watercourse south west of the woodland. Areas of bracken made up the interior of the wood close to the watercourse embankment. As previously mentioned, Ash dieback was

evident in the north and east of the Site, but as of present was not seen in the ash trees in the south and east of the site. Species were mostly native with Himalayan balsam heavily present in the north east of the Site which has replaced most of the native ground flora present within the inhabited area.

During the site visit a number of rabbit warrens and birds were observed throughout the site. There were multiple nests observed throughout the woodland in the canopy. In addition to this the woodland could support roosting bats due to splits, cracks and rot holes in the trunks and limbs, and ivy on the trees. Further information on protected species is found within the Preliminary Ecological Appraisal (PEA).

OTHER CONSIDERATIONS

A review of publicly accessible historical mapping has been undertaken to supplement the site visit and the recommendation to review historical records to determine whether the woodland pre-dates 1600AD. The review of publicly available sources identified a map produced by William Faden and published in 1809. Interpretation of this map[1] by WSP did not indicate the Long Thin Wood but does indicate wooded areas both to the east and west.

An older map published in 1769[2] by A. Dury and W. Herbert also does not indicate the woodland's presence at that time.

Further analysis of mapping available from the National Library of Scotland[3] identified a map produced by Ordnance Survey that was surveyed between 1872-73 and published in 1877. This map[4] does indicate the area of woodland referred to as Long Thin Wood.

The review of publicly accessible historic mapping indicates that the woodland dates back to at least the 1870s and this finding is commensurate with findings of the site visit. The earlier maps do not necessarily confirm the absence of the woodland as the scale of the mapping and cartography do not permit detailed analysis. However, they do suggest that the woodland may not have been present prior to the 1870s. Further work would be required to confirm this.

[1] https://www.davidrumsey.com/ll/detailView.html?&manifestUrl=https%3A%2F%2Fwww.davidrumsey.com%2Fluna%2Fservlet%2Fiiif%2Fm%2FRUMSEY~8~1~253703~5519088%2Fmanifest&os=0&lc=RUMSEY~8~1&baseUrl=%2F%2Fwww.davidrumsey.com%2Fluna%2Fservlet%2Fas%2Fsearch&mediaType=Image#?c=0&m=0&s=0&cv=0&r=0&xywh=29397%2C11263%2C3071%2C1307 accessed 21/07/2021

[2] https://biblio.unibe.ch/web-apps/maps/zoomify.php?pic=Ryh_1806_34.jpg&col=ryh accessed 22/07/2021

[3] https://maps.nls.uk/geo/find/#zoom=14&lat=51.27718&lon=1.09406&layers=102&b=1&z=1&point=51.28003,1.08025 accessed 21/07/2021

[4] https://maps.nls.uk/view/102343537 accessed 21/07/2021

TECHNICAL NOTE

DATE:	05 August 2021	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent: Long Thin Wood – Technical Summary		
PROJECT:	70080896	**AUTHOR:**	Howard Booth and Daniel Stewart
CHECKED:	Alan Heatley	**APPROVED:**	Justin Sherlock

SUMMARY

WSP has been appointed by the University of Kent (UoK) to provide transport and environmental advice for the development of proposals on land at their Canterbury Campus that has been identified as being surplus to requirement.

A potential area of ancient woodland located within Site B has been identified as being impacted by the masterplan proposals.

A site visit was undertaken to help establish the quality of the woodland (both from an arboricultural and ecological perspective) and the likely age.

The site visit found that the oldest tree (an oak) was likely to be between 150 and 200 years old, whilst coppiced ash stools are likely to be less than 300 years old.

Long Thin Wood is shown in the Ancient Woodland Inventory, an inventory that records sites that have potential of being ancient. An ancient woodland is an area of woodland which has been continuously treed from before 1600AD. None of the trees within the woodland show signs of being in-situ prior to 1600AD. Other evidence such as maps or estate records would be needed to confirm the status of Long Thin Wood as an ancient woodland. The review of publicly accessible historic maps confirms that the woodland was in existence around 1870 but may have not been present prior to this. Further work will be required to confirm this.

Irrespective of the status of the woodland as ancient or not it has several trees which have some veteran characteristics. This will need to be taken into account as the proposals are developed further.

APPENDIX I

Flood Risk and Drainage Note

University of Kent (UoK), Canterbury Campus – Draft Flood Risk and Drainage Strategy Technical Note

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

SUMMARY

This note provides a summary of the preliminary flood risk assessment and drainage strategy based on a desktop review and initial consultation with key stakeholders for the proposed disposal sites, as further described in **Section 1**. Initial stakeholder feedback can be found in **Section 2** and a summary of the flood risk profile for each site is provided in **Section 3**.

The principles of on-site drainage and initial assessment of the impact to the proposed masterplan for sites B, C and D based on the EA's Flood Risk Assessment Guidance and the NPPF Planning Practice Guidance can be found in **Section 4**. This assessment is subsequently illustrated on a series of constraint maps in **Appendix A**.

Conclusions and further recommendations are presented in **Section 5** based on limited baseline information presented in **Appendix B** which must be confirmed through additional investigation and consultation in the next stage of the project.

1. INTRODUCTION

WSP UK Ltd (WSP) have been commissioned by the University of Kent (Canterbury Campus) to provide Transport and Environment Consultancy Services associated with the planning and disposal strategy associated with surplus land in and around the Canterbury Campus.

The flood risk study area includes the disposal sites A, B, C, D, E and F with particular interest to sites B, C and D.

Within the study area there are several watercourses located within and adjacent to the site, namely the River Great Stour (main river), ordinary watercourses[1] such as the Sarre Penn and the River Stour Internal Drainage Board (IDB) drains.

A high-level flood risk assessment from all sources of flooding has been performed in the following sections. Based on this assessment, surface water flood risk is considered to be the main source of flood risk to the assessment area based on the available information. A more detailed assessment and further consultation has been recommended to be carried out in the next design stages of the project.

[1] Kent County Council LLFA is the responsible authority for ordinary watercourses that are outside of the internal drainage districts and main river networks.

University of Kent (UoK), Canterbury Campus – Draft Flood Risk and Drainage Strategy Technical Note

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

2. CONSULTATION FEEDBACK

Consultation with the Environment Agency (EA), Kent County Council Lead Local Flood Authority (LLFA) and the River Stour (Kent) Internal Drainage Board was carried out. It should be noted that this initial consultation was tailored to gather data on the flood risk profile of the area with no consultation in relation to proposed development, acceptability of the proposed works and it is recommended that further consultation is undertaken in due course with the above-named consultees alongside the local planning authority (LPA) to identify any potential concerns/recommendations they may have of the proposed works and ultimately aim to gain their support. Initial consultation with the EA, LLFA and IDB has identified various baseline data which relates to the flood risk profile. A summary of the consultation feedback is detailed below:

Environment Agency:

The EA did not provide any advice or recommendation at this early stage. Further consultation is recommended later on the design process.

Kent County Council Lead Local Flood Authority

KCC did not provide any advice or recommendation at this early stage. They suggested to follow the pre-application process to gather more information and data in later stages of the design.

River Stour (Kent) Internal Drainage Board

River Stour (Kent) IDB provided a copy of their watercourse and district areas. They also provided the following comments:

- Formal written consent would be required for any works within the channel or drains or within 8m of any watercourse in their district, irrespective of whether it is identified as one of the IDB maintained channels;
- The IDB have Byelaws that help protect the capacity of heir system and their maintenance activities. These can be summarised as:
    - Specific attention must be paid to runoff volumes (not just rates);
    - The capacity and condition of the receiving network must be properly assessed throughout its entire course, not just the locality in which discharge may be proposed;
    - Water quality must be enhanced where possible, certainly with no degradation allowed.

DRAFT

- Full regard must be given to Kent County Council Drainage and Planning Policy [2] statement along with any specific requirements stipulated by Canterbury City Council in their SFRA.

3. SUMMARY OF OVERALL FLOOD RISK PROFILE

There are several watercourses located within and adjacent to the site, namely the River Great Stour (main river), ordinary watercourses[3] such as the Sarre Penn and the River Stour Internal Drainage Board (IDB) drains.

Based on the data provided by the EA all the disposal sites are within Flood Zone 1[4]. Therefore, it is not expected to have fluvial flooding within the extents of the study sites.

The main source of flood risk present is expected to be surface water as observed in the Environment Agency Flood Map for Surface Water [5] (refer to constraint maps in Appendix A). It should be noted that other sources of flood risk including groundwater are present and appropriate mitigation to manage the impacts of these sources of flood risk will need to be further investigated to ensure the risk is not increased off-site.

4. HIGH LEVEL DRAINAGE STRATEGY AND CONSTRAINTS

The below tables provide a summary of the flood risk review from all sources for the different disposal sites that are being considered for this assessment. Drainage opportunities and constraints have also been summarised in this section.

Site A

Flood Risk	**River (Fluvial) and tidal flooding** Boundary of disposal Site A is located within Flood Zone 1. Therefore, the risk of fluvial flooding is low.

[2] Drainage and Planning Policy – a Local Flood Risk Management Strategy Document (KCC, November 2019)
[3] Kent County Council LLFA is the responsible authority for ordinary watercourses that are outside of the internal drainage districts and main river networks.
[4] Flood Zone 1: Land having a less than 0.1% annual probability (1 in 1000 return period) of river (fluvial) flooding or sea (tidal) flooding in any given year.
[5] Environment Agency Long Term Flood Risk Maps. Available at https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=613392&northing=159705&map=RiversOrSea [last accessed June 2021]

University of Kent (UoK), Canterbury Campus – Draft Flood Risk and Drainage Strategy Technical Note

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

	Surface water (pluvial) flooding The EA Flood Map for Surface Water shows that the majority of the site is located in land classified at very low or low risk of flooding from surface water. **Groundwater flooding** The groundwater vulnerability mapping identifies this disposal site within an area at medium-high risk of groundwater flooding. Further investigation would be required to understand groundwater flood risk. **Sewer flooding** The majority of the site is located within greenfield land, where the risk of flooding from sewer systems could only arise from surrounding highways and housing developments. Therefore, the risk of flooding from drainage and sewer systems is likely to be low. **Flooding from artificial sources** A review of Environment Agency's Flood Map for Planning indicates that the footprint of site A is not at risk of flooding from reservoirs.
High-level Drainage Strategy	A review of British Geological Survey (BGS) mapping indicates the underlying geology is primarily London Clay formation overlaid by superficial deposits of clay and silt. These geological characteristics indicate that infiltration-based drainage features might be feasible subject to further BRE Digest infiltration tests and groundwater investigations. In the case that discharge via infiltration is not possible, discharge to the existing sewer network could be studied.
Opportunities and Constraints	Constraint maps attached within Appendix A indicates the potential locations based on topography and flood risk to implement Sustainable Drainage features (SuDS) to collect and store surface water runoff. These features will also improve water quality through filtration, adsorption, sedimentation and biological treatment of contaminants. It is assumed that potential SuDS features will be above the ground level and that they will be unlined (unless there is a potential to mobilise contamination or if the groundwater is found to be higher). It is estimated that the attenuation required is xxm^3 required an extension of xxm^2 of land. Refer to Appendix C for more information.
Comments of proposed	Masterplan principles not received yet for this site.

DRAFT

University of Kent (UoK), Canterbury Campus – Draft Flood Risk and Drainage Strategy Technical Note

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

Masterplan principles	

Site B

Flood Risk	**River (Fluvial) and tidal flooding** Boundary of disposal Site B is located within Flood Zone 1. Therefore, the risk of fluvial flooding is low. **Surface water (pluvial) flooding** The EA Flood Map for Surface Water shows that the site is within two main flow paths with land classified at low, medium and high risk of flooding from surface water. **Groundwater flooding** The groundwater vulnerability mapping identifies this disposal site within an area at low risk of groundwater flooding. **Sewer flooding** The site is located within greenfield land with no sewer network within the vicinity. Therefore, the risk of flooding from drainage and sewer systems is very low. **Flooding from artificial sources** A review of Environment Agency's Flood Map for Planning indicates that the footprint of site B is not at risk of flooding from reservoirs.
High-level Drainage Strategy	A review of British Geological Survey (BGS) mapping indicates the underlying geology is primarily London Clay formation overlaid by superficial deposits of clay and silt. These geological characteristics indicate that infiltration-based drainage features might be feasible subject to further BRE Digest infiltration tests and groundwater investigations. In the case that discharge via infiltration is not possible, discharge to the existing drains and Sarre Penn watercourse could be studied.
Opportunities and Constraints	Constraint maps attached within Appendix A indicates the potential locations based on topography and flood risk to implement Sustainable Drainage features (SuDS) to collect and store surface water runoff. These features will also improve water quality through filtration, adsorption, sedimentation and biological treatment of contaminants.

DRAFT

University of Kent (UoK), Canterbury Campus – Draft Flood Risk and Drainage Strategy Technical Note

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

<table>
<tr><td></td><td colspan="2">It is assumed that potential SuDS features will be above the ground level and that they will be unlined (unless there is a potential to mobilise contamination or if the groundwater is found to be higher).

As indicated in the maps, any development should be avoided within the channel or drains, within 8m of any watercourse and within any land at risk of surface water flooding.

It is estimated that the attenuation required is xxm^3 required an extension of xxm^2 of land. Refer to Appendix C for more information.</td></tr>
<tr><td>Comments of proposed Masterplan principles</td><td>
</td><td>▪ Potential primary roads crossing IDB drains and the Sarre Penn watercourse have been proposed for Site B. A formal written consent will be required by the River Stour IDB for any works undertaken within the watercourses or within 8m from the top of the bank. Further consultation with IDB and LLFA is recommended to understand the specific requirements of these proposals and evaluate its feasibility. For the rest of the development parcels, it is advised to avoid any type of work within the 8m buffer subject to further discussion.

▪ There is a significant surface water flow path in the northern boundary of Site B where development parcels have been proposed. It is recommended to avoid any type of development within the mapped flood outlines, subject to further review.</td></tr>
</table>

DRAFT

University of Kent (UoK), Canterbury Campus – Draft Flood Risk and Drainage Strategy Technical Note

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

Site C

Flood Risk	**River (Fluvial) and tidal flooding** Boundary of disposal Site C is located within Flood Zone 1. Therefore, the risk of fluvial flooding is low. **Surface water (pluvial) flooding** The EA Flood Map for Surface Water shows that the site is within a flow path in the southern boundary with land classified at low, medium and high risk of flooding from surface water. **Groundwater flooding** The groundwater vulnerability mapping identifies this disposal site within an area classified as 'unproductive'. Therefore, it is unlikely to be at risk of groundwater. **Sewer flooding** The site is located within greenfield land with no sewer network within the vicinity. Therefore, the risk of flooding from drainage and sewer systems is very low. **Flooding from artificial sources** A review of Environment Agency's Flood Map for Planning indicates that the footprint of site C is not at risk of flooding from reservoirs.
High-level Drainage Strategy	A review of British Geological Survey (BGS) mapping indicates the underlying geology is primarily London Clay formation overlaid by superficial deposits of clay and silt. These geological characteristics indicate that infiltration-based drainage features might be feasible subject to further BRE Digest infiltration tests and groundwater investigations. In the case that discharge via infiltration is not possible, discharge to the existing drains could be studied.
Opportunities and Constraints	Constraint maps attached within Appendix A indicates the potential locations based on topography and flood risk to implement Sustainable Drainage features (SuDS) to collect and store surface water runoff. These features will also improve water quality through filtration, adsorption, sedimentation and biological treatment of contaminants. It is assumed that potential SuDS features will be above the ground level and that they will be unlined (unless there is a potential to mobilise contamination).

DRAFT

University of Kent (UoK), Canterbury Campus – Draft Flood Risk and Drainage Strategy Technical Note

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

<table>
<tr><td></td><td colspan="2">As indicated in the maps, any development should be avoided within the channel or drains, within 8m of any watercourse and within any land at risk of surface water flooding.

It is estimated that the attenuation required is xxm^3 required an extension of xxm^2 of land. Refer to Appendix C for more information.</td></tr>
<tr><td>Comments of proposed Masterplan principles</td><td>
</td><td>▪ It must be noted that a couple of drains run along the southern boundary of Site C close to the proposed “Potential local centre”. A formal written consent would be required by the River Stour IDB for any works undertaken within the channel or within 8m from the top of the bank of these drains. However, it doesn’t guarantee the approval of the proposed works by the IDB. It is advised to avoid any type of work within the 8m buffer subject to further discussion.
▪ In the constraints map is also highlighted a significant surface water flow path along the southern boundary of the site. It is recommended to avoid any type of development within the mapped flood outlines subject to further review.</td></tr>
</table>

DRAFT

University of Kent (UoK), Canterbury Campus – Draft Flood Risk and Drainage Strategy Technical Note

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

Site D

Flood Risk	**River (Fluvial) and tidal flooding** Boundary of disposal Site D is located within Flood Zone 1. Therefore, the risk of fluvial flooding is low. **Surface water (pluvial) flooding** The EA Flood Map for Surface Water shows that the majority of the site is within land at very low risk of surface water flooding. There is only a flow path in the north eastern boundary with land classified at low, medium and high risk of flooding from surface water. **Groundwater flooding** The groundwater vulnerability mapping identifies this disposal site within an area classified as 'unproductive'. Therefore, it is unlikely to be at risk of groundwater. **Sewer flooding** The site is located within greenfield land with no sewer network within the vicinity. Therefore, the risk of flooding from drainage and sewer systems is very low. **Flooding from artificial sources** A review of Environment Agency's Flood Map for Planning indicates that the footprint of site D is not at risk of flooding from reservoirs.
High-level Drainage Strategy	A review of British Geological Survey (BGS) mapping indicates the underlying geology is primarily London Clay formation overlaid by superficial deposits of clay and silt. These geological characteristics indicate that infiltration-based drainage features might be feasible subject to further BRE Digest infiltration tests and groundwater investigations. In the case that discharge via infiltration is not possible, discharge to the existing drains could be studied.
Opportunities and Constraints	Constraint maps attached within Appendix A indicates the potential locations based on topography and flood risk to implement Sustainable Drainage features (SuDS) to collect and store surface water runoff. These features will also improve water quality through filtration, adsorption, sedimentation and biological treatment of contaminants. It is assumed that potential SuDS features will be above the ground level and that they will be unlined (unless there is a potential to mobilise contamination).

DRAFT

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

	As indicated in the maps, any development should be avoided within the channel or drains, within 8m of any watercourse and within any land at risk of surface water flooding. It is estimated that the attenuation required is xxm^3 required an extension of xxm^2 of land. Refer to Appendix C for more information.	
Comments of proposed Masterplan principles		▪ The proposals for Site D seem to be adequate from a drainage and flooding point of view. Sport pitches have been proposed in the northern corner in an area at risk of surface water flooding which is acceptable for this type of use. ▪ Potential location of attenuation features is shown in the constraint's maps. The attenuation feature proposed in the southern boundary could be located next to the proposed potential access subject to further assessment of local topography.

Site E

Flood Risk	**River (Fluvial) and tidal flooding** Boundary of disposal Site E is located within Flood Zone 1. Therefore, the risk of fluvial flooding is low. **Surface water (pluvial) flooding** The EA Flood Map for Surface Water shows that the majority of the site is located in land classified at very low or low risk of flooding from surface water. **Groundwater flooding** The groundwater vulnerability mapping identifies this disposal site within an area at low risk of groundwater flooding. Further investigation would be required to understand groundwater flood risk.

DRAFT

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

	Sewer flooding The site is located within greenfield land with no sewer network within the vicinity. Therefore, the risk of flooding from drainage and sewer systems is very low. **Flooding from artificial sources** A review of Environment Agency's Flood Map for Planning indicates that the footprint of site E is not at risk of flooding from reservoirs.
High-level Drainage Strategy	A review of British Geological Survey (BGS) mapping indicates the underlying geology is primarily Harwich formation overlaid by superficial deposits of clay and silt. These geological characteristics indicate that infiltration-based drainage features might be feasible subject to further BRE Digest infiltration tests and groundwater investigations. In the case that discharge via infiltration is not possible, discharge to the existing drain in the southern boundary could be studied.
Opportunities and Constraints	Constraint maps attached within Appendix A indicates the potential locations based on topography and flood risk to implement Sustainable Drainage features (SuDS) to collect and store surface water runoff. These features will also improve water quality through filtration, adsorption, sedimentation and biological treatment of contaminants. It is assumed that potential SuDS features will be above the ground level and that they will be unlined (unless there is a potential to mobilise contamination or if the groundwater is found to be higher). As indicated in the maps, any development should be avoided within the channel or drains, within 8m of any watercourse and within any land at risk of surface water flooding. It is estimated that the attenuation required is xxm^3 required an extension of xxm^2 of land. Refer to Appendix C for more information.
Comments of proposed Masterplan principles	Masterplan principles not received yet for this site.

DRAFT

University of Kent (UoK), Canterbury Campus – Draft Flood Risk and Drainage Strategy Technical Note

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

Site F

Flood Risk	**River (Fluvial) and tidal flooding** Boundary of disposal Site F is located within Flood Zone 1. Therefore, the risk of fluvial flooding is low. **Surface water (pluvial) flooding** The EA Flood Map for Surface Water shows that the majority of the site is located in land classified at very low or low risk of flooding from surface water. **Groundwater flooding** The groundwater vulnerability mapping identifies this disposal site within an area classified as 'unproductive'. Therefore, it is unlikely to be at risk of groundwater. **Sewer flooding** The majority of the site is located within greenfield land, where the risk of flooding from sewer systems could only arise from surrounding highways and housing developments. Therefore, the risk of flooding from drainage and sewer systems is likely to be low. **Flooding from artificial sources** A review of Environment Agency's Flood Map for Planning indicates that the footprint of site F is not at risk of flooding from reservoirs.
High-level Drainage Strategy	A review of British Geological Survey (BGS) mapping indicates the underlying geology is primarily Harwich formation overlaid by superficial deposits of clay and silt. These geological characteristics indicate that infiltration-based drainage features might be feasible subject to further BRE Digest infiltration tests and groundwater investigations. In the case that discharge via infiltration is not possible, discharge to the existing drain in the northern boundary could be studied.
Opportunities and Constraints	Constraint maps attached within Appendix A indicates the potential locations based on topography and flood risk to implement Sustainable Drainage features (SuDS) to collect and store surface water runoff. These features will also improve water quality through filtration, adsorption, sedimentation and biological treatment of contaminants. It is assumed that potential SuDS features will be above the ground level and that they will be unlined (unless there is a potential to mobilise contamination or if the groundwater is found to be higher).

DRAFT

	As indicated in the maps, any development should be avoided within the channel or drains, within 8m of any watercourse and within any land at risk of surface water flooding. It is estimated that the attenuation required is xxm^3 required an extension of xxm^2 of land. Refer to Appendix C for more information.
Comments of proposed Masterplan principles	Masterplan principles not received yet for this site.

5. CONCLUSIONS

The above flood risk and high-level drainage strategy shows that:

- There is no risk of fluvial flooding and artificial sources for any of the disposal sites.
- The risk from surface water varies from the different options and a detailed drainage assessment will be required at later stages to manage and mitigate generated overland flows and discharge rates.
- The risk from groundwater flooding ranges between low to medium so it would be required further assessment to understand is mitigation is required in those locations classified as ‘medium’ risk.
- Underlying geology across the sites indicate that London Clay formation and Harwich formation are dominant in this area which indicates that infiltration-based SuDS features might be feasible for all the disposal sites.
- Further consultation with the EA and LLFA is recommended to gather additional data and advise on flood risk and to earn their approval and support of the proposed development.

DRAFT

University of Kent (UoK), Canterbury Campus – Draft Flood Risk and Drainage Strategy Technical Note

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

APPENDIX A - CONSTRAINT MAPS

DRAFT

614000

159000

N

Site A

Other University Land

Retained Campus

Other University Land

Opportunity:
Potential to locate a Sustainable Drainage feature (SuDS) to collect and store surface water runoff. Discharge via infiltration might be feasible.If infiltration is not possible, discharge to the existing sewer network could be studied.

Constraint:
Area in the south western corner of the site identified as flooded in the past.

50 0 50 100 150 200 m

KEY:

Disposal Sites
- Site A
- Site B
- Site C
- Site D
- Site E
- Site F
- Retained Campus
- Other University Land

Overland Flow Paths
- Flood Extent 1 in 30 year
- Flood Extent 1 in 100 year
- Flood Extent 1 in 1000 year
- Historical Flooding

REV	DATE	DRW	DESCRIPTION	CHK	APP
A	30/01/2018	SBR	FOR CONSULTATION	SW	SW

STATUS: FOR INFORMATION ONLY

wsp
6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 121 352 4700
www.wsp.com

CLIENT: University of Kent

PROJECT: Transport and Environment Services associated with the planning and disposal strategy

TITLE: Flood Risk and Drainage Constraint Map - Site A

DRAWN:	CHECKED:	APPROVED:
SBR	EI	

QGIS FILE:	SCALE @A3:	DATE:
Workspace UoK- Constraint and Opportunities Maps.qgz	1:2500	27/03/21

PROJECT No:	DRAWING No:	REV:
70080896		A

THE PROPERTY OF THIS DRAWING AND DESIGN IS VESTED IN WSP AND MUST NOT BE COPIED OR REPRODUCED IN ANY WAY WITHOUT THEIR WRITTEN CONSENT
CONTAINS ORDNANCE SURVEY DATA © CROWN COPYRIGHT AND DATABASE RIGHT 2018, ENVIRONMENT AGENCY INFORMATION © ENVIRONMENT AGENCY AND DATABASE RIGHT 2018
BRITISH GEOLOGICAL SURVEY MATERIALS © NERC 2018

Created by: UKSBR001 - 2021-03-27 17:39:47 - \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\DR Drainage and Flooding\3. GIS\Workspace UoK- Constraint and Opportunities Maps.qgz

613000
613500
614000
161000
160500
160000

N

Site D

Site C

Site B

Site E

Site F

Retained Campus

Other University Land

Sarre Penn watercourse

Drain

Drain

Drain

Drain

Dismantled Railway

Constraint:
Avoid any intervention within 8m from the top of bank of this drain. The River Stour (Kent) Internal Drainage Board has jurisdiction over this land.

Constraint:
If infiltration is not feasible at this location, further investigation might be required to find a suitable place for discharging.

Constraint:
Risk of flooding from surface water (low to medium)

Opportunity:
Potential to locate a Sustainable Drainage feature (SuDS) to collect and store surface water runoff. Discharge via infiltration or to watercourse might be feasible.

Opportunity:
Potential to locate a Sustainable Drainage feature (SuDS) to collect and store surface water runoff. Discharge via infiltration might be feasible.

Opportunity:
Potential to implement linear SuDS features to collect, convey and store surface water runoff. Discharge via infiltration or to watercourse might be feasible.

50 0 50 100 150 200 m

KEY:

Disposal Sites
- Site A
- Site B
- Site C
- Site D
- Site E
- Site F
- Retained Campus
- Other University Land

Overland Flow Paths
- Flood Extent 1 in 30 year
- Flood Extent 1 in 100 year
- Flood Extent 1 in 1000 year
- Historical Flooding

REV	DATE	DRW	DESCRIPTION	CHK	APP
A	30/01/2018	SBR	FOR CONSULTATION	SW	SW

STATUS: FOR INFORMATION ONLY

wsp
6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 121 352 4700
www.wsp.com

CLIENT: University of Kent

PROJECT: Transport and Environment Services associated with the planning and disposal strategy

TITLE: Flood Risk and Drainage Constraint Map - Site B

DRAWN:	CHECKED:	APPROVED:
SBR	EI	

QGIS FILE:	SCALE @A3:	DATE:
Workspace UoK- Constraint and Opportunities Maps.qgz	1:4500	27/03/21

PROJECT No:	DRAWING No:	REV:
70080896		A

THE PROPERTY OF THIS DRAWING AND DESIGN IS VESTED IN WSP AND MUST NOT BE COPIED OR REPRODUCED IN ANY WAY WITHOUT THEIR WRITTEN CONSENT
CONTAINS ORDNANCE SURVEY DATA © CROWN COPYRIGHT AND DATABASE RIGHT 2018, ENVIRONMENT AGENCY INFORMATION © ENVIRONMENT AGENCY AND DATABASE RIGHT 2018
BRITISH GEOLOGICAL SURVEY MATERIALS © NERC 2018

Created by: UKSBR001 - 2021-03-27 17:17:15 - \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\DR Drainage and Flooding\3. GIS\Workspace UoK- Constraint and Opportunities Maps.qgz

612500

613000

161000

N

Site D

Site C

Site B

Opportunity:
Potential to locate a Sustainable Drainage feature (SuDS) to collect and store surface water runoff. Discharge via infiltration might be feasible.

Constraint:
Main surface water flow path. Risk of flooding from surface water. Avoid any intervention within footprint at risk of flooding.

Opportunity:
Potential to locate a Sustainable Drainage feature (SuDS) to collect and store surface water runoff. Discharge via infiltration might be feasible.

Constraint:
Avoid any intervention within 8m from the top of the bank of this drain. The River Stour (Kent) Internal Drainage Board has jurisdiction over this land.

Crab and Winkle Way

Drain

Drain

Tyler Hill Road

50 0 50 100 150 200 m

KEY:

Disposal Sites
- Site A
- Site B
- Site C
- Site D
- Site E
- Site F
- Retained Campus
- Other University Land
- Overland Flow Paths
- Flood Extent 1 in 30 year
- Flood Extent 1 in 100 year
- Flood Extent 1 in 1000 year
- Historical Flooding

REV	DATE	DRW	DESCRIPTION	CHK	APP
A	30/01/2018	SBR	FOR CONSULTATION	SW	SW

STATUS: FOR INFORMATION ONLY

6 Devonshire Square
London, EC2M 4YE

Tel: +44 (0) 121 352 4700

www.wsp.com

CLIENT: University of Kent

PROJECT: Transport and Environment Services associated with the planning and disposal strategy

TITLE: Flood Risk and Drainage Constraint Map - Site C

DRAWN:	CHECKED:	APPROVED:
SBR	EI	

QGIS FILE:	SCALE @A3:	DATE:
Workspace UoK- Constraint and Opportunities Maps.qgz	1:2500	27/03/21

PROJECT No:	DRAWING No:	REV:
70080896		A

THE PROPERTY OF THIS DRAWING AND DESIGN IS VESTED IN WSP AND MUST NOT BE COPIED OR REPRODUCED IN ANY WAY WITHOUT THEIR WRITTEN CONSENT
CONTAINS ORDNANCE SURVEY DATA © CROWN COPYRIGHT AND DATABASE RIGHT 2018, ENVIRONMENT AGENCY INFORMATION © ENVIRONMENT AGENCY AND DATABASE RIGHT 2018
BRITISH GEOLOGICAL SURVEY MATERIALS © NERC 2018

Created by: UKSBR001 - 2021-03-27 17:01:13 - \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\DR Drainage and Flooding\3. GIS\Workspace UoK- Constraint and Opportunities Maps.qgz

613000

613500

161500

161000

N

Constraint:
Avoid any intervention within 8m from the top of bank of these drains. The River Stour (Kent) Internal Drainage Board has jurisdiction over this land.

Drain

Drain

Constraint:
Risk of flooding from surface water (low). Avoid any intervention within footprint at risk of flooding.

Opportunity:
Potential to locate a Sustainable Drainage feature (SuDS) to collect and store surface water runoff. Discharge via infiltration might be feasible.

Constraint:
There is no direct connection to a watercourse from the southern section of this site. If discharge via infiltration is not viable, further investigation involving a coordinate solution with Site B and other university land might be required.

Site D

Opportunity:
Potential to locate a Sustainable Drainage feature (SuDS) to collect and store surface water runoff. Discharge via infiltration might be feasible.

Tyler Hill Road

Crab and Winkle Way

Site C

Site B

Other University Land

50 0 50 100 150 200 m

KEY:

Disposal Sites
- Site A
- Site B
- Site C
- Site D
- Site E
- Site F
- Retained Campus
- Other University Land

Overland Flow Paths
- Flood Extent 1 in 30 year
- Flood Extent 1 in 100 year
- Flood Extent 1 in 1000 year
- Historical Flooding

REV	DATE	DRW	DESCRIPTION	CHK	APP
A	30/01/2018	SBR	FOR CONSULTATION	SW	SW

STATUS: FOR INFORMATION ONLY

6 Devonshire Square
London, EC2M 4YE

Tel: +44 (0) 121 352 4700

www.wsp.com

CLIENT: University of Kent

PROJECT: Transport and Environment Services associated with the planning and disposal strategy

TITLE: Flood Risk and Drainage Constraint Map - Site D

DRAWN:	CHECKED:	APPROVED:
SBR	EI	

QGIS FILE:	SCALE @A3:	DATE:
Workspace UoK- Constraint and Opportunities Maps.qgz	1:3000	27/03/21

PROJECT No:	DRAWING No:	REV:
70080896		A

THE PROPERTY OF THIS DRAWING AND DESIGN IS VESTED IN WSP AND MUST NOT BE COPIED OR REPRODUCED IN ANY WAY WITHOUT THEIR WRITTEN CONSENT
CONTAINS ORDNANCE SURVEY DATA © CROWN COPYRIGHT AND DATABASE RIGHT 2018, ENVIRONMENT AGENCY INFORMATION © ENVIRONMENT AGENCY AND DATABASE RIGHT 2018
BRITISH GEOLOGICAL SURVEY MATERIALS © NERC 2018

Created by: UKSBR001 - 2021-03-27 17:08:48 - \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\DR Drainage and Flooding\3. GIS\Workspace UoK- Constraint and Opportunities Maps.qgz

614500

160500

160000

N

Constraint:
Avoid any intervention within 8m from the top of bank of this drain. The River Stour (Kent) Internal Drainage Board has jurisdiction over this land.

Opportunity:
Discharge to the drain might be a suitable option if discharge via infiltration is not possible.

Opportunity:
Local topography sloping towards east. Potential to intersect overland flows using SuDS features.

Drain

St. Stephen's Hill

Site E

Site F

Retained Campus

50 0 50 100 150 200 m

KEY:

Disposal Sites
- Site A
- Site B
- Site C
- Site D
- Site E
- Site F
- Retained Campus
- Other University Land

Overland Flow Paths
- Flood Extent 1 in 30 year
- Flood Extent 1 in 100 year
- Flood Extent 1 in 1000 year
- Historical Flooding

REV	DATE	DRW	DESCRIPTION	CHK	APP
A	30/01/2018	SBR	FOR CONSULTATION	SW	SW

STATUS: FOR INFORMATION ONLY

wsp
6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 121 352 4700
www.wsp.com

CLIENT: University of Kent

PROJECT: Transport and Environment Services associated with the planning and disposal strategy

TITLE: Flood Risk and Drainage Constraint Map - Site E

DRAWN:	CHECKED:	APPROVED:
SBR	EI	

QGIS FILE:	SCALE @A3:	DATE:
Workspace UoK- Constraint and Opportunities Maps.qgz	1:2500	27/03/21

PROJECT No:	DRAWING No:	REV:
70080896		A

THE PROPERTY OF THIS DRAWING AND DESIGN IS VESTED IN WSP AND MUST NOT BE COPIED OR REPRODUCED IN ANY WAY WITHOUT THEIR WRITTEN CONSENT
CONTAINS ORDNANCE SURVEY DATA © CROWN COPYRIGHT AND DATABASE RIGHT 2018, ENVIRONMENT AGENCY INFORMATION © ENVIRONMENT AGENCY AND DATABASE RIGHT 2018
BRITISH GEOLOGICAL SURVEY MATERIALS © NERC 2018

Created by: UKSBR001 - 2021-03-27 17:24:44 - \\uk.wspgroup.com\central data\Projects\70060xxx\70080896 - University of Kent\03 WIP\DR Drainage and Flooding\3. GIS\Workspace UoK- Constraint and Opportunities Maps.qgz

615000

615500

160500

N

Site F

Opportunity:
Potential to locate a Sustainable Drainage feature (SuDS) to collect and store surface water runoff.
Discharge via infiltration might be feasible.

Constraint:
If discharge via infiltration is not feasible, further study is required to find a suitable discharge option. Clarification of land ownership to the north of the site might be required.

Constraint:
Risk of flooding from surface water (low)

Opportunity:
Potential to locate a Sustainable Drainage feature (SuDS) to collect and store surface water runoff.
Discharge via infiltration or near watercourse might be feasible.

Brickhouse Wood

Drain

Drain

Constraint:
Avoid any intervention within 8m from the top of bank of this drain. The River Stour (Kent) Internal Drainage Board has jurisdiction over this land.

50 0 50 100 150 200 m

KEY:

Disposal Sites
- Site A
- Site B
- Site C
- Site D
- Site E
- Site F
- Retained Campus
- Other University Land
- Overland Flow Paths
- Flood Extent 1 in 30 year
- Flood Extent 1 in 100 year
- Flood Extent 1 in 1000 year
- Historical Flooding

REV	DATE	DRW	DESCRIPTION	CHK	APP
A	30/01/2018	SBR	FOR CONSULTATION	SW	SW

STATUS: FOR INFORMATION ONLY

wsp
6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 121 352 4700
www.wsp.com

CLIENT: University of Kent

PROJECT: Transport and Environment Services associated with the planning and disposal strategy

TITLE: Flood Risk and Drainage Constraint Map - Site F

DRAWN:	CHECKED:	APPROVED:
SBR	EI	

QGIS FILE:	SCALE @A3:	DATE:
Workspace UoK- Constraint and Opportunities Maps.qgz	1:3000	27/03/21

PROJECT No:	DRAWING No:	REV:
70080896		A

THE PROPERTY OF THIS DRAWING AND DESIGN IS VESTED IN WSP AND MUST NOT BE COPIED OR REPRODUCED IN ANY WAY WITHOUT THEIR WRITTEN CONSENT
CONTAINS ORDNANCE SURVEY DATA © CROWN COPYRIGHT AND DATABASE RIGHT 2018, ENVIRONMENT AGENCY INFORMATION © ENVIRONMENT AGENCY AND DATABASE RIGHT 2018
BRITISH GEOLOGICAL SURVEY MATERIALS © NERC 2018

Created by: UKSBR001 - 2021-03-27 17:32:30 - \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\DR Drainage and Flooding\3. GIS\Workspace UoK- Constraint and Opportunities Maps.qgz

University of Kent (UoK), Canterbury Campus – Draft Flood Risk and Drainage Strategy Technical Note

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

APPENDIX B – DATA REVIEWED

DRAFT

University of Kent (UoK), Canterbury Campus – Draft Flood Risk and Drainage Strategy Technical Note

DATE:	22 June 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	University of Kent (UoK), Canterbury Campus Technical Note		
PROJECT:	70080896	**AUTHOR:**	Soledad Berbel Roman
APPROVED:	Enrico Isnenghi	**REPORT STATUS:**	Draft

APPENDIX C - CALCULATIONS

DRAFT

APPENDIX J

Preliminary Risk Assessments

APPENDIX J

Preliminary Risk Assessments

University of Kent

CANTERBURY CAMPUS - SITE B

Phase 1 Preliminary Risk Assessment

70080896-008
JUNE 2021

CONFIDENTIAL

University of Kent

CANTERBURY CAMPUS - SITE B

Phase 1 Preliminary Risk Assessment

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70080896

OUR REF. NO. 70080896-008

DATE: JUNE 2021

WSP

2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

Phone: +44 148 352 8400

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1
Remarks		
Date	24 June 2021	
Prepared by	Callum Harris	
Signature		
Prepared by		
Signature		
Checked by	Lydia Evans	
Signature		
Authorised by	Rob Hares	
Signature		
Project number	70080896	
Report number	70080896-008	
File reference	\\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\GW Ground & Water\(6) Reporting\02 Preliminary Risk Assessment\Site E	

CONTENTS

1	**INTRODUCTION AND OBJECTIVES**	**1**
1.1	**TERMS OF REFERENCE**	**1**
1.2	**PROPOSED DEVELOPMENT**	**1**
1.3	**AIMS AND OBJECTIVES**	**1**
1.4	**SCOPE OF WORKS**	**1**
1.5	**LEGISITLATIVE CONTEXT AND GUIDANCE**	**1**
1.6	**SOURCES OF INFORMATION**	**2**
1.7	**LIMITATIONS**	**2**
1.8	**UNDERSTANDING THE RISK**	**2**
2	**SUMMARY OF THE SITE AND SURROUNDING AREA**	**4**
2.1	**SITE LOCATION AND DESCRIPTION**	**4**
3	**SITE AND REGIONAL HISTORY**	**5**
3.1	**HISTORICAL MAPS AND PHOTOS**	**5**
3.2	**AERIAL IMAGERY**	**6**
3.3	**HISTORICAL SITE OCCUPANTS AND OWNERSHIP**	**6**
3.4	**PREVIOUS REPORTS**	**7**
4	**ENVIRONMENTAL SETTING**	**8**
4.1	**GEOLOGY**	**8**
4.2	**GROUND STABILITY HAZARDS**	**8**
4.3	**HYDROLOGY**	**9**
4.4	**HYDROGEOLOGY**	**10**
4.4.1	NITRATE VULNERABILITY ZONE	10

4.4.2 SOURCE PROTECTION ZONES (SPZ) 10
4.5 DESIGNATED SITES AND SENSITIVE LAND USES 10
4.6 RADON 11
4.7 PRELIMINARY HYDROGEOLOGICAL MODEL 11
5 REGULATORY INFORMATION AND CONSULTATION 12
5.1 LOCAL AUTHORITY 13
5.2 ENVIRONMENT AGENCY 13
5.3 PLANNING HISTORY 14
5.4 UNEXPLODED ORDNANCE 14
6 RISK ASSESSMENT 15
6.1 PRELIMINARY CONCEPTUAL SITE MODEL 15
6.2 POTENTIAL SOURCES OF CONTAMINATION 16
6.3 POTENTIAL RECEPTORS 17
6.4 PRELIMINARY CONCEPTUAL SITE MODEL (CSM) 17
7 CONCLUSIONS AND RECOMMENDATIONS 21
7.1 CONCLUSIONS 21
7.2 RECOMMENDATIONS 22

TABLES

Table 2-1 – Summary of Site Details 4
Table 3-1 – Site History 5
Table 5-1 - Environmental Database Review Summary 12
Table 6-1 – Potential Sources of Contamination 16
Table 6-2 – Plausible Contaminant Linkages 17

APPENDICES

APPENDIX A

FIGURES & DRAWINGS

APPENDIX B

LIMITATIONS

APPENDIX C

CIRIA RISK DEFINITIONS

APPENDIX D

SITE PHOTOGRAPHS

APPENDIX E

GROUNDSURE REPORT / HISTORICAL MAPS

APPENDIX F

HISTORICAL BOREHOLE LOGS

APPENDIX G

ENVIRONMENT AGENCY RESPONSE

1 INTRODUCTION AND OBJECTIVES

1.1 TERMS OF REFERENCE

WSP UK Ltd has been instructed by The University of Kent (UoK) ("The Client") to undertake a Phase 1 Preliminary Risk Assessment to support the delivery of a planning and disposal strategy associated with surplus land within UoK's ownership. There are six subject Sites associated with the strategy and this report is focussed on Site B ("The Site").

1.2 PROPOSED DEVELOPMENT

The exact redevelopment proposal of the Site is currently unknown. However, at this stage it is considered likely that the development will be for residential use that incorporates private gardens.

1.3 AIMS AND OBJECTIVES

The key objectives of this assessment are as follows:

- Develop a preliminary Conceptual Site Model in order to identify potential ground contamination associated with the Site; and,
- Evaluate the likely exposure and its potential significance on identified receptors and provide recommendations to support the proposed development.

1.4 SCOPE OF WORKS

In order to meet the above aims and objectives the following tasks are to be carried out:

- Completion of a Site walkover;
- A review of publicly available historical maps and plans (where available) to identify former land uses and potential contaminative activities on and surrounding the Site;
- A review of relevant databases (e.g. Groundsure, BGS Data, PBA non-coal mining and natural cavities database);
- Contact with relevant regulators (Environment Agency and Canterbury City Council);
- A review of relevant publicly available information relating to hydrological features, hydrogeology, neighbouring land use, ecologically sensitive uses and geology in order to establish the environmental setting of the Site and ground conditions in the area;
- Development of a preliminary Conceptual Site Model via the source-pathway-receptor contaminant linkage approach;
- An outline of the environmental risks and / or opportunities, with respect to ground, groundwater and ground gas conditions, which may potentially arise as liabilities or constraints associated with future use of the Site; and,
- Preparation of a Phase 1 Preliminary Risk Assessment Report.

1.5 LEGISITLATIVE CONTEXT AND GUIDANCE

The assessment was undertaken in the legislative context of:

- Part 2A of The Environmental Protection Act (1990); and,
- The National Planning Policy Framework (2019).

The following good practice and statutory guidance was considered, and the assessment was undertaken in general accordance with:

- Environment Agency 'Land Contamination: Risk Management guidance (October 2020);
- BS 10175:2011+A2:2017 Investigation of potentially contaminated Sites. Code of practice; and,
- CIRIA C552 'Contaminated Land Risk Assessment. A guide to good practice' (2001).

1.6 SOURCES OF INFORMATION

The following relevant sources of information were used in the production of this report:

- Groundsure report, dated April 2021, Order Ref: WSP-7710143;
- British Geological Survey (BGS) Online Viewer (http://mapapps.bgs.ac.uk/geologyofbritain/home.html) accessed on 14 April 2021;
- BGS map – South London, England and Wales Sheets 273 and 289, Solid and Drift Geology, 1:50,000 Series (1982), accessed 14 April 2021;
- British Geological Survey (BGS) Online Viewer (http://mapapps2.bgs.ac.uk/geoindex/home.html?layer=BGSHydroMap&_ga=2.134221169.1060074440.1618391808-586268598.1617716937) – Hydrogeological Map of the UK, 1: 625,000, accessed 14 April 2021;
- Coal Authority, (https://mapapps2.bgs.ac.uk/coalauthority/home.html), accessed 14 April 2021;
- Flood Maps for Planning Service (incorporated into the Groundsure report) accessed 14 April 2021;
- Multi Agency Geographic Information for the Countryside (MAGIC) (https://magic.defra.gov.uk/) accessed 14 April 2021;
- Public Health England, UK Maps of Radon (https://www.ukradon.org/information/ukmaps) accessed 14 April 2021;
- Canterbury City Council Planning Applications (https://pa.canterbury.gov.uk/online-applications/search.do?action=simple accessed 15 April 2021; and,
- Zetica UXO Risk Maps (https://zeticauxo.com/downloads-and-resources/risk-maps/) accessed 14 April 2021.

The report contains British Geological Survey materials ©NERC 2019 and Environment Agency information ©Environment Agency and database right.

1.7 LIMITATIONS

This report is addressed to and may be relied upon by The University of Kent and may not be relied upon or transferred to any other parties without the express written agreement of WSP.

This report should be read and used in full. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party. WSP cannot be held liable for third party information. Full details of the limitations are provided as **Appendix B**.

1.8 UNDERSTANDING THE RISK

It is important to recognise that any risks identified during a preliminary assessment such as that presented below are perceived risks based on the recorded information reviewed. A more detailed

assessment of the actual risks can only be assessed following intrusive investigations. The preliminary assessments presented herein are qualitative based on professional judgements following review of the available data and within the context of the existing/proposed use. Those risk categories presented (Very Low, Low, Low to Moderate, Moderate, High, Very High) follow guidance presented in CIRIA Publication C552, Contaminated Land Risk Assessment – A Guide to Good Practice. CIRIA states that risk levels should be based both on an understanding of both the probability (likelihood) of a risk occurring and the magnitude of the potential consequence (severity) of a risk.

CIRIA defines four levels of probability and four levels of severity with relation to contaminated land, as presented in **Appendix C**.

2 SUMMARY OF THE SITE AND SURROUNDING AREA

2.1 SITE LOCATION AND DESCRIPTION

Table 2-1 provides a detailed summary of the Site and information obtained from a Site walkover which was completed by a WSP representative on 20 April 2021. All external areas of the Site were accessed. Selected photographs from the walkover are presented in **Appendix D**.

A review of Ordnance Survey (OS) mapping, online aerial photography and relevant regulatory information obtained from the Groundsure report is also summarised below, where applicable. The Groundsure report is included in **Appendix E**. The Site Location and Site Layout plans are enclosed in **Appendix A**.

Table 2-1 – Summary of Site Details

Detail	Comment
Name and Address of Site	Land north of the University of Kent Campus, Canterbury, CT2 7NZ
Current Site Use	The Site predominantly comprises several arable fields with some small areas of woodland. The Site encompasses public footpaths along the field boundaries and several inland streams. The boundaries of the Site are as follows: ▪ The north of the Site is bound by Tyler Hill Road and beyond is more arable land. Church Cottage and 'St Cosmus and St Damian Church' is adjacent to the north of the Site; ▪ The east of the Site is situated adjacent to arable land. The boundary is defined by a wooded public footpath; ▪ The south of the Site is situated adjacent to the University of Kent Campus; and, ▪ The west of the Site is adjacent to arable land, woodland and residential gardens associated with Blean Village. Buildings associated with Hothe Court Farm are situated on the north-east area of the Site. A public bridleway with a cycle track runs north to south through the centre of the Site. No fly tipped waste was visually observed onsite during the walkover. No evidence of invasive species was identified during the walkover. Inland rivers on site appeared to be shallow in depth with a weak current.
National Grid Reference	613108 160559
Area	63.39 Ha (approx.)
Topography	A topographical map is contained within the "University of Kent Framework Masterplan: Supporting Documents". Information on the map indicates that a depression in the land is located towards the centre of the Site. The north of Site is situated 75 – 80 m above sea level and slopes downwards towards the centre of the site at 55 – 60 m above sea level before sloping upwards again towards the south at 65 – 70 m above sea level.

3 SITE AND REGIONAL HISTORY

3.1 HISTORICAL MAPS AND PHOTOS

Historical maps were obtained via a Groundsure Report (enclosed in **Appendix D**) and were assessed to identify potentially significant contaminative activities at the Site, and within 500 m of the Site boundary that may pose a risk to current or future Site users and the wider environment. **Table 3-1** below presents a summary of the historical maps.

Table 3-1 – Site History

Map date	On Site	Off Site
1873 (1:10,560 scale)	The site comprises several open arable fields. Footpaths cut across the northern section of the Site. Another foot path and small areas of woodland are located in the south of the Site. A spring is located at the central western boundary.	St Cosmus and St Damian's, a graveyard and Church Farm are adjacent to the north of the Site. An old clay pit is situated 223 m east of the north-eastern corner. An electric telegraph line and section of railway runs parallel to the eastern boundary 170 m east. Brotherhood Wood is situated 480 m to the south-east. A smithy is located adjacent to the south-western boundary. A windmill and well are located off the north-west corner.
1896 (1:10,560 scale)	The Site remains largely unchanged. A tank is located on the Site's central western boundary.	Two old clay pits and a spring are situated 50 m to 100 m m east of the north-eastern corner. The railway line is now identified as '(SER) South Eastern Railway Whitstable branch'. The smithy is no longer marked.
1906 (1:10,560 scale)	Excavations have been undertaken towards the south-eastern corner of the Site.	The Old Clay Pits are no longer marked. A smithy is located 170 m west of the Site.
1938 (1:10,560 scale) **1957 (10,560 scale)**	The Site remains unchanged.	A well is located 20 m west of the Site (1947). The South Eastern Railway Whitstable Branch is now labelled as a Dismantled Railway.
1974 – 1975 (1:10,000 scale)	Earthworks have been undertaken off the north-western boundary of the Site in a similar location to where the church graveyard was located in earlier map editions. Hothe Court Farm has been built in the north-east corner of the Site.	A pumping station is situated adjacent to the south-west boundary. Residential development has taken place in the village of Blean to the west. The tank adjacent to the western boundary has been removed.

Map date	On Site	Off Site
	A small pond remains in the south-eastern area of the Site where previous earthworks had taken place.	
2001 (1:10,000 scale)	The earthworks on site are no longer marked.	-
2021 (1:10,000 scale).	The Site remains unchanged.	The Pumping Station has been removed and the 'Dismantled Railway' is no longer marked.

3.2 AERIAL IMAGERY

A review of aerial imagery of the Site available via Google Earth Pro has been undertaken to provide any further information on the Site's history. Images of the Site date from 1940 to present day and confirm the use of the Site as agricultural land with very similar features to the historical maps including the arrangement of footpaths and field boundaries. Some minor earthworks appear to have taken place towards the centre of the Site in 2011 possibly involving the stripping and stockpiling of topsoil. Potentially contaminative uses identified at the Site include the use of the Site as arable land since the earliest available map records (1873) to present day (2021). This may have led to the shallow soils being impacted with herbicides and pesticides and residues of these contaminants may still be present on Site today.

An area of potentially infilled land may be present following the decommissioning of the earthworks (1974 – 1975) and excavations (1906) on Site. Infilled Made Ground can be a source of hazardous ground gas contamination and asbestos containing materials. Data from the Groundsure report indicates that the earthworks on the northern area of the Site may be an archaeological dig associated with an area of dispersed medieval settlement remains and a roman building.

The historical maps show typical expansion of residential developments to the west of the Site in the village of Blean with a railway line in use to the east that was later dismantled. Historical data (http://www.kentpast.co.uk/canterbury_and_whistable_railway.html) indicates the 'South Eastern Railway Whitstable Branch' line was closed on 1 December 1952.

A tank was identified adjacent to the western boundary of the Site (1906 - 1974). The tanks contents are unknown but potentially could have been used to contain hazardous chemicals such as fuel or agrochemicals.

Some areas of potentially infilled land may be present associated with the old clay pits (1873 – 1906). Data from the Groundsure report identifies the clay pits as the Tylerhill Clay Pits which were excavated for Clay and Shale. Infilled land can be a source of ground gas contamination that could potentially impact the Site.

3.3 HISTORICAL SITE OCCUPANTS AND OWNERSHIP

Data provided by the Client (Masterplan Supporting Documents Volume 2, page 156) indicates that the land was owned in the 19th Century by Eastbridge Hospital prior to being purchased by the UoK.

Further Client data indicates development first began on the University between 1963 and 1965.

3.4 PREVIOUS REPORTS

Several Masterplan supporting documents have been provided to WSP in regard to the wider Canterbury Development. These documents include information pertaining to Site B, and that data has been used to supplement this report.

4 ENVIRONMENTAL SETTING

4.1 GEOLOGY

Published BGS mapping indicates that the Site and surrounding area are underlain by the geological sequence summarised in **Table 4-1**.

Table 4-1 – Summary of Anticipated Geological Strata

Group	Unit	Description
Superficial Deposits	Head	Head Deposits comprise poorly sorted and poorly stratified, angular rock debris and / or clayey hillwash and soil creep. Can occur locally with lenses of silt, clay or peat and organic material.
Bedrock	London Clay Formation	The London Clay Formation comprises bioturbated bluish grey slightly sandy clays.

There is one relevant historical borehole log located 360 m east of the Site. This borehole was drilled to a maximum depth of 69 m below ground level (m bgl). The borehole record is summarised (as recorded) in **Table 4-2** below:

Table 4-2 – Summary of relevant Historical Boreholes Logs

Reference	End of hole	Distance and orientation from Site	Strata descriptions (depth to top in m bgl)
TR16SW7 (1990)	69.00 m bgl	360 m east	0.00 – **London Clay** comprising fissured brown clay. 36.00 – **London Clay** comprising thinly laminated dark grey clay with silty fine sand. 43.50 – **Old Haven Beds** comprising grey silty clay with black rounded flint pebbles. 50.50 – **Woolwich Beds** comprising green glauconitic very silty clayey fine to medium sand. 61.00 – **Thanet Beds** comprising greenish grey glauconitic clayey very silty fine sand with occasional shells.

The historical borehole log gives no indication as to the depth of the groundwater.

Copies of the historical borehole log is contained within **Appendix F**.

4.2 GROUND STABILITY HAZARDS

Information on potential ground hazards assessed by the BGS are summarised in **Table 4-3.**

Table 4-3 - Ground Stability Hazards on Site (Groundsure, 2021)

Feature	Hazard
Collapsible ground stability	Very low potential risk where no superficial deposits are present. A very low risk indicates it is unlikely for

Feature	Hazard
	deposits with potential to collapse when loaded and saturated to be present. Moderate risk where the Site is underlain by the Head Deposits. A moderate risk indicates there is a probable possibility for deposits with potential to collapse when loaded and saturated.
Compressible ground stability	Negligible risk of compressible deposits for the Site.
Ground Dissolution stability	Negligible risk for ground dissolution stability hazards to occur.
Landslide ground stability	Very low risk for landslide ground stability hazards across site. This means slope instability problems are not likely to occur.
Running sands ground stability	Negligible risk where no superficial deposits are present. Very low potential risk where the Site is underlain by Head Deposits. A very low risk indicates that running sand conditions are unlikely.
Shrinking or swelling clay	Moderate risk for shrink / swell clays across site. A moderate risk indicates ground conditions that are predominantly of high plasticity. Following this, risk consideration should be given for shrink / swell clays to affect receptors.

The Coal Authority data indicates that the Site is not located within a Coal Authority designated mining area.

Data from the Groundsure report indicates that there are no natural cavities in or around the Site.

The Groundsure data does identify a non-coal mining area associated with chalk 452 m south of the Site. This means small scale underground mining may have occurred, with potential mine adits, shafts and tunnels present.

4.3 HYDROLOGY

Data from the Groundsure report indicates several surface-water features within 250 m of the Site:

- Five inland rivers are located within the Site boundaries, two of which are listed as being underground;
- The on-Site inland rivers continue off Site to the north (continuing north), south-east (continuing east) and south-west (continuing west);
- A network of other inland rivers is located 122 to 163 north-east of the Site; and,
- A pond is located 7 to 13 m west of the Site.

The rivers onsite and within the surrounding land are part of a water body catchment known as Sarre Penn and the River Wantsum. They fall under the Stour management catchment and the Stour Marshes operational catchment.

No licensed surface water abstraction record has been reported within 1000 m of the Site.

The Groundsure report indicates that the Site is not at a risk of flooding from rivers and sea.

Localised surface water flooding has been identified on Site associated with the rivers that pass through the north, east and south of the Site. The highest risk recorded is a 1 in 30 year rainfall event with flood water reaching between 0.3m to 1.0 m above ground level.

4.4 HYDROGEOLOGY

The Head Deposits underlying the northern area of the Site are classified as a Secondary (A) Aquifer. Secondary A aquifers comprise permeable layers that can support local water supplies and may form an important source of base flow to rivers.

The Head Deposits underlying the southern area of the Site and the London Clay Formation are classified as unproductive strata, described as rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

No active licensed groundwater abstraction has been reported within 2 km of the Site. The Groundsure Data lists one historical groundwater abstraction point located 391 m south of the Site. The abstraction site was located within the grounds of the University of Kent and was used for general farming and domestic purposes.

Reference to the Flood Map for Planning webpage indicates that the Site is located entirely in Flood Zone 1 and thus has a low probability of flooding.

4.4.1 NITRATE VULNERABILITY ZONE

The Site is not located within a nitrate vulnerability zone.

4.4.2 SOURCE PROTECTION ZONES (SPZ)

The Site does not lie in or within 500 m of an SPZ.

4.5 DESIGNATED SITES AND SENSITIVE LAND USES

Information on potential ground hazards assessed by the Groundsure report are summarised in **Table 4-5.**

Table 4-5 – Designated Sites and Sensitive land uses (Groundsure, 2021)

Designation	On site	Within 500 m	Comments
Designated Ancient Woodland Sites	3	4	Three Ancient and semi-natural woodland on Site (unknown designation); Park wood 188 – 301 m south to south-east; Church / Bossenden Wood 190 m south-west; An Ancient and semi-natural woodland 369 m north-east (unknown designation); and, Daws Wood 382 - 466m north-east.
Sites of Special Scientific Interest (SSSI)	0	2	Church Woods, Blean 190 m south-west of the Site; and,

Designation	On site	Within 500 m	Comments
			West Blean and Thornden Woods 368 m north-east.
Special Area of Conservation (SAC)	0	1	Blean Complex 190 m south-west associated with Beech Forests on acid soils, Oak-hornbeam forests and great crested newts within broad-leaved deciduous woodlands.
National Nature Reserve (NNR)	0	1	Blean Woods 190 m south-west
Local Nature Reserves	0	1	Tyler Hill Meadow 165 m north-east

The Site does not lie within 500 m of an Area of Outstanding National Beauty (AONB).

4.6 RADON

According to Public Health England, the Site is not at risk from Radon (less than 1 % of homes are at risk). No radon protection measures are deemed necessary for new dwellings or extensions.

4.7 PRELIMINARY HYDROGEOLOGICAL MODEL

Small localised areas of Made Ground are anticipated to be on Site, associated with the presence of the earthworks and excavation. Groundwater may be present within the Made Ground as perched water, associated with lenses of permeable material which are recharged by surface water infiltration.

Head Deposits are mapped across the majority of the topographically higher areas of the Site. The Head Deposits in the southern area of the Site are anticipated to consist of clay and silt and have been classified as unproductive strata. The soils are listed as having low to very low permeability and thus low vulnerability to groundwater pollution.

The Head Deposits in the northern area of the Site are anticipated to consist of gravel, sand, silt and clay. These soils are able to support intergranular flow and are classified as a Secondary A Aquifer with a low to very high permeability and therefore could have high vulnerability to groundwater pollution.

The London Clay Formation is mapped across the Site and is classed as unproductive strata with low to very low permeability and thus low vulnerability to groundwater pollution.

Therefore, a localised groundwater table may be found where more granular Head Deposits are present and possibly where the inland rivers / field drains are located on Site.

5 REGULATORY INFORMATION AND CONSULTATION

The Groundsure report includes information and data collected from several organisations including the Environment Agency (EA), the Local Authority, the British Geological Survey (BGS, Department of Environment, Food and Rural Affairs (DEFRA) and Health & Safety Executive (HSE).

Information considered pertinent to the Site has been summarised in **Table 5-1** from the Groundsure Report. The full report is included in **Appendix E**.

Table 5-1 - Environmental Database Review Summary

Data Type	On Site	Within 500 m	Comments
Past Land Uses			
Historical Industrial Land Uses	15	82	The following land uses are listed as having been historically located on the Site: • Unspecified ground workings 1906 – 1974; • Unspecified pits – 1938 - 1957; • Unspecified tank 1906 - 1938; • Graveyard – 1873 The closest off-site land uses include unspecified workings, corn windmills, unspecified tank, smithy, old clay pit, pumping station, unspecified heap and cuttings.
Historical Tanks	0	12	Closest recorded historical tanks: • Unspecified tank onsite (1907); • Unspecified tank 17m north-west (1971); • Unspecified tank 22 m north-west (1907 - 1938); • Unspecified tank 362 m south (1973); • Unspecified tank 492 m south (1971 – 1996).
Historic Energy Features	0	10	Closest recorded features: • Electricity substation 214 m south-east (1994); • Electricity substation 287 m west (1971 - 1993); • Electricity substation 394 m south (1992); • Electricity substation 404 m east (1971); • Electricity substation 408 m east (1993); • Electricity substation 432 m south-east (1992 – 1996).
Waste and Landfill			

Data Type	On Site	Within 500 m	Comments
Waste exemptions	0	20	The closest record to the Site is a waste exemption for the storage of agricultural waste only at Hothe Court Farm, located 26 m north-east of the Site. Other listed waste exemptions are located from 254 m away from the Site and pertain to the following: • Disposing of waste (on a farm); • Storage of waste (on a farm); • Treating waste (on a farm) • Using waste (on a farm);
Current Industrial Land Use			
Recent industrial land uses	0	6	A furniture designer's is located 31 m north of the Site. The other listed uses are located over 100 m from the site and include a pumping station, vehicle repair, testing and servicing garages, an unspecified works and an electricity substation.
Current or recent petrol stations	0	1	No active fuel station is reported within 500m of the Site. An obsolete station is located 392 m west of the Site.
Railway Infrastructure and Projects			
Historical railway and tunnel features	0	4	The closest historical record pertains to railway sidings located 237 m east of the Site from maps dated from 1874 to 1938. These are not considered to be significant given the distance to the site.
Historical railways	0	2	Two former abandoned railway lines are located 172 m and 208 m from the Site respectively.

Mineral working sites were identified in the review of the historical maps as the Tylerhill Clay pits (98 to 223 m east).

5.1 LOCAL AUTHORITY

Canterbury City Council was contacted by WSP via email on 16 April 2021 to provide a land use enquiry. A response was received on 20 April 2021 indicating that Canterbury City Council holds no information in regard to contaminated land, or potential contaminated land, on the Site or within 250 m of the Site.

5.2 ENVIRONMENT AGENCY

WSP requested information from the Environment Agency on the 13 April 2021 to obtain any record that they may hold considered pertinent to the Site. Their response was received on the 3 June 2021. The Environment Agency has no record of any sites being determined as Contaminated Land under S78 of the Environmental protection act in the Site's vicinity and is not dealing with any designated

Special Sites under that Regime at this location. No pertinent data was provided for the Site. A copy of the Agency's response is presented in **Appendix G**.

5.3 PLANNING HISTORY

Canterbury City Council's public planning portal was accessed on 15 April 2021. One planning record is associated with the central footpath running north-south through the Site. The application (reference: CA//98/00925) pertains to the construction of a cycle route. The application was submitted September 1998 and granted January 1999.

This planning history is unlikely to have caused any significant contamination to the whole Site. Any impact by construction work will be limited to the footprint around the cycle path.

5.4 UNEXPLODED ORDNANCE

The Zetica Bomb Risk Maps (available from the Zetica Limited website) have been reviewed to provide a preliminary assessment of potential Unexploded Ordnance (UXO) risks. The maps indicated that the Site is within a '**Moderate'** risk area from UXO.

It is recommended that a detailed UXO Threat Assessment Report is undertaken for sites in a moderate UXB risk area.

6 RISK ASSESSMENT

6.1 PRELIMINARY CONCEPTUAL SITE MODEL

The Preliminary Conceptual Site Model (CSM) is based upon the environmental conditions of the Site as described in previous sections. As the proposed development for the Site is unknown but understood to likely be residential the CSM has been developed following the most conservative criteria available, for residential development with private gardens.

The assessment follows a risk-based approach; with the potential environmental risk assessed qualitatively using the 'source-pathway-receptor' contaminant linkage concept introduced in the guidance documents (principally the LCRM 2020) on the practical implementation of the Environmental Protection Act 1990.

Environmental risk can be defined as the combination of the consequence of a harmful effect and the probability of its occurrence. The existence of a contaminant linkage is primarily dependant on site usage and environmental conditions. Any risks identified during a preliminary assessment, such as the ones presented in this document, are perceived risks based on the information reviewed. The risk categories presented follow guidance presented in CIRIA Publication C552, Contaminated Land Risk Assessment – A Guide to Good Practice. CIRIA defines four levels of probability and four levels of severity with relation to contaminated land, as presented in **Appendix C.**

The environmental risk assessment has been carried out by identifying and evaluating the significance of the following:

- **Potential sources of contamination:** these include any actual or potentially contaminating materials and activities, located either on or in the vicinity of the Site;
- **Potential receptors of contamination:** these can include Site users, adjacent users, controlled waters; and,
- **Potential pathways for contamination migration**: these are the routes or mechanisms by which contaminants may migrate from the source to the receptor.

6.2 POTENTIAL SOURCES OF CONTAMINATION

Table 6-1 provides a summary of the potential sources of contamination that may be present at the Site, as well as the likely nature of such sources.

Table 6-1 – Potential Sources of Contamination

Potential Source	Potential Contaminants of Concern	Likely/Anticipated Distribution
ON-SITE		
Use as arable land (1873 – present day)	▪ Agrochemicals containing heavy metals; and, ▪ Fertilisers, herbicides and pesticides.	Agrochemicals – site wide
Unspecified ground workings (1906 – 1974); Unspecified pits – (1938 – 1957);	Potential for Made Ground resulting in: ▪ Asbestos containing materials; ▪ Heavy metals; ▪ Hazardous ground gas generation.	Localised to the northern earthworks and south-eastern excavations.
Unspecified tank 1906 – 1938	Potential for hazardous contaminants associated with the contents of the tank: ▪ Agrochemicals ▪ Petroleum Hydrocarbons	Localised to the location of the former tank.
Cycle Track construction (1999)	Potential for Made Ground resulting in: ▪ Asbestos containing materials; and, ▪ Heavy metals.	Localised to the footprint around the cycle track.
OFF-SITE		
Graveyard – 1873	▪ Pathogens.	Localised to the northern Site boundary.
Nearby infilled land (Tylerhill clay pits, 1873 - 1906)	▪ Ground gases (carbon dioxide and methane); ▪ Heavy metals; ▪ Total Petroleum Hydrocarbons (TPH); ▪ Polycyclic Aromatic Hydrocarbons (PAH); and, ▪ ACMs.	Nearest area of infilled land located adjacent to the north-west of the Site (former old clay pit).
Tank adjacent to the western boundary (1906 - 1974)	▪ Agrochemical containing heavy metals; ▪ Fertilisers, herbicides and pesticides; ▪ Total Petroleum Hydrocarbons (TPH); and, ▪ Polycyclic Aromatic Hydrocarbons (PAH).	Localised to the area around the tank, therefore, may impact the Site boundary adjacent to the tank.

6.3 POTENTIAL RECEPTORS

In the context of the potential residential development of the Site, the following are considered to be potential receptors:

Human Health

- Current and future Site users;
- Construction and maintenance workers; and,
- Third party neighbours.

Controlled Waters

- Groundwater within the Secondary A Aquifers (Head Deposits);
- The inland rivers identified on Site and the surrounding area; and,
- The pond located 7 to 13 m west of Site.

Services and Building Fabric

- Future below ground services (e.g. potable water supply pipes); and,
- Future building structures.

Flora

- Plant life in future landscaped areas.

6.4 PRELIMINARY CONCEPTUAL SITE MODEL (CSM)

Table 6-2 provides an evaluation of the potential contaminant linkages that are considered to be plausible on the basis of the information currently available for the site and the proposed end use.

Table 6-2 – Plausible Contaminant Linkages

Potential Contaminant Sources	Pathways	Receptor	Comments / Risk
ON-SITE			
▪ Made Ground associated with earthworks, excavated land and cycle track. ▪ Agricultural Practices	▪ Dermal contact; ▪ Ingestion of impacted soil particles on Site, and windblown to adjacent land-uses; ▪ Inhalation of dust and asbestos fibres, and windblown to adjacent land-uses; and, ▪ Migration of volatile vapours	**Human Health** ▪ Future Site users and visitors; ▪ Construction workers and future maintenance workers; and, ▪ Third party neighbours.	The Site has had limited historical development, therefore there will be limited Made Ground deposits and assumed less impacted soils. Exposure to potential contaminants will be restricted in areas where hardstanding is present in the future development. The greatest risk of exposure to future site users is where private gardens and soft landscaping will be located assuming a residential end use.

Potential Contaminant Sources	Pathways	Receptor	Comments / Risk
	into buildings or below ground structures.		Site wide contamination would be associated with historical use of agrochemicals. Therefore, the risk to future site users and visitors is thought to be **Low to Moderate.** Construction workers and future maintenance workers may encounter asbestos or contaminated soils / groundwater during ground works (e.g. dermal exposure or inhalation of particles, vapours or ground gases), therefore the risk to construction and future maintenance workers is considered to be **Low-Moderate**. However, these risks should be managed with the adherence to Health and Safety protocols during the works. There is a risk that windblown impacted soil, dust and asbestos fibres could migrate off-Site causing a risk to third party neighbours. However, the surrounding and is generally agricultural land with low density of development and the risk to these areas is considered to be **Low**. A Construction Environmental Management Plan (CEMP) would mitigate against the creation of potential pollution pathways during the project's construction such as mud being transported on to local roads from construction plant / vehicles. Limited potential sources of ground gas have been identified. Ground gas may migrate vertically and accumulate in enclosed areas; therefore, posing a risk of asphyxiation or explosion. However, these sources are localised to small areas of Site. Therefore, the risk from on-Site sources is thought to be **Low**.

Potential Contaminant Sources	Pathways	Receptor	Comments / Risk
	▪ Vertical and lateral leaching from impacted soil; and, ▪ Lateral migration within groundwater.	**Controlled waters** Secondary A Aquifer (northern Head Deposits) Inland rivers (on-site)	Site-wide agrochemical use may have occurred leaving residues within the near surface soils. The risk to the underlying Secondary A Aquifer and local surface water bodies is considered to be **Low**. A Construction Environmental Management Plan (CEMP) would mitigate against the creation of potential pollution pathways during the project's construction such as surface water run-off.
OFF-SITE			
▪ Graveyard	▪ Migration of ground gas ▪ Release of pathogens	**Human Health** Future Site users and visitors; and, Construction workers and future maintenance workers.	A localised area of the Site at the northern boundary could have been impacted by the historical graveyard associated with The Church of Saints Cosmus and Damian. It is understood that an archaeological survey will likely be required to assess any archaeological remains at the Site prior to any construction related activities.
▪ Areas of infilled land (Tylerhill clay pits)	▪ Migration of ground gas; and, ▪ Lateral migration of contaminated groundwater.	**Human Health** Future Site users and visitors; and, Construction workers and future maintenance workers.	Ground gas generated by Made Ground in areas surrounding the Site may migrate laterally within the subsurface and accumulate in enclosed areas; therefore, posing a risk of explosion or asphyxiation. However, due to the distance from these sources, the risk is considered to be **Low.**
Tank adjacent to the western boundary of Site (1906 – 1957)	▪ Lateral migration of contaminants within groundwater.	**Controlled Waters** Secondary A Aquifer (Head Deposits) Inland rivers and adjacent pond 13 m west (off-site)	Lateral migration of contaminants from off-Site to on-site has the potential to occur via the northern superficial Secondary A aquifer. Contaminants leaking from the historical tank to the south-west (presuming the tanks held hazardous liquids) has a very limited potential to laterally migrate onto Site due to the likely

Potential Contaminant Sources	Pathways	Receptor	Comments / Risk
			impermeable nature of the sub-surface. The volume of material within the tanks will have been limited and the tank was removed from the Site over 50 years ago. Therefore, the risk is considered to be **Low.**

7 CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the Site walkover and the desk-based assessment, WSP makes the following conclusions and recommendations in the context of a proposed residential development including private gardens to provide the most conservative assessment.

7.1 CONCLUSIONS

The majority of Site is currently occupied by open arable fields with an area of woodland. Several inland rivers run across the Site.

Historical maps indicate that the Site has largely remained undeveloped but was used for agricultural purposes since at least 1873 until present day. Earthworks were identified at and within the northern Site boundary between (1974 – 1975) potentially associated with an archaeological dig. Another area of excavation was identified on Site between 1906 – 1974 located towards the south-eastern corner. An unspecified tank was located at the Site's central western boundary in the 1890's.

A cycle track was constructed along the footpath that runs north to south through the Site in 1999.

Blean village to the west underwent typical residential development in the later part of the 20th Century. The Tylerhill Clay Pits were excavated (1876 – 1896) to the north-east of the Site and were subsequently infilled (1906).

The superficial geology consists of Head Deposits at the north and south of the Site on the topographical high points. Towards the north, the Head Deposits are identified as a Secondary A Aquifer whilst the Head Deposits at the south are identified as unproductive strata. The Site is underlain by a bedrock of the London Clay Formation which is also classified as unproductive strata.

The Secondary A Aquifer has a medium to high vulnerability to groundwater pollution depending upon the leachability of the soil. Therefore, this water body is considered to be of **medium** sensitivity and will require protection from construction activity during the project's development.

If contamination is located within the soils on site, mitigation measures will need to be undertaken to inhibit migration pathways being formed into the Secondary A aquifer via piling into the ground, placement of foundations etc.

In addition, surface water runoff generated through construction activities would need to be controlled to stop chemical and physical contaminants such as silt, cement dust from migrating into surface water bodies and/or entering existing waterways and site drainage. It would be advisable to carry out all construction work with due regard to the potential for environmental impacts during construction. Any fuels and chemicals used during construction should be stored in an appropriate manner to prevent leaks and / or spillages from impacting the local environment.

The release of fugitive dust from the site during construction works will need to be appropriately managed to limit its impact on neighbouring land. It is recommended that stockpiles of spoil are kept damp and/or sheeted during dry weather, a temporary wind-breaker can be employed to control the loss of fugitive dust from site, all haulage lorries should be sheeted prior to leaving the site and a wheel wash should be available on site to reduce the tracking of mud on to local roads by plant and haulage vehicles leaving site. This will help to reduce the impact of construction works on local residents and people working within the site's vicinity.

The desk-based search has identified limited sources (earthworks and excavation) of ground gas that could potentially impact the site pre or post site redevelopment. These potential sources are

considered to be localised and the land has since been used for agricultural purposes. Therefore, the risk form ground gas is considered to be **Low**.

The risk from asbestos is considered to be **Low** however unknown contamination could be present in near surface soils from past historical activities.

Future residents of the site are considered to be at the greatest risk of coming into direct contact with potential ground contamination. The greatest risk of exposure is likely to occur within private gardens, due to gardening activities and especially where fruit and/or vegetables are to be grown for personal consumption. The most sensitive receptor is a young child who is at a greater risk of ingesting contaminated soil and/or contaminated soil getting on to their skin through playing in the garden. Contaminated soil can be tracked into the house via muddy footwear from the garden, thus creating a potential inhalation risk of contaminated soil/dust. The risk is considered to be **Low.**

Construction workers and future maintenance workers may encounter asbestos or contaminated soils/groundwater during ground works (e.g. dermal exposure or inhalation of particles, vapours or ground gases), therefore the risk to construction and future maintenance workers is considered to be **Low.** However, these risks should be managed with the adherence to Health and Safety protocols during the works.

Contaminants within the soil that remain as areas of soft landscaping post redevelopment could theoretically present a long-term water pollution risk to groundwater and surface waters from surface run-off. New service corridors and drainage systems could create preferential migration pathways for contaminants.

Depending upon if the underlying soils have been affected by contamination, sub-surface construction materials could potentially be at risk from aggressive chemical attack. The London Clay Formation can be naturally high in sulphur / sulphites leading to aggressive chemical attack of concrete structures. Sampling and analysis of soils for an aggressive ground suite will indicate if the underlying soils are likely to pose aggressive ground conditions for concrete based structures. Contamination can permeate plastic and consequently taint a drinking water supply. Any new services to be laid within parts of the site where contamination of the soils is observed will need to be considered further to protect future site users and maintenance workers.

There is a risk that windblown impacted soil, dust and asbestos fibres could migrate off-Site causing a risk to third party neighbours. However, the surrounding land is not heavily developed and with the adherence to a Construction Environmental Management Plan (CEMP), the risk to these areas is considered to be **Low**.

The Site is situated within an area at **moderate** risk from UXO.

7.2 RECOMMENDATIONS

Should the Site be re-developed then it is recommended an intrusive ground investigation is undertaken to assess the underlying ground conditions. The ground investigation should be compliant with current UK guidance e.g. BS10175 and include a Generic Quantitative Risk Assessment (GQRA) to allow the assessment of identified plausible contaminant linkages and if remedial measures may be required. Geotechnical testing could also be undertaken to inform foundation design for potential future redevelopment. It is recommended that the ground investigation is designed based on the following technical objectives:

- Characterisation of the ground and groundwater conditions underlying the Site;

- Soil and groundwater sampling for contamination and geotechnical testing;
- Groundwater and ground gas monitoring;
- Provision of a GQRA to assess risks to human health and controlled waters;
- An assessment of potential foundation design and geotechnical constraints.

A Detailed UXO Threat Assessment report will be required prior to any intrusive ground works being undertaken to confirm if any UXO mitigation is required during the ground investigation.

Appendix A

FIGURES & DRAWINGS

Confidential

DO NOT SCALE

Information Classification:

INTERNAL

Information that is only intended for internal distribution among WSP employees, independent consultants, contractors, sub-contractors, clients and authorised third parties.

Legend :

Title : 70080896-008-B

Author : Callum Harris

Scale : 1:18,056

Layout : WSP A3 Landscape

Current Time : 13/04/2021 15:46

© WSP UK Ltd

Appendix B

LIMITATIONS

Confidential

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

GENERAL

1. WSP UK Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

2. Unless explicitly agreed otherwise, in writing, this report has been prepared under WSP UK Limited standard Terms and Conditions as included within our proposal to the Client.

3. Project specific appointment documents may be agreed at our discretion and a charge may be levied for both the time to review and finalise appointments documents and also for associated changes to the appointment terms. WSP UK Limited reserves the right to amend the fee should any changes to the appointment terms create an increase risk to WSP UK Limited.

4. The report needs to be considered in the light of the WSP UK Limited proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEO ENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: *This section covers reports with the following titles or combination of titles: phase 1; desk top study; geo environmental assessment; development appraisal; preliminary environmental risk assessment; constraints report; due diligence report; geotechnical development review; environmental statement; environmental chapter; project scope summary report (PSSR), program environmental impact report (PEIR), geotechnical development risk register; and, baseline environmental assessment.*

5. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. WSP UK Limited cannot be held responsible for any disclosures that are provided post production of our report and will not automatically update our report.

6. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP UK Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.

7. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.

8. WSP UK Limited does not warrant work / data undertaken / provided by others.

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

INTRUSIVE INVESTIGATION REPORTS

Coverage: *The following report titles (or combination) may cover this category of work: geo environmental site investigation; geotechnical assessment; GIR (Ground Investigation reports); preliminary environmental and geotechnical risk assessment; and, geotechnical risk register.*

9. The investigation has been undertaken to provide information concerning either:

- **i.** The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
- **ii.** Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.

10. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.

11. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.

12. For geotechnical investigations the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.

13. The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.

14. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

15. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, WSP UK Limited has used reasonable skill and care to extrapolate conditions between these points based upon assumptions to develop our interpretation and conclusions. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation. Conditions can change between investigation points and these interpretations should be considered indicative.

16. The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective

effects of any future changes or amendments to these values. Specific assumptions associated with the WSP UK Limited risk assessment process have been outlined within the body or associated appendix of the report.

17. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.

18. Where soil contamination concentrations recorded as part of this investigation are used for commentary on potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed.

19. The results of the asbestos testing are factually reported and interpretation given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and / or trace loose asbestos fibres within the soil matrix at the site.

20. If costs have been included in relation to additional site works, and / or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

21. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.

22. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIAL STRATEGY REPORTS

23. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected on the basis of the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

24. The outputs of the Detailed Quantitative Risk Assessments are based upon WSP UK Limited manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.

25. Prior to adoption on site they will need discussing and agreeing with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of WSP UK Limited. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

GEOTECHNICAL DESIGN REPORT (GDR)

26. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS)

27. These reports are factual in nature and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of an earthworks or remedial works.

28. The data is presented and will be compared with assessment criteria.

Appendix C

CIRIA RISK DEFINITIONS

Confidential

CIRIA RISK DEFINITIONS

Table A1 - Classifications of Probability

Classification	Definition
High Likelihood	There is a pollution linkage / identified geotechnical hazard and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term

Table A2 - Classifications of Consequence

Classification	Definition
Severe	Short-term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resource. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem.
Medium	Chronic damage to Human Health ("significant harm" as defined in DETR, 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem, or organism forming part of such ecosystem.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services (significant harm as defined m the Draft Circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings/structures/services or the environment.
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve, Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc.). Easily repairable effects of damage to buildings, structures and services

The risk categories presented in this report, taking into account both probability and severity, are based on the matrix presented in **Table A3** below, following CIRIA C552.

Table A3 - Adopted Risk Categories / Comparison of Consequence Against Probability

Probability	Consequence			
	Severe	**Medium**	**Mild**	**Minor**
High Likelihood	Very High Risk	High Risk	Moderate Risk	Low to Moderate Risk
Likely	High Risk	Moderate Risk	Low to Moderate Risk	Low Risk
Low Likelihood	Moderate Risk	Low to Moderate Risk	Low Risk	Very Low Risk
Unlikely	Low to Moderate Risk	Low Risk	Very Low Risk	Very Low Risk

Appendix D

SITE PHOTOGRAPHS

Confidential

Photographic Report

Photo 1: Site B

Photo 2: Eastern boundary of Site B

Photographic Report

Photo 3: Tree nursery within Site B

Photo 4: Northern boundary of Site B

Appendix E

GROUNDSURE REPORT / HISTORICAL MAPS

Confidential

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo
Insight

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Order Details

Date: 01/04/2021

Your ref: Uni_of_Kent_B

Our Ref: WSP-7710143

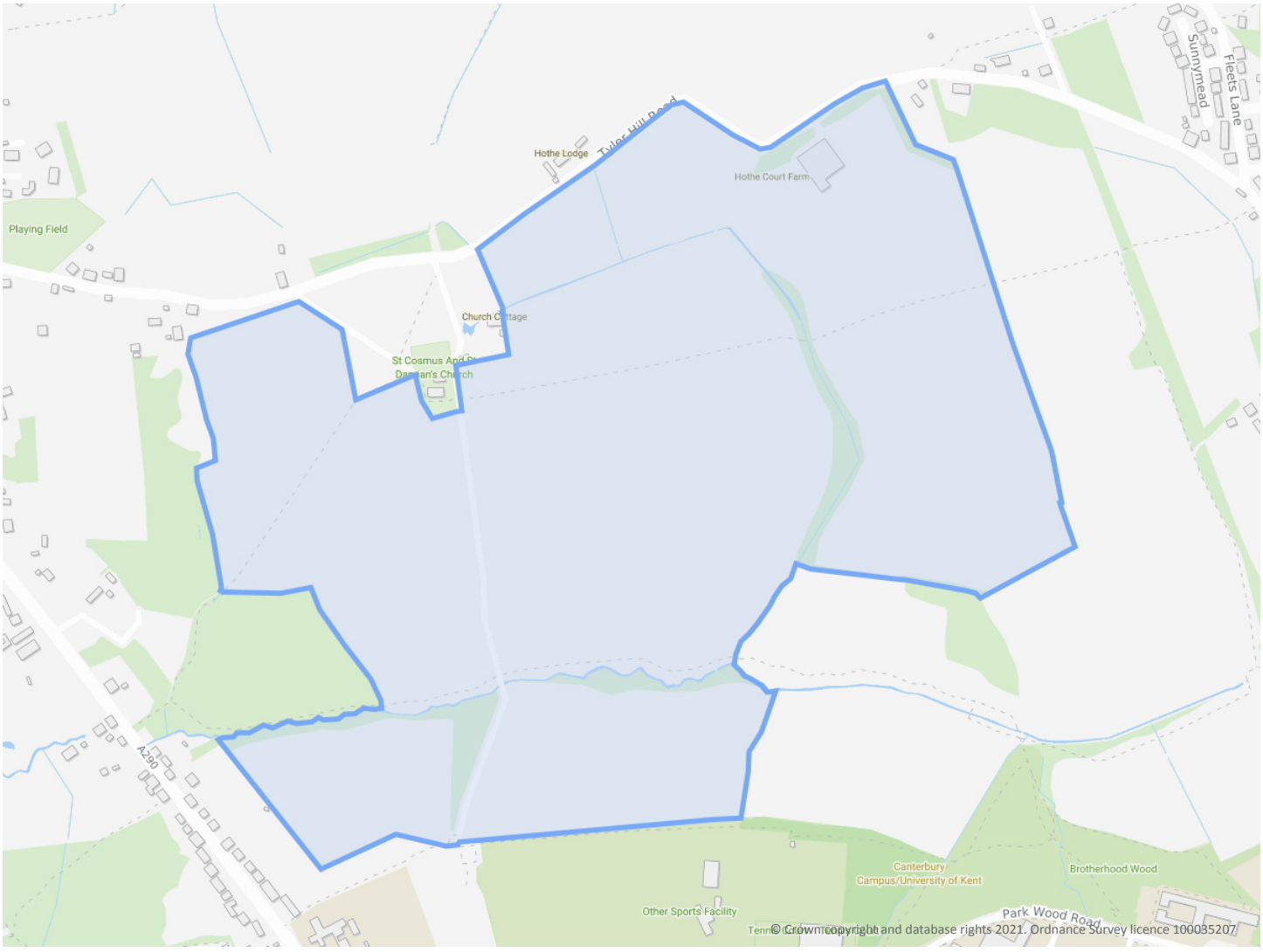
Client: WSP

Site Details

Location: 613108 160559

Area: 63.39 ha

Authority: Canterbury City Council



Summary of findings p. 2

Aerial image p. 8

OS MasterMap site plan N/A: >10ha

groundsure.com/insightuserguide

Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	Historical industrial land uses	9	15	23	15	-
16	1.2	Historical tanks	1	2	0	3	-
16	1.3	Historical energy features	0	0	1	6	-
17	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	0	-
18	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
19	2.1	Historical industrial land uses	15	17	29	21	-
23	2.2	Historical tanks	1	3	0	8	-
23	2.3	Historical energy features	0	0	1	9	-
24	2.4	Historical petrol stations	0	0	0	0	-
24	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
25	3.1	Active or recent landfill	0	0	0	0	-
25	3.2	Historical landfill (BGS records)	0	0	0	0	-
26	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
26	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
26	3.5	Historical waste sites	0	0	0	0	-
26	3.6	Licensed waste sites	0	0	0	0	-
26	3.7	Waste exemptions	0	1	0	19	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
29	4.1	Recent industrial land uses	0	1	5	-	-
30	4.2	Current or recent petrol stations	0	0	0	1	-
30	4.3	Electricity cables	0	0	0	0	-
30	4.4	Gas pipelines	0	0	0	0	-
31	4.5	Sites determined as Contaminated Land	0	0	0	0	-

31	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
31	4.7	Regulated explosive sites	0	0	0	0	-
31	4.8	Hazardous substance storage/usage	0	0	0	0	-
31	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
32	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
32	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
32	4.12	Radioactive Substance Authorisations	0	0	0	0	-
32	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
32	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
33	4.15	Pollutant release to public sewer	0	0	0	0	-
33	4.16	List 1 Dangerous Substances	0	0	0	0	-
33	4.17	List 2 Dangerous Substances	0	0	0	0	-
33	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
33	4.19	Pollution inventory substances	0	0	0	0	-
34	4.20	Pollution inventory waste transfers	0	0	0	0	-
34	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
35	**5.1**	**Superficial aquifer**	Identified (within 500m)				
37	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
38	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
42	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
42	5.5	Groundwater vulnerability- local information	None (within 0m)				
43	**5.6**	**Groundwater abstractions**	0	0	0	1	0
44	5.7	Surface water abstractions	0	0	0	0	0
44	5.8	Potable abstractions	0	0	0	0	0
44	5.9	Source Protection Zones	0	0	0	0	-
45	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
46	**6.1**	**Water Network (OS MasterMap)**	17	13	30	-	-

51	6.2	Surface water features	1	4	15	-	-
51	6.3	WFD Surface water body catchments	1	-	-	-	-
52	6.4	WFD Surface water bodies	0	0	0	-	-
52	6.5	WFD Groundwater bodies	0	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
53	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
53	7.2	Historical Flood Events	0	0	0	-	-
53	7.3	Flood Defences	0	0	0	-	-
53	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
54	7.5	Flood Storage Areas	0	0	0	-	-
55	7.6	Flood Zone 2	None (within 50m)				
55	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
56	8.1	Surface water flooding	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
58	9.1	Groundwater flooding	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
59	10.1	Sites of Special Scientific Interest (SSSI)	0	0	1	1	6
60	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
60	10.3	Special Areas of Conservation (SAC)	0	0	1	0	0
61	10.4	Special Protection Areas (SPA)	0	0	0	0	0
61	10.5	National Nature Reserves (NNR)	0	0	1	0	1
61	10.6	Local Nature Reserves (LNR)	0	0	1	0	0
62	10.7	Designated Ancient Woodland	3	0	3	10	55
64	10.8	Biosphere Reserves	0	0	0	0	0
65	10.9	Forest Parks	0	0	0	0	0
65	10.10	Marine Conservation Zones	0	0	0	0	0
65	10.11	Green Belt	0	0	0	0	0
65	10.12	Proposed Ramsar sites	0	0	0	0	0

65	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
66	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
66	10.15	Nitrate Sensitive Areas	0	0	0	0	0
66	**10.16**	**Nitrate Vulnerable Zones**	0	0	0	1	1
67	**10.17**	**SSSI Impact Risk Zones**	4	-	-	-	-
70	**10.18**	**SSSI Units**	0	0	1	3	22
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
81	11.1	World Heritage Sites	0	0	0	-	-
82	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
82	11.3	National Parks	0	0	0	-	-
82	**11.4**	**Listed Buildings**	0	2	0	-	-
83	**11.5**	**Conservation Areas**	1	0	4	-	-
83	**11.6**	**Scheduled Ancient Monuments**	1	0	0	-	-
84	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
85	**12.1**	**Agricultural Land Classification**	Non Agricultural (within 250m)				
86	**12.2**	**Open Access Land**	0	1	5	-	-
87	**12.3**	**Tree Felling Licences**	0	0	2	-	-
87	**12.4**	**Environmental Stewardship Schemes**	0	0	4	-	-
87	**12.5**	**Countryside Stewardship Schemes**	0	0	1	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
88	**13.1**	**Priority Habitat Inventory**	5	3	25	-	-
90	13.2	Habitat Networks	0	0	0	-	-
90	13.3	Open Mosaic Habitat	0	0	0	-	-
90	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
91	**14.1**	**10k Availability**	Identified (within 500m)				
92	14.2	Artificial and made ground (10k)	0	0	0	0	-
93	14.3	Superficial geology (10k)	0	0	0	0	-

93	14.4	Landslip (10k)	0	0	0	0	-
94	14.5	Bedrock geology (10k)	0	0	0	0	-
94	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
95	**15.1**	**50k Availability**	Identified (within 500m)				
96	15.2	Artificial and made ground (50k)	0	0	0	0	-
96	15.3	Artificial ground permeability (50k)	0	0	-	-	-
97	**15.4**	**Superficial geology (50k)**	2	2	2	3	-
98	**15.5**	**Superficial permeability (50k)**	Identified (within 50m)				
98	15.6	Landslip (50k)	0	0	0	0	-
99	15.7	Landslip permeability (50k)	None (within 50m)				
100	**15.8**	**Bedrock geology (50k)**	2	0	0	0	-
101	**15.9**	**Bedrock permeability (50k)**	Identified (within 50m)				
101	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
102	**16.1**	**BGS Boreholes**	0	0	1	-	-
Page	Section	Natural ground subsidence					
103	**17.1**	**Shrink swell clays**	Moderate (within 50m)				
104	**17.2**	**Running sands**	Very low (within 50m)				
106	**17.3**	**Compressible deposits**	Negligible (within 50m)				
107	**17.4**	**Collapsible deposits**	Moderate (within 50m)				
108	**17.5**	**Landslides**	Very low (within 50m)				
109	**17.6**	**Ground dissolution of soluble rocks**	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
111	18.1	Natural cavities	0	0	0	0	-
112	**18.2**	**BritPits**	0	0	2	0	-
112	**18.3**	**Surface ground workings**	11	3	21	-	-
114	**18.4**	**Underground workings**	0	0	0	6	2
114	18.5	Historical Mineral Planning Areas	0	0	0	0	-

115	**18.6**	**Non-coal mining**	0	0	0	1	1
115	18.7	Mining cavities	0	0	0	0	0
115	18.8	JPB mining areas	None (within 0m)				
116	18.9	Coal mining	None (within 0m)				
116	18.10	Brine areas	None (within 0m)				
116	18.11	Gypsum areas	None (within 0m)				
116	18.12	Tin mining	None (within 0m)				
116	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
117	**19.1**	**Radon**	Less than 1% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
118	**20.1**	**BGS Estimated Background Soil Chemistry**	33	11	-	-	-
120	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
121	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
122	21.1	Underground railways (London)	0	0	0	-	-
122	21.2	Underground railways (Non-London)	0	0	0	-	-
123	21.3	Railway tunnels	0	0	0	-	-
123	**21.4**	**Historical railway and tunnel features**	0	0	4	-	-
123	21.5	Royal Mail tunnels	0	0	0	-	-
124	**21.6**	**Historical railways**	0	0	2	-	-
124	21.7	Railways	0	0	0	-	-
124	21.8	Crossrail 1	0	0	0	0	-
124	21.9	Crossrail 2	0	0	0	0	-
125	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 21/10/2018

Site Area: 63.39ha

Recent site history - 2015 aerial photograph

Capture Date: 14/04/2015

Site Area: 63.39ha

Recent site history - 2012 aerial photograph

Capture Date: 25/05/2012

Site Area: 63.39ha

Recent site history - 2008 aerial photograph

Capture Date: 20/09/2008

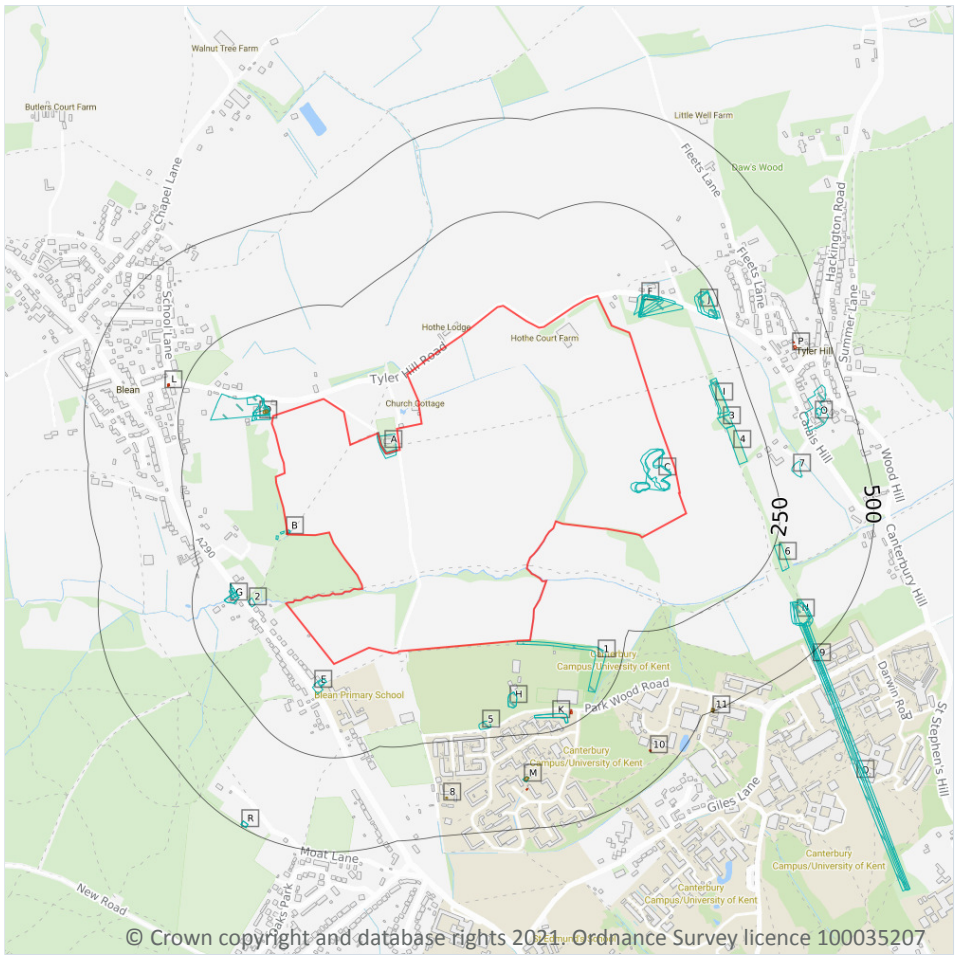
Site Area: 63.39ha

Recent site history - 1999 aerial photograph

Capture Date: 28/08/1999

Site Area: 63.39ha

1 Past land use



1.1 Historical industrial land uses

Records within 500m	62

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Grave Yard**	**1873**	**2346604**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Unspecified Ground Workings**	**1906**	**2357475**
B	**On site**	**Unspecified Tank**	**1906 - 1938**	**2353363**
B	**On site**	**Tank**	**1906**	**2364503**
C	**On site**	**Unspecified Pit**	**1947**	**2354199**
C	**On site**	**Unspecified Pit**	**1906 - 1938**	**2355681**
C	**On site**	**Unspecified Pits**	**1957 - 1974**	**2358730**
C	**On site**	**Unspecified Pit**	**1906 - 1938**	**2358900**
C	**On site**	**Unspecified Pit**	**1947**	**2362676**
1	2m S	Unspecified Ground Workings	1974	2347001
D	6m W	Corn Windmills	1873	2349438
B	8m W	Unspecified Tank	1947	2348013
D	10m NW	Windmill	1906	2355825
D	10m W	Windmill	1906	2364019
D	12m W	Windmill	1938 - 1947	2361671
D	14m W	Unspecified Tank	1873	2348016
D	20m NW	Windmills	1896	2348546
B	24m W	Unspecified Tank	1957	2348014
D	42m W	Unspecified Tank	1873	2348015
D	45m W	Windmills	1896	2348544
E	46m SW	Smithy	1873	2360293
E	48m SW	Smithy	1896	2352387
F	49m NE	Unspecified Ground Workings	1957	2346997
F	49m N	Unspecified Pit	1938	2360176
F	51m NE	Unspecified Pit	1873	2362664
F	51m NE	Unspecified Pit	1947	2365450
F	56m NE	Old Clay Pit	1896	2348727
F	56m NE	Unspecified Pit	1906	2360519
2	82m W	Pumping Station	1974	2350710

ID	Location	Land use	Dates present	Group ID
G	126m W	Smithy	1906	2354960
G	127m W	Smithy	1947	2364586
G	130m W	Smithy	1906 - 1938	2356135
G	132m W	Smithy	1896	2361141
H	135m S	Unspecified Heap	1973	2352003
H	135m S	Unspecified Heap	1983 - 1990	2361424
G	144m W	Smithy	1957	2361020
3	151m E	Cuttings	1896	2361270
I	156m E	Cuttings	1974	2359269
I	157m E	Cuttings	1896	2361746
4	165m E	Cuttings	1974	2360148
J	192m E	Unspecified Pit	1906 - 1938	2362069
J	199m E	Unspecified Pit	1947 - 1957	2360081
K	201m S	Unspecified Ground Workings	1983 - 1990	2361095
K	201m S	Unspecified Ground Workings	1973	2364733
5	206m S	Unspecified Heap	1973	2351308
J	207m E	Old Clay Pit	1896	2348729
J	214m E	Clay Pit	1873	2348703
6	250m E	Unspecified Heap	1974	2351307
7	303m E	Unspecified Pit	1947 - 1957	2354310
M	362m S	Unspecified Tank	1973	2348012
N	364m SE	Cuttings	1938 - 1947	2357836
N	369m SE	Cuttings	1896 - 1906	2362993
O	370m E	Brick Field	1873	2349342
N	373m SE	Unspecified Pit	1957	2345869
N	381m SE	Cuttings	1873	2354394
O	404m E	Brick Kiln	1873	2346555
Q	419m SE	Tunnel	1938	2354457

ID	Location	Land use	Dates present	Group ID
Q	429m SE	Tunnel	1947	2353891
9	429m SE	Tunnel	1957	2354570
Q	430m SE	Tunnel	1896 - 1906	2360305
R	483m SW	Unspecified Station	1973	2360339
R	483m SW	Unspecified Station	1983 - 1990	2364624

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m **6**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
B	**On site**	**Unspecified Tank**	**1907**	**422188**
D	17m NW	Unspecified Tank	1971	424817
D	22m NW	Unspecified Tank	1907 - 1938	425797
M	362m S	Unspecified Tank	1973	422185
8	398m S	Unspecified Tank	1956	424627
11	492m S	Tanks	1970 - 1996	423533

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m **7**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
K	214m SE	Electricity Substation	1994	300356
L	287m W	Electricity Substation	1971 - 1989	302617
L	288m W	Electricity Substation	1993	301151
M	394m S	Electricity Substation	1992 - 1994	302000
P	404m E	Electricity Substation	1971	300358
P	408m E	Electricity Substation	1993	300359
10	432m SE	Electricity Substation	1992 - 1996	302863

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	**0**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	**0**

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

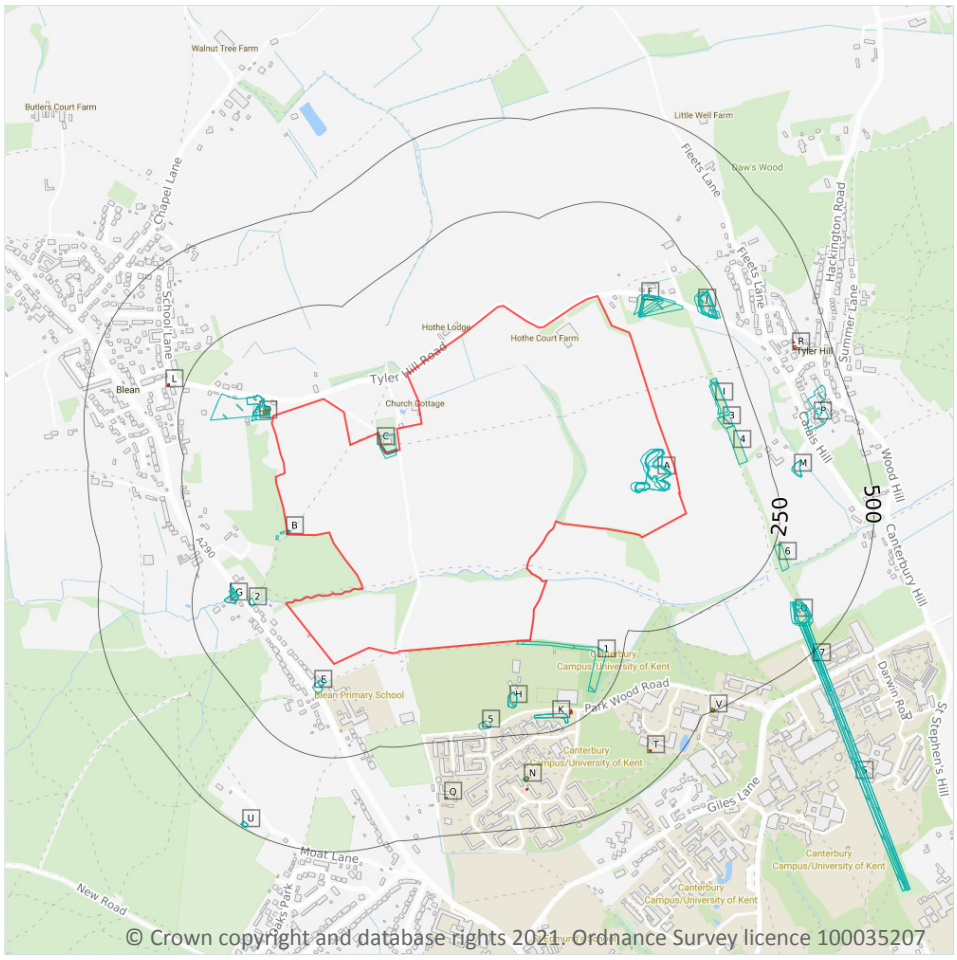
1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

2.1 Historical industrial land uses

Records within 500m	82

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Unspecified Pit**	**1906**	**2358900**
A	**On site**	**Unspecified Pit**	**1906**	**2355681**
A	**On site**	**Unspecified Pits**	**1974**	**2358730**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Unspecified Pits**	**1957**	**2358730**
A	**On site**	**Unspecified Pit**	**1947**	**2362676**
A	**On site**	**Unspecified Pit**	**1947**	**2354199**
A	**On site**	**Unspecified Pit**	**1938**	**2358900**
A	**On site**	**Unspecified Pit**	**1938**	**2355681**
B	**On site**	**Unspecified Tank**	**1906**	**2353363**
B	**On site**	**Tank**	**1906**	**2364503**
B	**On site**	**Tank**	**1906**	**2364503**
B	**On site**	**Unspecified Tank**	**1938**	**2353363**
C	**On site**	**Unspecified Ground Workings**	**1906**	**2357475**
C	**On site**	**Unspecified Ground Workings**	**1906**	**2357475**
C	**On site**	**Grave Yard**	**1873**	**2346604**
1	2m S	Unspecified Ground Workings	1974	2347001
D	6m W	Corn Windmills	1873	2349438
B	8m W	Unspecified Tank	1947	2348013
D	10m NW	Windmill	1906	2355825
D	10m W	Windmill	1906	2364019
D	10m W	Windmill	1906	2364019
D	12m W	Windmill	1938	2361671
D	12m W	Windmill	1947	2361671
D	14m W	Unspecified Tank	1873	2348016
D	20m NW	Windmills	1896	2348546
B	24m W	Unspecified Tank	1957	2348014
D	42m W	Unspecified Tank	1873	2348015
D	45m W	Windmills	1896	2348544
E	46m SW	Smithy	1873	2360293
E	48m SW	Smithy	1896	2352387
F	49m NE	Unspecified Ground Workings	1957	2346997

ID	Location	Land Use	Date	Group ID
F	49m N	Unspecified Pit	1938	2360176
F	51m NE	Unspecified Pit	1947	2365450
F	51m NE	Unspecified Pit	1873	2362664
F	56m NE	Old Clay Pit	1896	2348727
F	56m NE	Unspecified Pit	1906	2360519
2	82m W	Pumping Station	1974	2350710
G	126m W	Smithy	1906	2354960
G	127m W	Smithy	1947	2364586
G	130m W	Smithy	1938	2356135
G	130m W	Smithy	1906	2356135
G	130m W	Smithy	1906	2356135
G	132m W	Smithy	1896	2361141
H	135m S	Unspecified Heap	1990	2361424
H	135m S	Unspecified Heap	1983	2361424
H	135m S	Unspecified Heap	1973	2352003
G	144m W	Smithy	1957	2361020
3	151m E	Cuttings	1896	2361270
I	156m E	Cuttings	1974	2359269
I	157m E	Cuttings	1896	2361746
4	165m E	Cuttings	1974	2360148
J	192m E	Unspecified Pit	1938	2362069
J	199m E	Unspecified Pit	1957	2360081
K	201m S	Unspecified Ground Workings	1990	2361095
K	201m S	Unspecified Ground Workings	1983	2361095
K	201m S	Unspecified Ground Workings	1973	2364733
J	202m E	Unspecified Pit	1947	2360081
J	203m E	Unspecified Pit	1906	2362069
5	206m S	Unspecified Heap	1973	2351308

ID	Location	Land Use	Date	Group ID
J	207m E	Old Clay Pit	1896	2348729
J	214m E	Clay Pit	1873	2348703
6	250m E	Unspecified Heap	1974	2351307
M	303m E	Unspecified Pit	1957	2354310
M	307m E	Unspecified Pit	1947	2354310
N	362m S	Unspecified Tank	1973	2348012
O	364m SE	Cuttings	1938	2357836
O	369m SE	Cuttings	1906	2362993
P	370m E	Brick Field	1873	2349342
O	373m SE	Unspecified Pit	1957	2345869
O	374m SE	Cuttings	1947	2357836
O	381m SE	Cuttings	1873	2354394
O	390m SE	Cuttings	1896	2362993
P	404m E	Brick Kiln	1873	2346555
S	419m SE	Tunnel	1938	2354457
S	419m SE	Tunnel	1938	2354457
S	429m SE	Tunnel	1947	2353891
7	429m SE	Tunnel	1957	2354570
S	430m SE	Tunnel	1906	2360305
S	430m SE	Tunnel	1896	2360305
U	483m SW	Unspecified Station	1990	2364624
U	483m SW	Unspecified Station	1983	2364624
U	483m SW	Unspecified Station	1973	2360339

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	12

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
B	**On site**	**Unspecified Tank**	**1907**	**422188**
D	17m NW	Unspecified Tank	1971	424817
D	22m NW	Unspecified Tank	1938	425797
D	22m NW	Unspecified Tank	1907	425797
N	362m S	Unspecified Tank	1973	422185
Q	398m S	Unspecified Tank	1956	424627
Q	398m S	Unspecified Tank	1956	424627
V	492m S	Tanks	1971	423533
V	492m S	Tanks	1978	423533
V	493m S	Tanks	1992	423533
V	493m S	Tanks	1996	423533
V	493m S	Tanks	1970	423533

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	10

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
K	214m SE	Electricity Substation	1994	300356
L	287m W	Electricity Substation	1971	302617

ID	Location	Land Use	Date	Group ID
L	288m W	Electricity Substation	1993	301151
L	288m W	Electricity Substation	1989	302617
N	394m S	Electricity Substation	1994	302000
N	394m S	Electricity Substation	1992	302000
R	404m E	Electricity Substation	1971	300358
R	408m E	Electricity Substation	1993	300359
T	432m SE	Electricity Substation	1992	302863
T	432m SE	Electricity Substation	1996	302863

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	**0**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

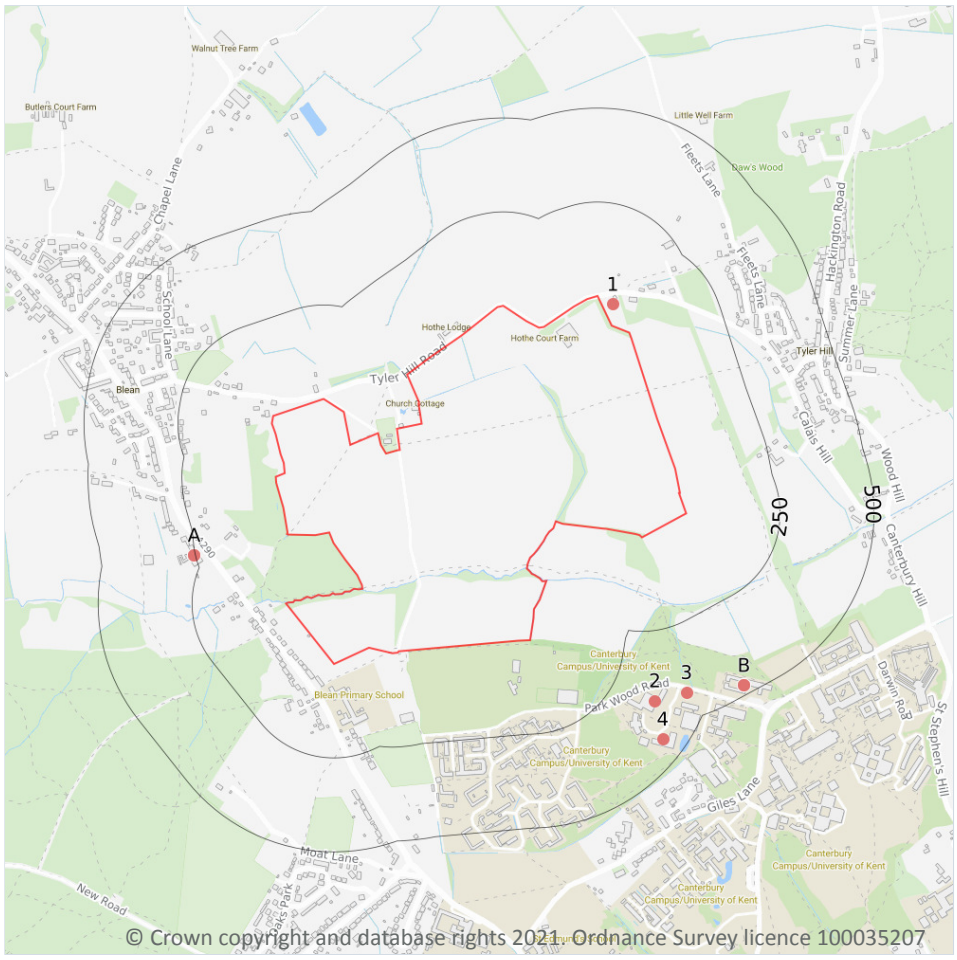
2.5 Historical garages

Records within 500m	**0**

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	0

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	0

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m	20

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

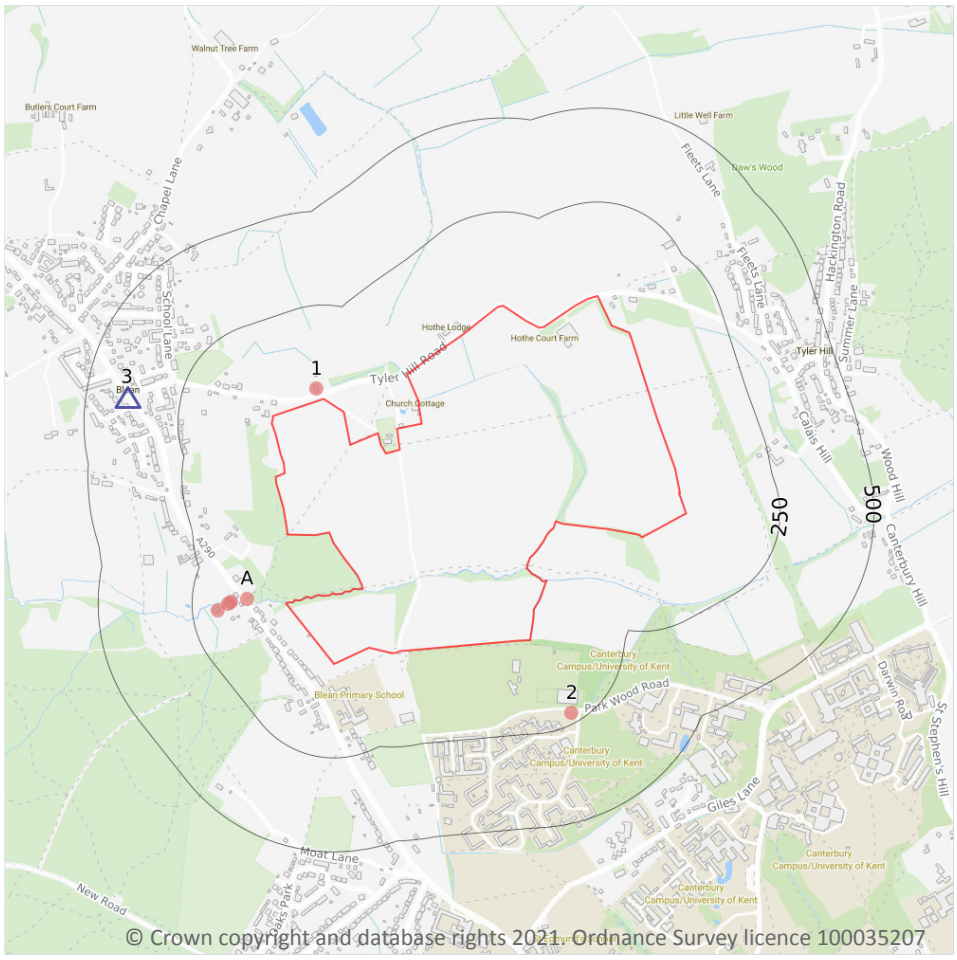
Features are displayed on the Waste and landfill map on **page 25**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	26m NE	Hothe Court Farm Tyler Hill Road CANTERBURY Kent CT2 9LU	EPR/FE5581BF/A001	Storing waste exemption	Agricultural Waste Only	Storage of waste in a secure place
A	254m W	17, BLEAN HILL, BLEAN, CANTERBURY, CT2 9EF	WEX057418	Disposing of waste exemption	On a farm	Burning waste in the open
A	254m W	17, BLEAN HILL, BLEAN, CANTERBURY, CT2 9EF	WEX057418	Storing waste exemption	On a farm	Storage of waste in a secure place
A	254m W	17, BLEAN HILL, BLEAN, CANTERBURY, CT2 9EF	WEX057418	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
A	254m W	17, BLEAN HILL, BLEAN, CANTERBURY, CT2 9EF	WEX057418	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	254m W	17, BLEAN HILL, BLEAN, CANTERBURY, CT2 9EF	WEX057418	Using waste exemption	On a farm	Use of mulch
A	254m W	17, BLEAN HILL, BLEAN, CANTERBURY, CT2 9EF	WEX057418	Using waste exemption	On a farm	Incorporation of ash into soil
2	370m SE	University of Kent at Canterbury Parkwood Road CANTERBURY Kent CT2 7PE	EPR/ZF0100KR/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction
3	431m S	-	WEX177650	Using waste exemption	Not on a farm	Use of waste in construction
4	441m SE	University of Kent at Canterbury, New Economics Building, Park Wood Road, Canterbury, CT2 7PD	WEX119446	Using waste exemption	Not on a farm	Use of waste in construction
B	477m SE	ESTATES & BUILDINGS OFFICE, CANTERBURY, CT2 7NN	WEX163605	Disposing of waste exemption	Not on a Farm	Burning waste in the open
B	477m SE	ESTATES & BUILDINGS OFFICE, CANTERBURY, CT2 7NN	WEX165144	Treating waste exemption	Not on a Farm	Treatment of kitchen waste in a wormery
B	477m SE	ESTATES & BUILDINGS OFFICE, CANTERBURY, CT2 7NN	WEX165144	Using waste exemption	Not on a Farm	Spreading waste on non-agricultural land to confer benefit
B	477m SE	ESTATES & BUILDINGS OFFICE, CANTERBURY, CT2 7NN	WEX165144	Using waste exemption	Not on a Farm	Use of mulch

ID	Location	Site	Reference	Category	Sub-Category	Description
B	477m SE	ESTATES & BUILDINGS OFFICE, CANTERBURY, CT2 7NN	WEX165144	Treating waste exemption	Not on a Farm	Aerobic composting and associated prior treatment
B	477m SE	ESTATES & BUILDINGS OFFICE, CANTERBURY, CT2 7NN	WEX001059	Disposing of waste exemption	Not on a farm	Burning waste in the open
B	477m SE	ESTATES & BUILDINGS OFFICE, CANTERBURY, CT2 7NN	WEX005305	Treating waste exemption	Not on a farm	Aerobic composting and associated prior treatment
B	477m SE	ESTATES & BUILDINGS OFFICE, CANTERBURY, CT2 7NN	WEX005305	Treating waste exemption	Not on a farm	Treatment of kitchen waste in a wormery
B	477m SE	ESTATES & BUILDINGS OFFICE, CANTERBURY, CT2 7NN	WEX005305	Using waste exemption	Not on a farm	Spreading waste on non-agricultural land to confer benefit
B	477m SE	ESTATES & BUILDINGS OFFICE, CANTERBURY, CT2 7NN	WEX005305	Using waste exemption	Not on a farm	Use of mulch

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



Site Outline

Search buffers in metres (m)

Recent industrial land uses

Current or recent petrol stations

4.1 Recent industrial land uses

Records within 250m	6

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 29**

ID	Location	Company	Address	Activity	Category
1	31m N	A M Designs	45, Tyler Hill Road, Blean, Canterbury, Kent, CT2 9HU	Furniture	Consumer Products
A	105m W	Pumping Station	Kent, CT2	Water Pumping Stations	Industrial Features

ID	Location	Company	Address	Activity	Category
A	148m W	Hartlee Engineering Ltd	53, Tile Kiln Hill, Blean, Canterbury, Kent, CT2 9EE	Vehicle Repair, Testing and Servicing	Repair and Servicing
A	154m W	Works	Kent, CT2	Unspecified Works Or Factories	Industrial Features
A	182m W	Blean Garage	Unit 1 Kelks, Tile Kiln Hill, Blean, Canterbury, Kent, CT2 9EE	Vehicle Repair, Testing and Servicing	Repair and Servicing
2	224m SE	Electricity Sub Station	Kent, CT2	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	1

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 29**

ID	Location	Company	Address	LPG	Status
3	392m W	OBSOLETE	85, Blean Common, Blean, Canterbury, Kent, CT2 9JH	Not Applicable	Obsolete

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m	0

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	0

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	0

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	0

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	0

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

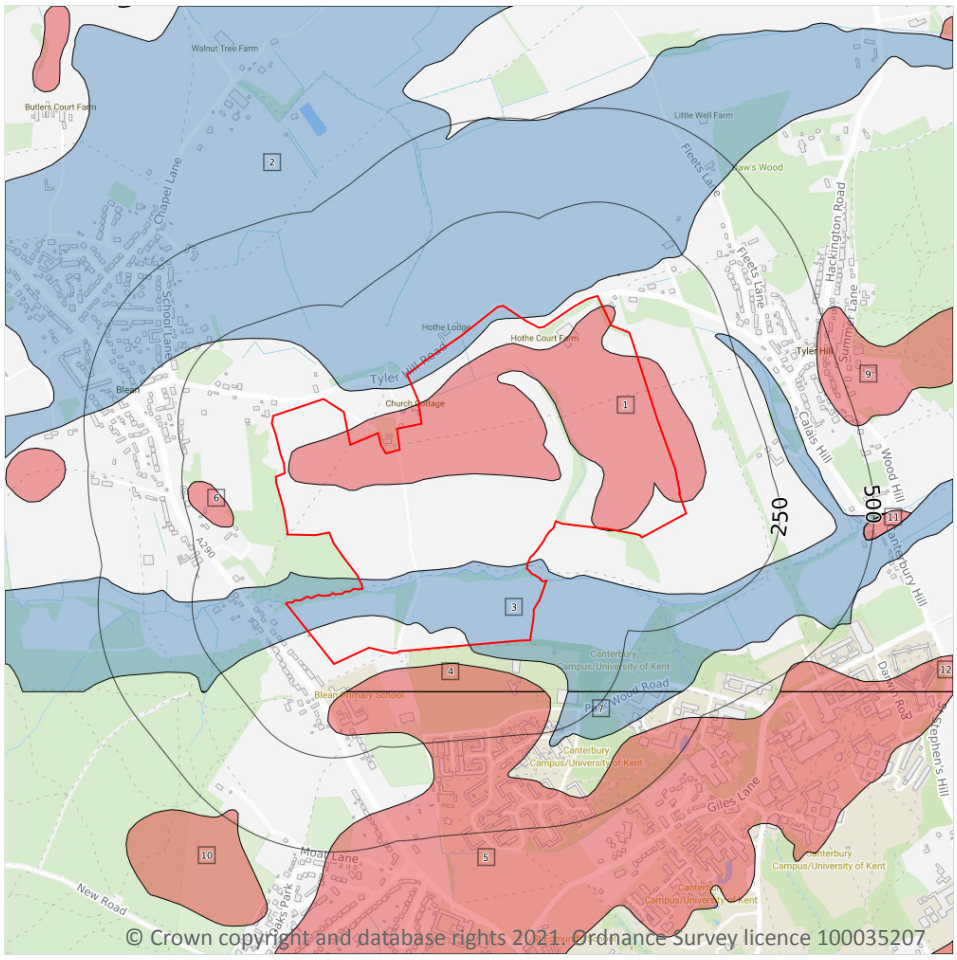
4.21 Pollution inventory radioactive waste

Records within 500m	0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	12

Aquifer status of groundwater held within superficial geology.

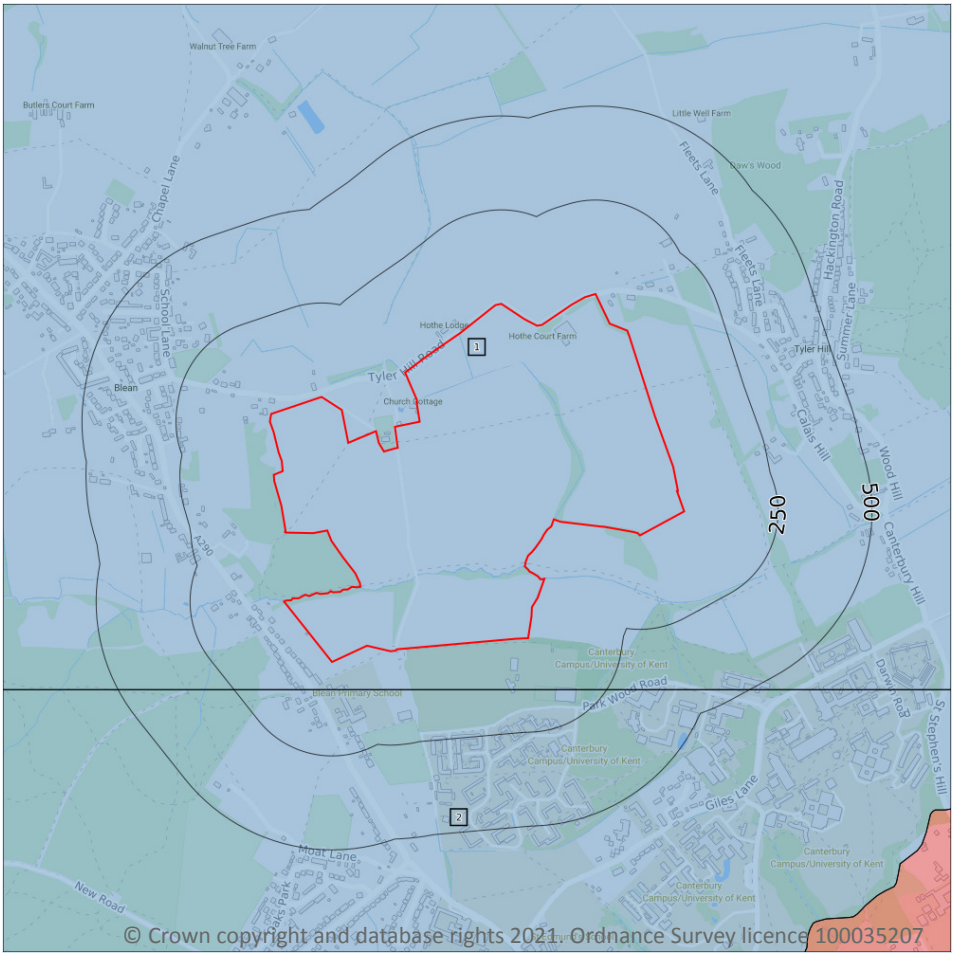
Features are displayed on the Hydrogeology map on **page 35**

ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	On site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

ID	Location	Designation	Description
3	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**
4	43m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	81m SE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
6	134m W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
7	170m SE	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
8	313m SW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
9	441m E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
10	470m SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
11	475m E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
12	494m SE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	2

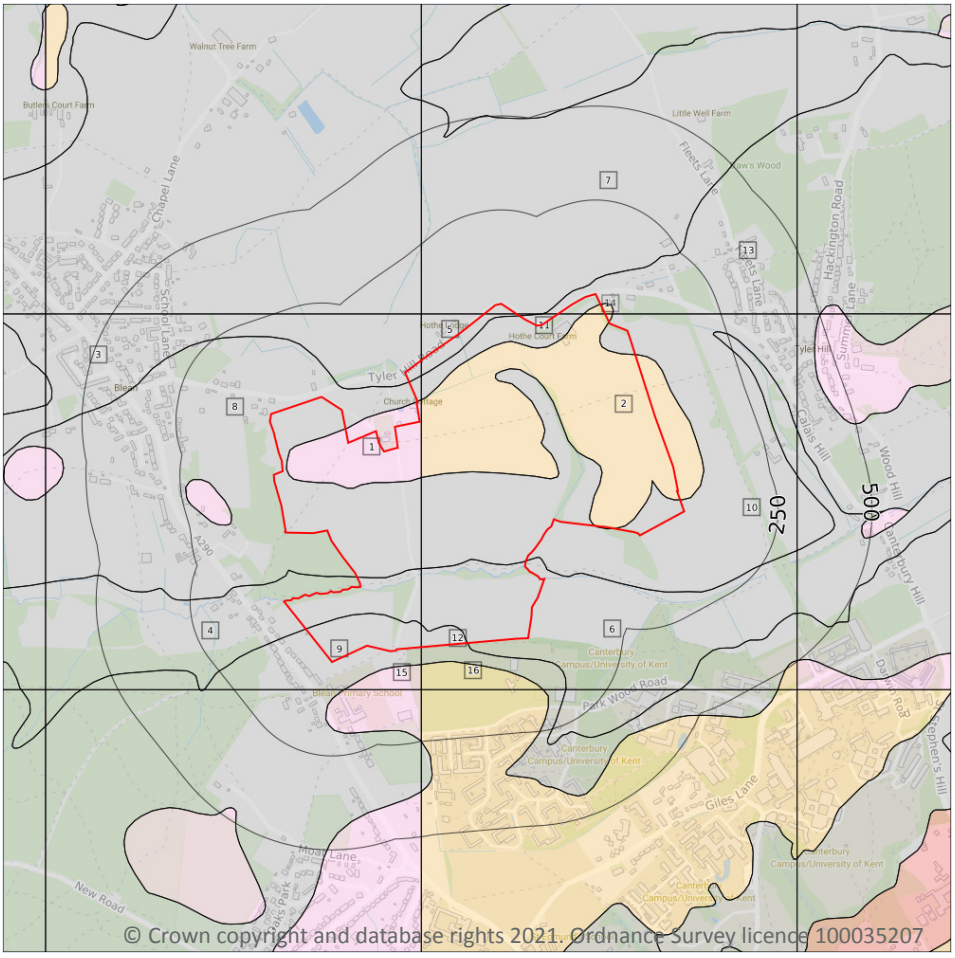
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 37**

ID	Location	Designation	Description
1	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**
2	74m S	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	16

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 38**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
2	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
3	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
4	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
5	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
6	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
7	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
8	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
9	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
10	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
11	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
12	**On site**	**Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed**
13	**On site**	**Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed**
14	**On site**	**Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year**	**Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed**
15	42m S	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
16	44m S	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

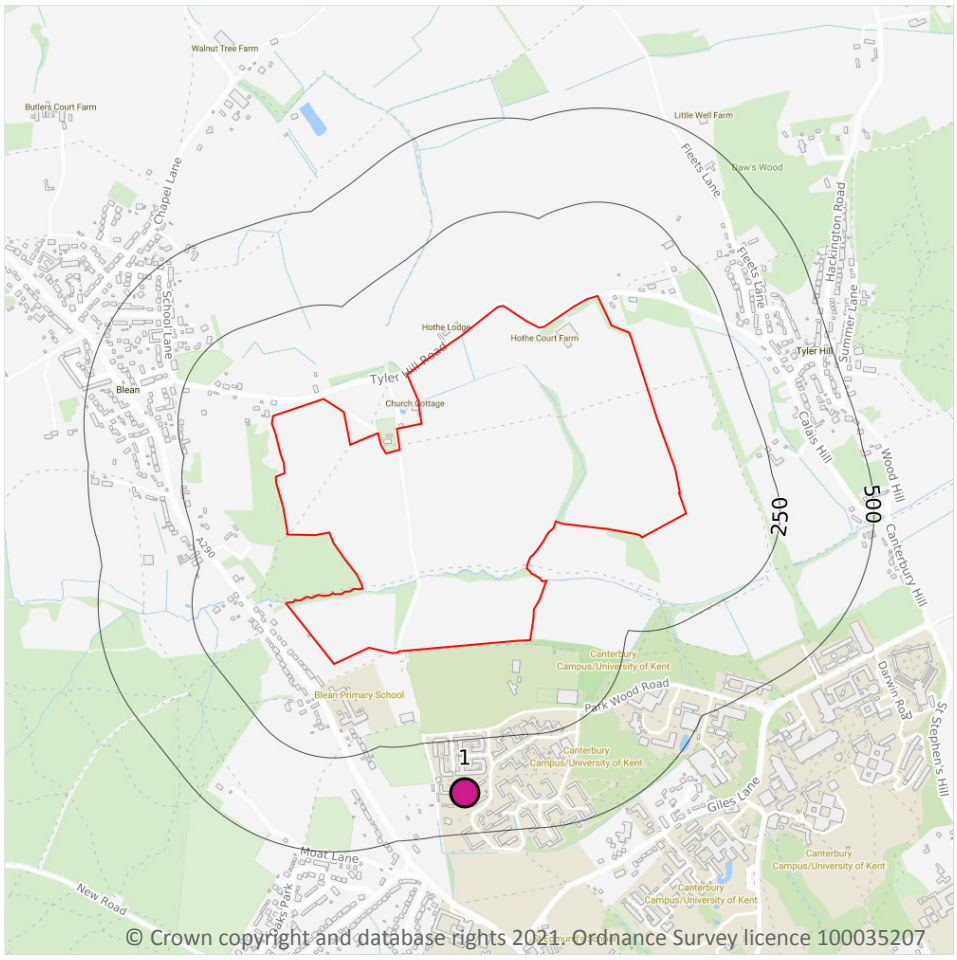
5.5 Groundwater vulnerability- local information

Records on site	0

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	1

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 43**

ID	Location	Details	
1	391m S	Status: Historical Licence No: 9/40/04/0221/GR Details: General Farming & Domestic Direct Source: Southern Region Groundwater Point: WELL AT THE UNIVERSITY OF KENT, BLEAN Data Type: Point Name: The University of Kent at Canterbury Easting: 613110 Northing: 159730	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 01/11/1973 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	**0**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	**0**

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	**0**

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

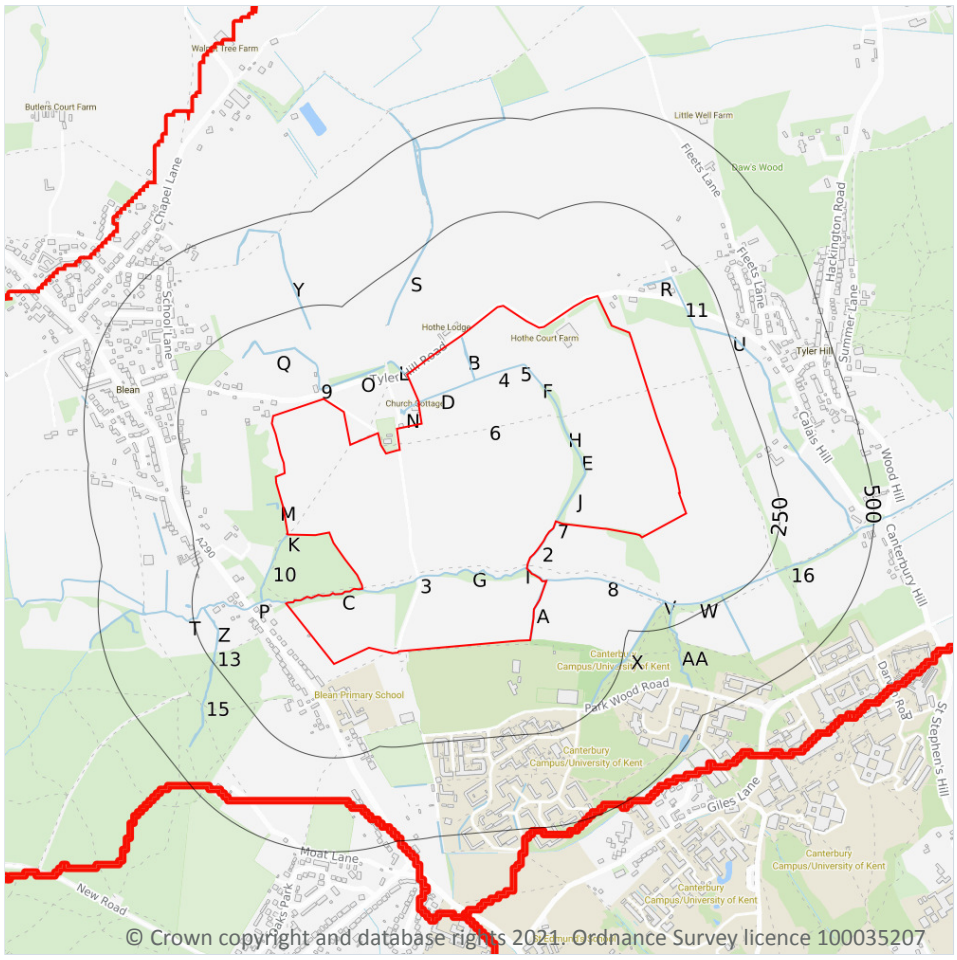
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



6.1 Water Network (OS MasterMap)

Records within 250m	60

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 46**

ID	Location	Type of water feature	Ground level	Permanence	Name
2	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**

ID	Location	Type of water feature	Ground level	Permanence	Name
3	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
4	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
5	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
F	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
I	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
I	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
J	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
K	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
7	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
I	1m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
8	2m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
L	7m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
M	11m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
M	13m W	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
K	16m SW	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
9	26m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
10	29m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
N	32m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
N	40m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
O	43m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	63m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	63m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	93m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
Q	94m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	103m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
R	122m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
S	136m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	137m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
P	144m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	154m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
11	163m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	164m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	169m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
V	173m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
V	175m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
V	179m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
X	179m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Y	188m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	193m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
V	196m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
W	196m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
V	196m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AA	213m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
T	218m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
13	223m SW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
15	229m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
16	235m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
W	235m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
W	236m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
W	239m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	20

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 46**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 46**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
6	**On site**	**River WB catchment**	**Sarre Penn and River Wantsum**	**GB107040019620**	**Stour Marshes**	**Stour**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	**1**

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 46**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	3523m E	River	Sarre Penn and River Wantsum	GB107040019620	Moderate	Good	Moderate	2016

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	**0**

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

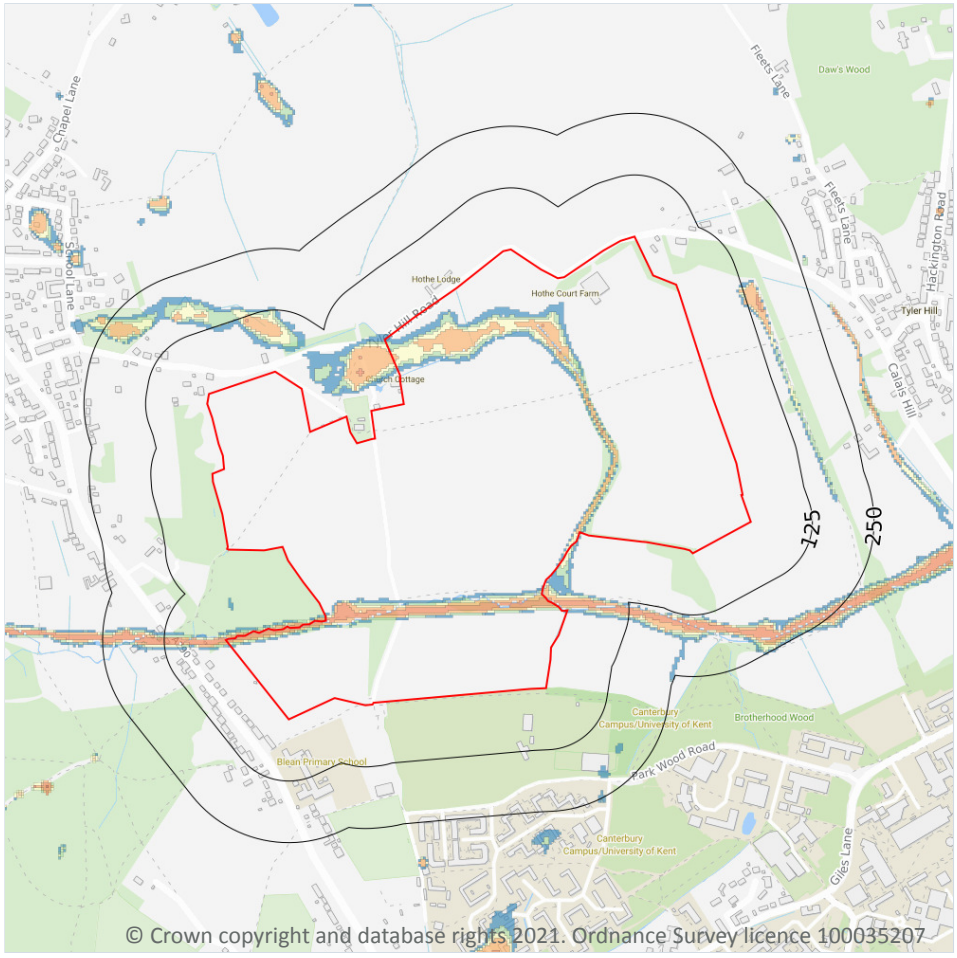
7.7 Flood Zone 3

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 0.3m - 1.0m**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 56**

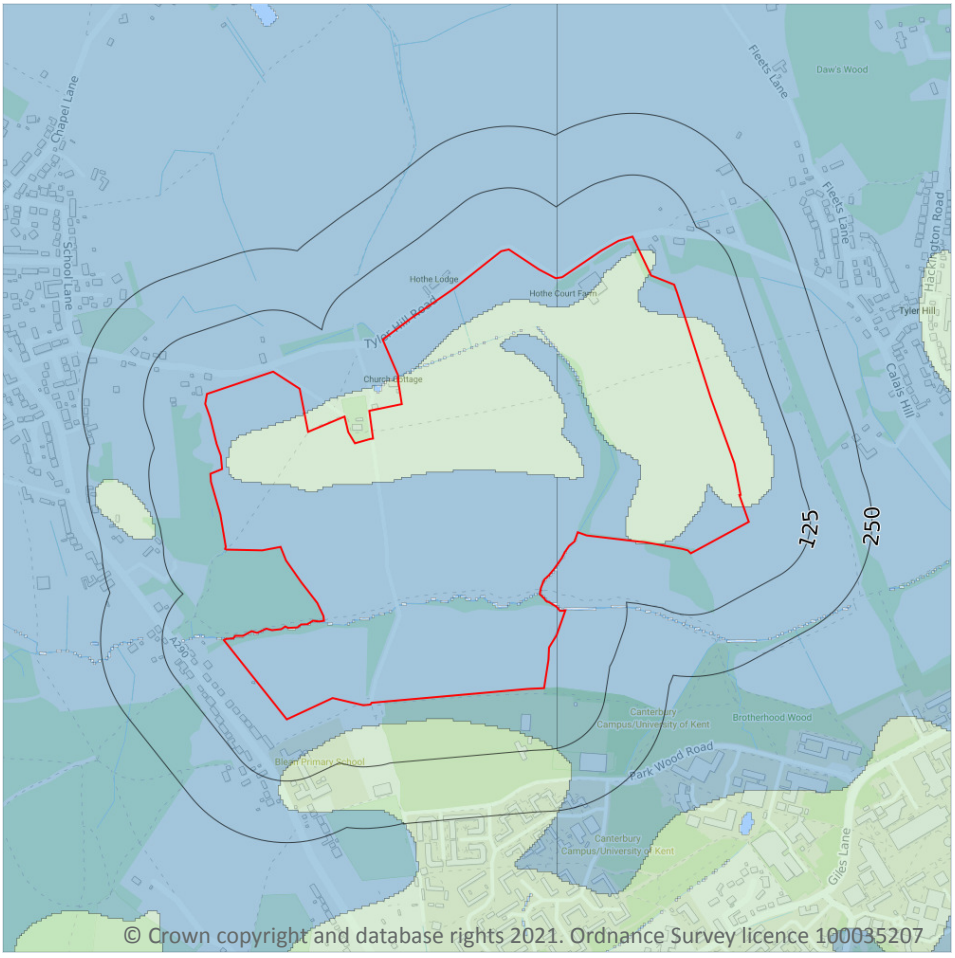
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Greater than 1.0m
1 in 250 year	Greater than 1.0m
1 in 100 year	Greater than 1.0m
1 in 30 year	Between 0.3m and 1.0m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



9.1 Groundwater flooding

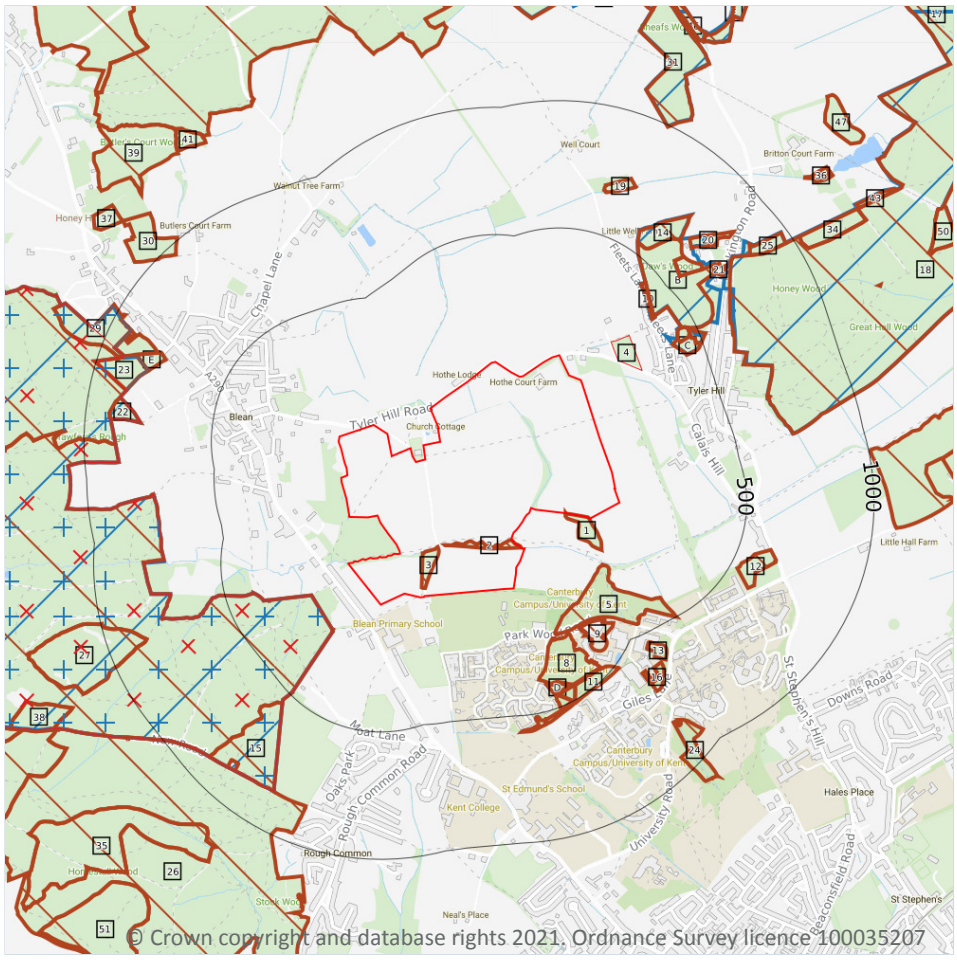
Highest risk on site	**Low**
Highest risk within 50m	**Low**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 58**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	8

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on **page 59**

ID	Location	Name	Data source
A	190m SW	Church Woods, Blean	Natural England

ID	Location	Name	Data source
B	368m NE	West Blean and Thornden Woods	Natural England
18	610m E	West Blean and Thornden Woods	Natural England
32	995m NE	West Blean and Thornden Woods	Natural England
46	1355m NE	West Blean and Thornden Woods	Natural England
F	1358m NE	West Blean and Thornden Woods	Natural England
48	1428m N	West Blean and Thornden Woods	Natural England
-	1645m N	West Blean and Thornden Woods	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	**0**

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	**1**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

Features are displayed on the Environmental designations map on **page 59**

ID	Location	Name	Features of interest	Habitat description	Data source
7	190m SW	Blean Complex	Beech forests on acid soils; Oak-hornbeam forests; Great crested newt.	Broad-leaved deciduous woodland	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	2

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

Features are displayed on the Environmental designations map on **page 59**

ID	Location	Name	Data source
A	190m SW	Blean Woods	Natural England
-	1852m W	Blean Woods	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	1

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

Features are displayed on the Environmental designations map on **page 59**

ID	Location	Name	Data source
4	165m NE	Tyler Hill Meadow	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	**71**

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 59**

ID	Location	Name	Woodland Type
1	**On site**	**Unknown**	**Ancient & Semi-Natural Woodland**
2	**On site**	**Unknown**	**Ancient & Semi-Natural Woodland**
3	**On site**	**Unknown**	**Ancient & Semi-Natural Woodland**
5	188m S	Park Wood	Ancient & Semi-Natural Woodland
6	190m SW	Church/bossenden Woods	Ancient & Semi-Natural Woodland
8	249m SE	Park Wood	Ancient & Semi-Natural Woodland
9	301m SE	Park Wood	Ancient & Semi-Natural Woodland
10	369m NE	Unknown	Ancient & Semi-Natural Woodland
B	382m NE	Daws Wood	Ancient & Semi-Natural Woodland
C	387m E	Daws Wood	Ancient & Semi-Natural Woodland
D	392m S	Unknown	Ancient & Semi-Natural Woodland
C	412m NE	Dawes Wood	Ancient & Semi-Natural Woodland
D	448m SE	Park Wood	Ancient & Semi-Natural Woodland
11	450m SE	Park Wood	Ancient & Semi-Natural Woodland
D	455m S	Unknown	Ancient & Semi-Natural Woodland
C	466m NE	Daws Wood	Ancient & Semi-Natural Woodland
D	502m SE	Unknown	Ancient & Semi-Natural Woodland
D	512m S	Unknown	Ancient & Semi-Natural Woodland
12	530m SE	Unknown	Ancient & Semi-Natural Woodland
13	538m SE	Brethren Wood	Ancient & Semi-Natural Woodland
14	538m NE	Unknown	Ancient & Semi-Natural Woodland
15	547m SW	Church/bossenden Woods	Ancient Replanted Woodland

ID	Location	Name	Woodland Type
B	563m NE	Dawes Wood	Ancient & Semi-Natural Woodland
16	605m SE	Brethren Wood	Ancient & Semi-Natural Woodland
17	607m E	Childs Forstal	Ancient & Semi-Natural Woodland
19	666m N	Ozier Ground	Ancient & Semi-Natural Woodland
20	668m NE	Daws Wood	Ancient & Semi-Natural Woodland
21	672m NE	Dawes Wood	Ancient & Semi-Natural Woodland
E	745m NW	Mincing Wood	Ancient & Semi-Natural Woodland
22	781m W	Crawfords Rough	Ancient & Semi-Natural Woodland
E	785m NW	Church/bossenden Woods	Ancient Replanted Woodland
23	795m W	Church/bossenden Woods	Ancient & Semi-Natural Woodland
24	819m SE	Unknown	Ancient & Semi-Natural Woodland
25	827m NE	Unknown	Ancient & Semi-Natural Woodland
26	844m S	Church/bossenden Woods	Ancient & Semi-Natural Woodland
27	845m W	Church/bossenden Woods	Ancient Replanted Woodland
28	857m W	Church/bossenden Woods	Ancient Replanted Woodland
29	904m W	Church/bossenden Woods	Ancient & Semi-Natural Woodland
30	960m NW	Upper Wood	Ancient & Semi-Natural Woodland
31	993m NE	Childs Forstal	Ancient & Semi-Natural Woodland
33	1006m E	Childs Forstal	Ancient & Semi-Natural Woodland
34	1022m NE	Unknown	Ancient & Semi-Natural Woodland
35	1112m SW	Church/bossenden Woods	Ancient Replanted Woodland
36	1185m NE	Honeywood, Ratscastle And Hickslees Woods	Ancient & Semi-Natural Woodland
37	1198m NW	Willow Wood	Ancient & Semi-Natural Woodland
38	1222m SW	Church/bossenden Woods	Ancient Replanted Woodland
39	1227m NW	Childs Forstal	Ancient & Semi-Natural Woodland
40	1236m N	Childs Forstal	Ancient Replanted Woodland
41	1268m NW	Butlers Court	Ancient & Semi-Natural Woodland
42	1280m E	Childs Forstal	Ancient Replanted Woodland

ID	Location	Name	Woodland Type
43	1284m NE	Unknown	Ancient & Semi-Natural Woodland
44	1322m SW	Church/bossenden Woods	Ancient Replanted Woodland
45	1328m N	Childs Forstal	Ancient & Semi-Natural Woodland
F	1356m NE	Childs Forstal	Ancient & Semi-Natural Woodland
47	1388m NE	Honeywood, Ratscastle And Hickslees Woods	Ancient & Semi-Natural Woodland
49	1435m SW	Church/bossenden Woods	Ancient & Semi-Natural Woodland
50	1455m E	Unknown	Ancient & Semi-Natural Woodland
51	1463m SW	Church/bossenden Woods	Ancient Replanted Woodland
-	1514m E	Pomfrett Hill Wood	Ancient & Semi-Natural Woodland
-	1541m SW	Church/bossenden Woods	Ancient Replanted Woodland
54	1643m NW	Childs Forstal	Ancient & Semi-Natural Woodland
-	1646m N	Childs Forstal	Ancient & Semi-Natural Woodland
-	1689m S	Church/bossenden Woods	Ancient Replanted Woodland
-	1695m E	Unknown	Ancient & Semi-Natural Woodland
-	1715m W	Church/bossenden Woods	Ancient & Semi-Natural Woodland
-	1762m W	Church/bossenden Woods	Ancient Replanted Woodland
-	1766m E	Unknown	Ancient & Semi-Natural Woodland
-	1823m W	Church/bossenden Woods	Ancient Replanted Woodland
-	1914m W	Church/bossenden Woods	Ancient Replanted Woodland
-	1929m SW	Town Wood	Ancient & Semi-Natural Woodland
-	1967m W	Church/bossenden Woods	Ancient Replanted Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

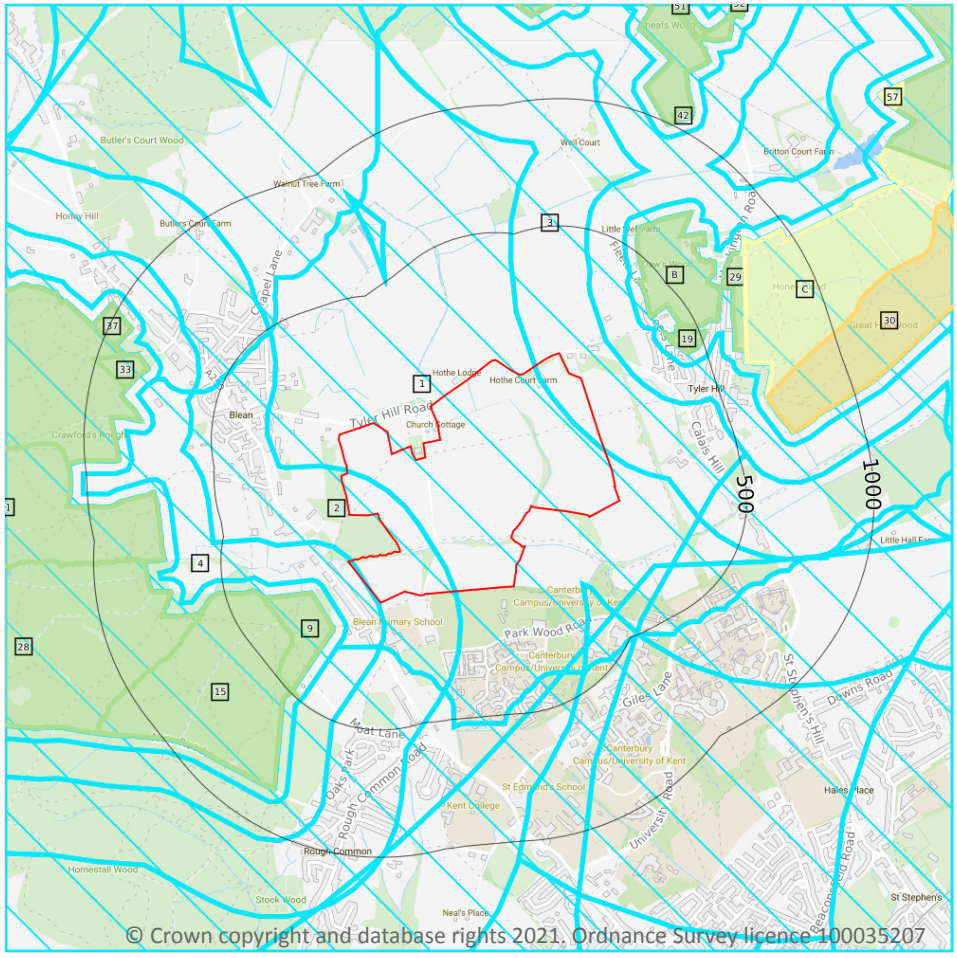
Records within 2000m	2

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
374m SW	R. GREAT STOUR NVZ	Surface Water	S515	Existing
660m SE	R. GREAT STOUR NVZ	Surface Water	S515	Existing

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



10.17 SSSI Impact Risk Zones

Records on site	4

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 67**

ID	Location	Type of developments requiring consultation
1	On site	**Infrastructure - Airports, helipads and other aviation proposals. Wind and Solar - Wind turbines. Residential - Residential development of 500 units or more. Rural residential - Any residential development of 500 or more houses outside existing settlements/urban areas. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons > 200m² & manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 500 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Notes: For new residential development in this area financial contributions are required to mitigate increased recreational disturbance on coastal SPAs and Ramsar Sites. Check with Local Planning Authority.**
2	On site	**Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines Minerals, Oil and Gas - Planning applications for quarries: new proposals or extensions, outside or extending outside existing settlements/urban areas affecting greenspace, farmland or semi natural habitats. Oil & gas exploration/extraction Rural non-residential - Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha. Residential - Residential development of 500 units or more. Rural residential - Any residential development of 50 or more houses outside existing settlements/urban areas. Air pollution - Any development that could cause AIR POLLUTION (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons/manure stores). Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Notes: For new residential development in this area financial contributions are required to mitigate increased recreational disturbance on coastal SPAs and Ramsar Sites. Check with Local Planning Authority.**

ID	Location	Type of developments requiring consultation
3	On site	**Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines Minerals, Oil and Gas - Planning applications for quarries: new proposals or extensions, outside or extending outside existing settlements/urban areas affecting greenspace, farmland or semi natural habitats. Oil & gas exploration/extraction Rural non-residential - Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha. Residential - Residential development of 500 units or more. Rural residential - Any residential development of 50 or more houses outside existing settlements/urban areas. Air pollution - Any development that could cause AIR POLLUTION (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons/manure stores). Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Notes: For new residential development in this area financial contributions are required to mitigate increased recreational disturbance on coastal SPAs and Ramsar Sites. Check with Local Planning Authority.**
4	On site	**All applications - All Planning Applications (Except Householder) Outside Or Extending Outside Existing Settlements/urban Areas Affecting Greenspace, Farmland, Semi Natural Habitats Or Landscape Features Such As Trees, Hedges, Streams, Rural Buildings/structures Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha Residential - Residential development of 10 units or more. Rural residential - Any residential development of 10 or more houses outside existing settlements/urban areas. Air pollution - Any development that could cause AIR POLLUTION or DUST either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons/manure stores). Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Notes: For new residential development in this area financial contributions are required to mitigate increased recreational disturbance on coastal SPAs and Ramsar Sites. Check with Local Planning Authority.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	26

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on **page 67**

ID: 9
Location: 190m SW
SSSI name: Church Woods, Blean
Unit name: East Of Church Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	05/08/2005

ID: 15
Location: 349m SW
SSSI name: Church Woods, Blean
Unit name: Church Wood South
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	22/06/2011

ID: B
Location: 368m NE
SSSI name: West Blean and Thornden Woods
Unit name: Daw's Wood - Main
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900

Feature name	Feature condition	Date of assessment
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900

ID: 19
Location: 377m NE
SSSI name: West Blean and Thornden Woods
Unit name: Daw's Wood South
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 28
Location: 604m W
SSSI name: Church Woods, Blean
Unit name: Church Wood North
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	15/06/2011

ID: 29
Location: 610m E
SSSI name: West Blean and Thornden Woods
Unit name: Honey Wood - West
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Favourable	16/03/2013

ID: C
Location: 637m E
SSSI name: West Blean and Thornden Woods
Unit name: S15 Honey Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 30
Location: 674m E
SSSI name: West Blean and Thornden Woods
Unit name: S15 Honey Wood 2
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Unfavourable - No change	12/07/2010
Invert. assemblage A1 arboreal canopy	Unfavourable - No change	12/07/2010
Lowland mixed deciduous woodland	Unfavourable - No change	12/07/2010
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Unfavourable - No change	12/07/2010

ID: 31
Location: 723m W
SSSI name: Church Woods, Blean
Unit name: Woodland Trust
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Woodland	Favourable	15/06/2011
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	15/06/2011
Invert. assemblage A1 arboreal canopy	Favourable	15/06/2011
Lowland mixed deciduous woodland	Favourable	15/06/2011
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Favourable	15/06/2011

ID: 32
Location: 781m W
SSSI name: Church Woods, Blean
Unit name: English Nature - Grimshill (North) And Mincing Woo
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Woodland	Favourable	11/05/2011
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Favourable	11/05/2011
Lowland beech and yew woodland	Favourable	11/05/2011
Lowland mixed deciduous woodland	Favourable	11/05/2011
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 33
Location: 795m W
SSSI name: Church Woods, Blean
Unit name: East Of Nnr
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	21/01/2004

ID: 37
Location: 918m NW
SSSI name: Church Woods, Blean
Unit name: Adjacent To Caravan Site
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	12/06/2013
Lowland mixed deciduous woodland	Favourable	25/06/2013

ID: 41
Location: 995m NE
SSSI name: West Blean and Thornden Woods
Unit name: Mintey's Wood And Sheafs Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 42
Location: 1021m NE
SSSI name: West Blean and Thornden Woods
Unit name: Se Corner Of Sheafs Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Favourable	16/03/2013

ID: 51
Location: 1355m NE
SSSI name: West Blean and Thornden Woods
Unit name: Mintey's Wood And Sheafs Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 52
Location: 1358m NE
SSSI name: West Blean and Thornden Woods
Unit name: Mintey's Wood And Sheafs Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900

Feature name	Feature condition	Date of assessment
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: -
Location: 1440m W
SSSI name: Church Woods, Blean
Unit name: North Of Nnr 2 (Anderson)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	21/01/2004

ID: 54
Location: 1514m NE
SSSI name: West Blean and Thornden Woods
Unit name: 9
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: -
Location: 1516m E
SSSI name: West Blean and Thornden Woods
Unit name: Little Hall Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900

ID: -
Location: 1592m N
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (West)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Unfavourable - Recovering	12/07/2010
Invert. assemblage A1 arboreal canopy	Unfavourable - Recovering	12/07/2010
Invert. assemblage F2 grassland & scrub matrix	Unfavourable - Recovering	12/07/2010
Lowland mixed deciduous woodland	Unfavourable - Recovering	12/07/2010
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Unfavourable - Recovering	12/07/2010

ID: 57
Location: 1616m NE
SSSI name: West Blean and Thornden Woods
Unit name: S15 Honey Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: -
Location: 1632m N
SSSI name: West Blean and Thornden Woods
Unit name: Cane Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: -
Location: 1645m N
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (West)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Unfavourable - Recovering	12/07/2010
Invert. assemblage A1 arboreal canopy	Unfavourable - Recovering	12/07/2010
Invert. assemblage F2 grassland & scrub matrix	Unfavourable - Recovering	12/07/2010

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Unfavourable - Recovering	12/07/2010
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Unfavourable - Recovering	12/07/2010

ID: -
Location: 1692m W
SSSI name: Church Woods, Blean
Unit name: Church Woods
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Unfavourable - Recovering	16/03/2013

ID: -
Location: 1911m W
SSSI name: Church Woods, Blean
Unit name: North Of Nnr 1 (Bones Bros)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	21/01/2004

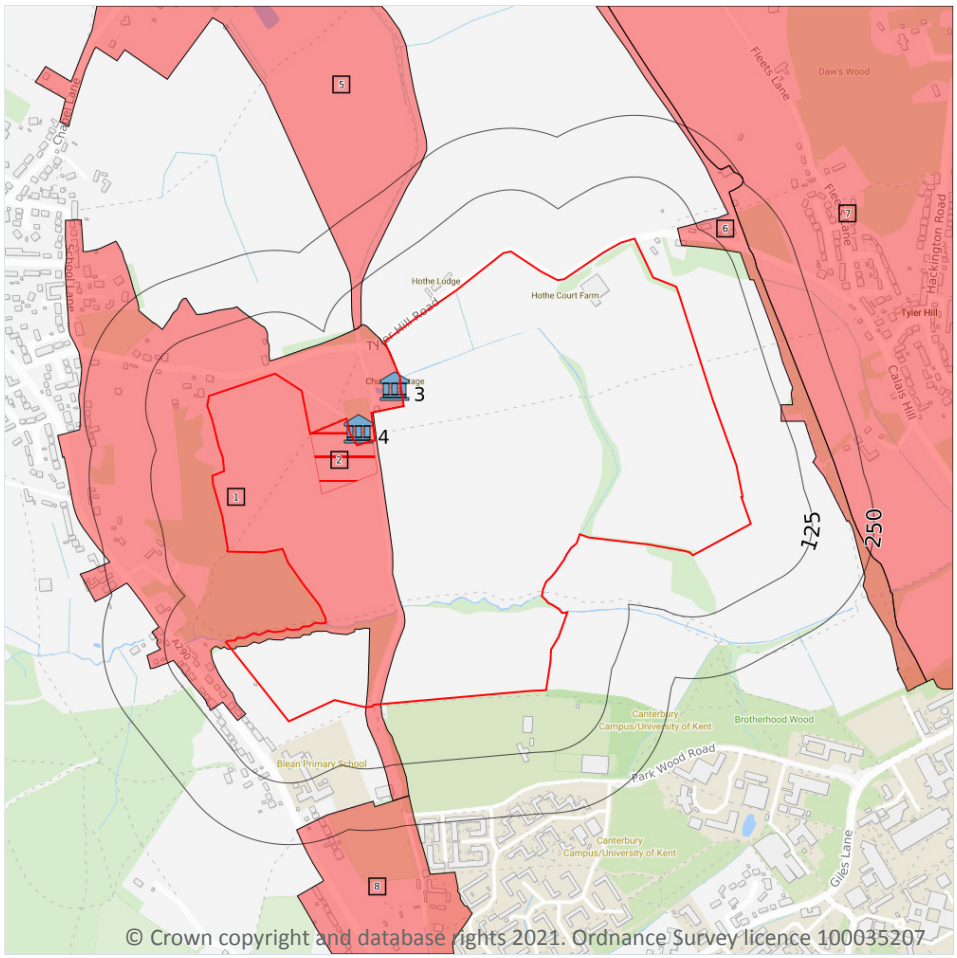
ID: -
Location: 1921m E
SSSI name: West Blean and Thornden Woods
Unit name: Barton Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations



11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	2

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 81**

ID	Location	Name	Grade	Reference Number	Listed date
3	12m W	Church Cottage, St. Cosmus And St. Damian In The Blean, Canterbury, Kent, CT2	II	1336584	14/03/1980
4	19m E	Church Of St Cosmus And St Damian, St. Cosmus And St. Damian In The Blean, Canterbury, Kent, CT2	II*	1085522	30/01/1967

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	5

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 81**

ID	Location	Name	District	Date of designation
1	**On site**	**Blean**	**Canterbury**	**13/09/1994**
5	58m NW	Amery Court, Blean	Canterbury	28/02/1995
6	80m NE	Canterbury and Whitstable Railway, Hackington and Blean	Canterbury	28/02/1995
7	167m E	Tyler Hill	Canterbury	28/02/1995
8	190m S	Hothe Court	Canterbury	13/09/1994

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	1

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

Features are displayed on the Visual and cultural designations map on **page 81**

ID	Location	Ancient monument name	Reference number
2	**On site**	**Dispersed medieval settlement remains and a Roman building immediately south west of St Cosmus and St Damian's Church**	**1018785**

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

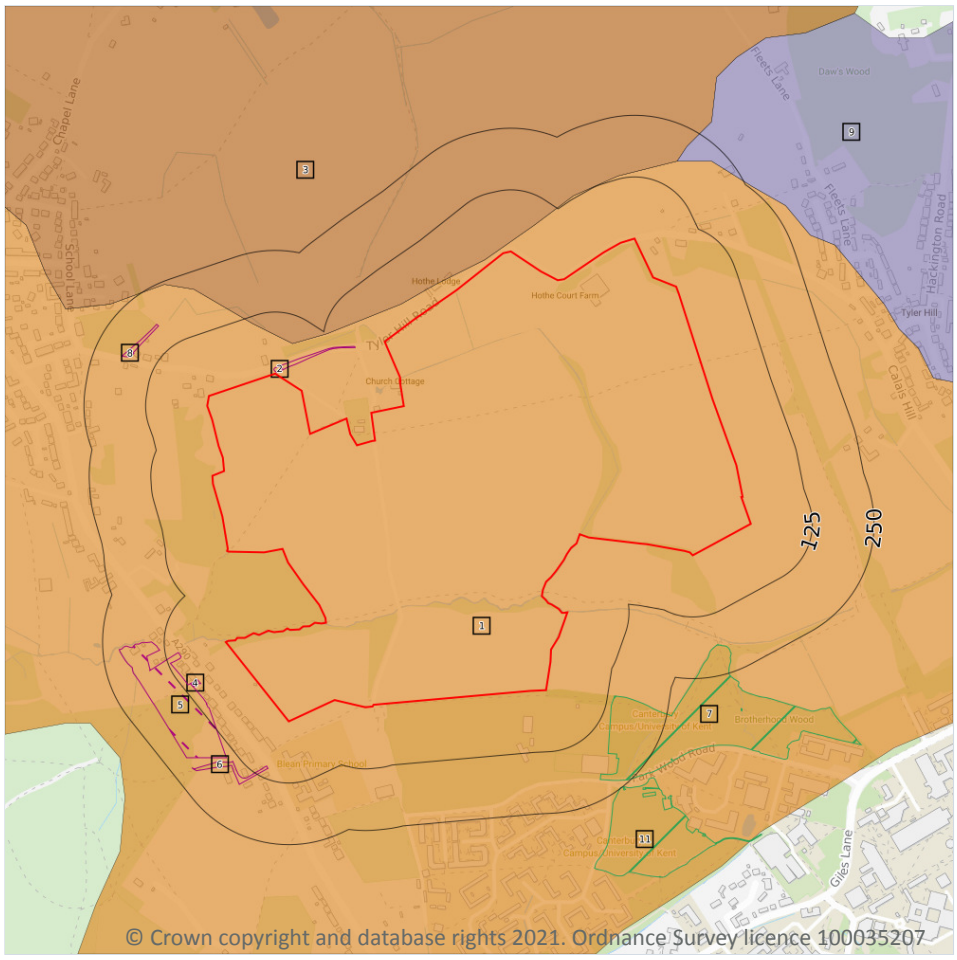
11.7 Registered Parks and Gardens

Records within 250m	0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

12 Agricultural designations



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

12.1 Agricultural Land Classification

Records within 250m	3

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 85**

ID	Location	Classification	Description
1	**On site**	**Grade 3**	**Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.**

ID	Location	Classification	Description
3	10m NW	Grade 2	Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.
9	179m NE	Non Agricultural	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	**6**

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

Features are displayed on the Agricultural designations map on **page 85**

ID	Location	Name	Classification	Other relevant legislation
2	4m NE	Two pieces of manorial waste situate on the east side of Chapel Lane and on the South side of Tyler Hill Road	Section 4 Conclusive Registered Common Land	-
4	92m SW	Five pieces of land in the Parish of St Cosmus	Section 4 Conclusive Registered Common Land	-
5	95m W	Area of land situate at Blean Bottom	Section 4 Conclusive Registered Common Land	-
6	101m SW	Five pieces of land in the Parish of St Cosmus	Section 4 Conclusive Registered Common Land	-
8	172m NW	Five pieces of land in the Parish of St Cosmus	Section 4 Conclusive Registered Common Land	-
10	211m SW	Five pieces of land in the Parish of St Cosmus	Section 4 Conclusive Registered Common Land	-

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	2

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

Features are displayed on the Agricultural designations map on **page 85**

ID	Location	Description	Reference	Application date
7	136m E	Selective Fell/Thin (Conditional)	019/409/15-16	29/03/2016
11	249m SE	Selective Fell/Thin (Conditional)	019/409/15-16	29/03/2016

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	4

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment.

Location	Reference	Scheme	Start Date	End date
107m SW	AG00333139	Entry Level plus Higher Level Stewardship	01/05/2011	30/04/2021
111m W	AG00333139	Entry Level plus Higher Level Stewardship	01/05/2011	30/04/2021
164m SW	AG00333139	Entry Level plus Higher Level Stewardship	01/05/2011	30/04/2021
227m SW	AG00333139	Entry Level plus Higher Level Stewardship	01/05/2011	30/04/2021

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

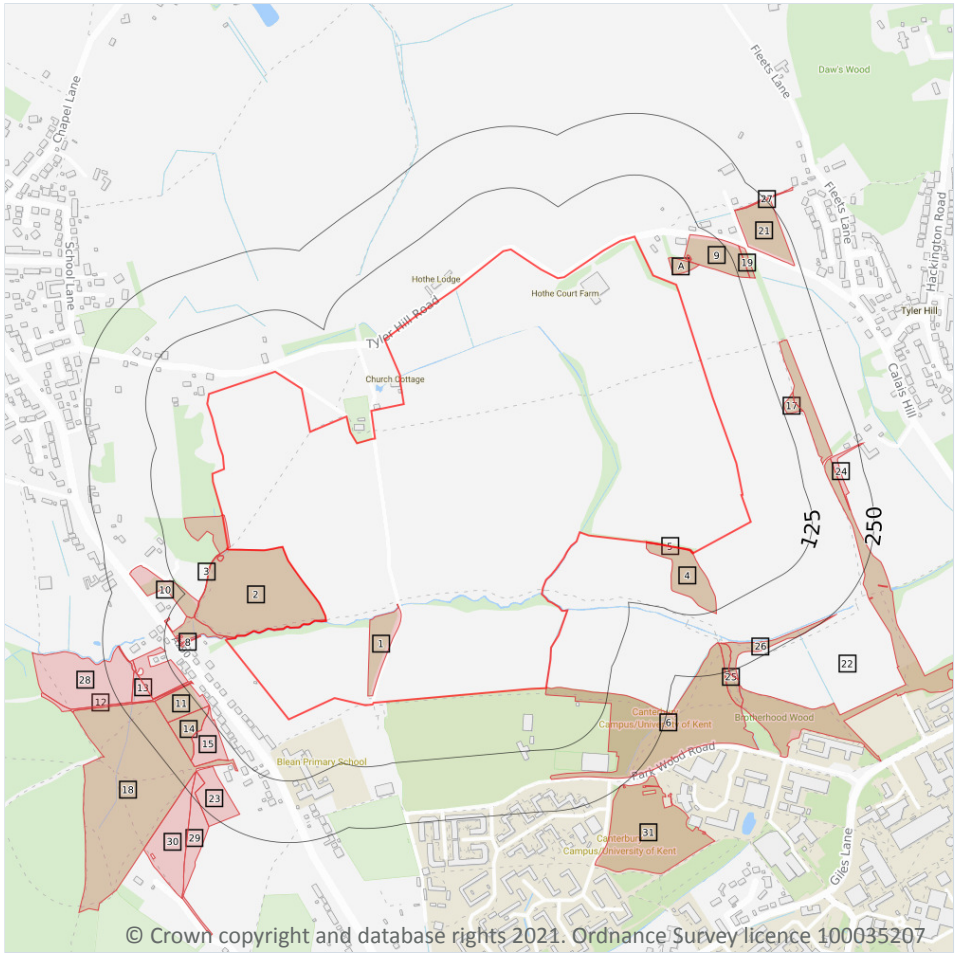
Records within 250m	1

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

Location	Reference	Scheme	Start Date	End Date
190m W	325401	Countryside Stewardship (Higher Tier)	01/01/2017	31/12/2021

This data is sourced from Natural England.

13 Habitat designations



Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks

Primary Habitat
Restorable Habitat
Associated Habitats
Habitat Restoration-Creation
Network Enhancement Zone 1
Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	33

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 88**

ID	Location	Main Habitat	Other habitats
1	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
5	**On site**	**Deciduous woodland**	**Main habitat: DWOOD (INV > 50%)**
6	1m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
7	16m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	17m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
8	52m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
9	55m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	57m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
10	80m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
11	106m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
12	107m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%); GQSIG (FEP + HLS)
13	107m SW	Good quality semi-improved grassland	Main habitat: GQSIG (FEP + HLS)
14	109m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%); GQSIG (FEP + HLS)
15	109m SW	Good quality semi-improved grassland	Main habitat: GQSIG (FEP + HLS)
16	111m SW	Good quality semi-improved grassland	Main habitat: GQSIG (FEP + HLS)
17	130m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
18	139m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%, ENSIS L1)
19	146m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
20	153m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
21	165m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
22	174m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
23	180m SW	Good quality semi-improved grassland	Main habitat: GQSIG (FEP + HLS); Additional: LMEAD (FEP 50%)
24	189m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
25	189m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
26	191m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
27	192m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
28	196m W	Good quality semi-improved grassland	Main habitat: GQSIG (FEP + HLS)
29	212m SW	Good quality semi-improved grassland	Main habitat: GQSIG (FEP + HLS); Additional: LMEAD (FEP 50%)
30	214m SW	Good quality semi-improved grassland	Main habitat: GQSIG (FEP + HLS); Additional: LMEAD (FEP 50%)

ID	Location	Main Habitat	Other habitats
31	249m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

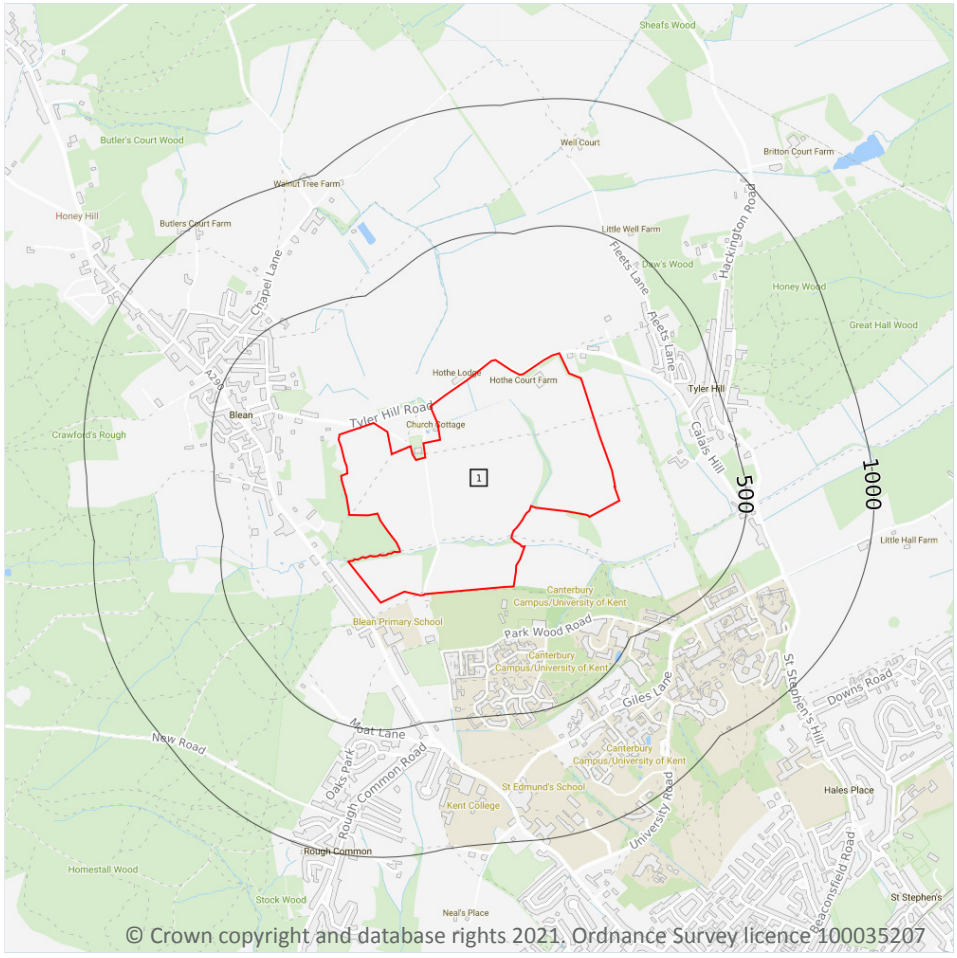
13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 91**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**No coverage**	**No coverage**	**No coverage**	**NoCov**

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground

14.2 Artificial and made ground (10k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

This data is sourced from the British Geological Survey.

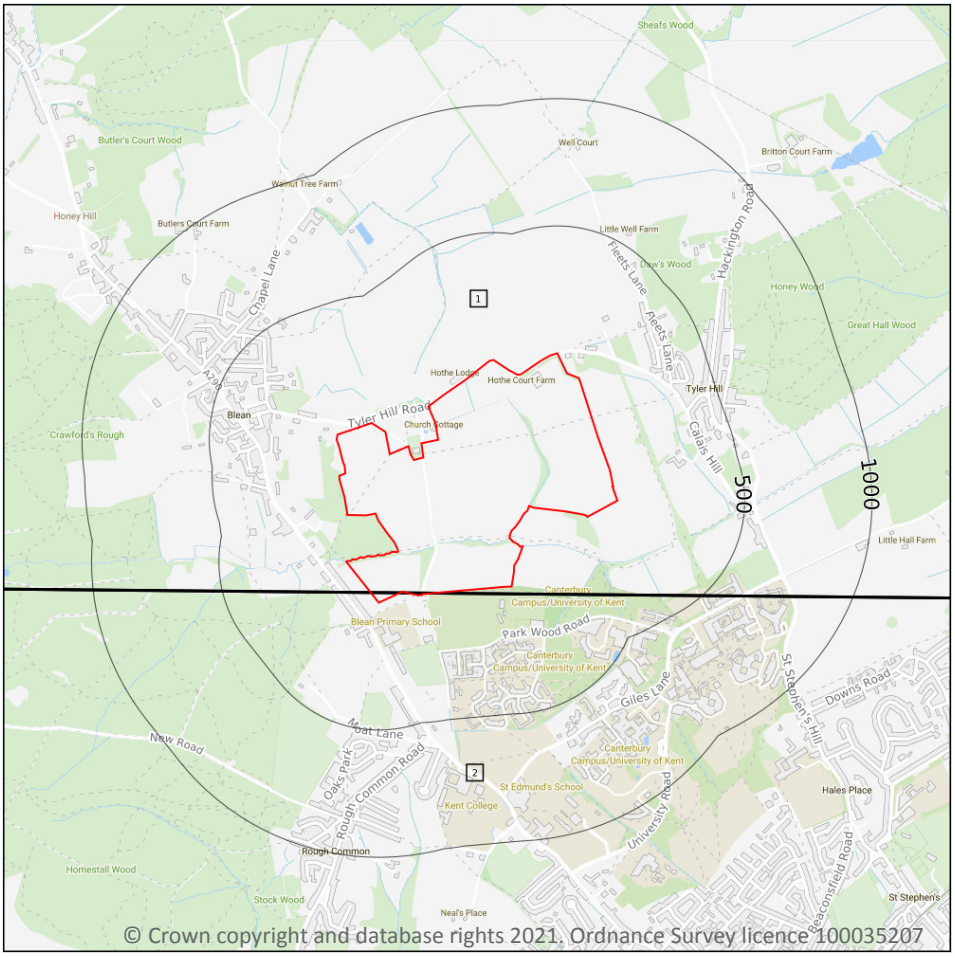
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	2

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 95**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	Full	EW273_faversham_v4
2	On site	No coverage	Full	Full	Full	EW289_canterbury_v4

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground

15.2 Artificial and made ground (50k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

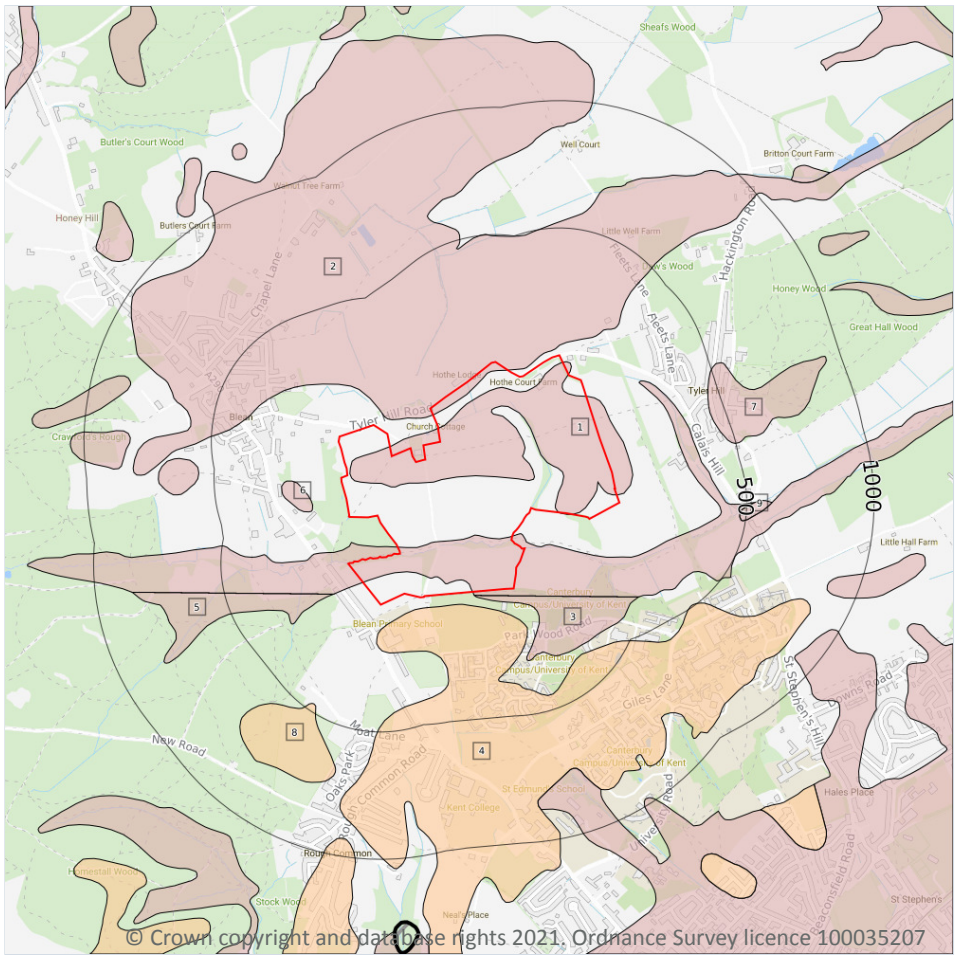
15.3 Artificial ground permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m	9

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 97**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**HEAD-XVSZC**	**HEAD**	**GRAVEL, SAND, SILT AND CLAY**
2	**On site**	**HEAD-XCZ**	**HEAD**	**CLAY AND SILT**
3	15m S	HEAD-XCZ	HEAD	CLAY AND SILT

ID	Location	LEX Code	Description	Rock description
4	43m S	RTD4-XSV	RIVER TERRACE DEPOSITS, 4	SAND AND GRAVEL
5	120m SW	HEAD-XCZ	HEAD	CLAY AND SILT
6	134m W	HEAD-XVSZC	HEAD	GRAVEL, SAND, SILT AND CLAY
7	441m E	HEAD-XVSZC	HEAD	GRAVEL, SAND, SILT AND CLAY
8	470m SW	RTD4-XSV	RIVER TERRACE DEPOSITS, 4	SAND AND GRAVEL
9	475m E	HEAD-XVSZC	HEAD	GRAVEL, SAND, SILT AND CLAY

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	**4**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Low**	**Very Low**
On site	**Intergranular**	**Very High**	**Low**
On site	**Mixed**	**Low**	**Very Low**
43m S	Intergranular	Very High	High

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	**0**

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

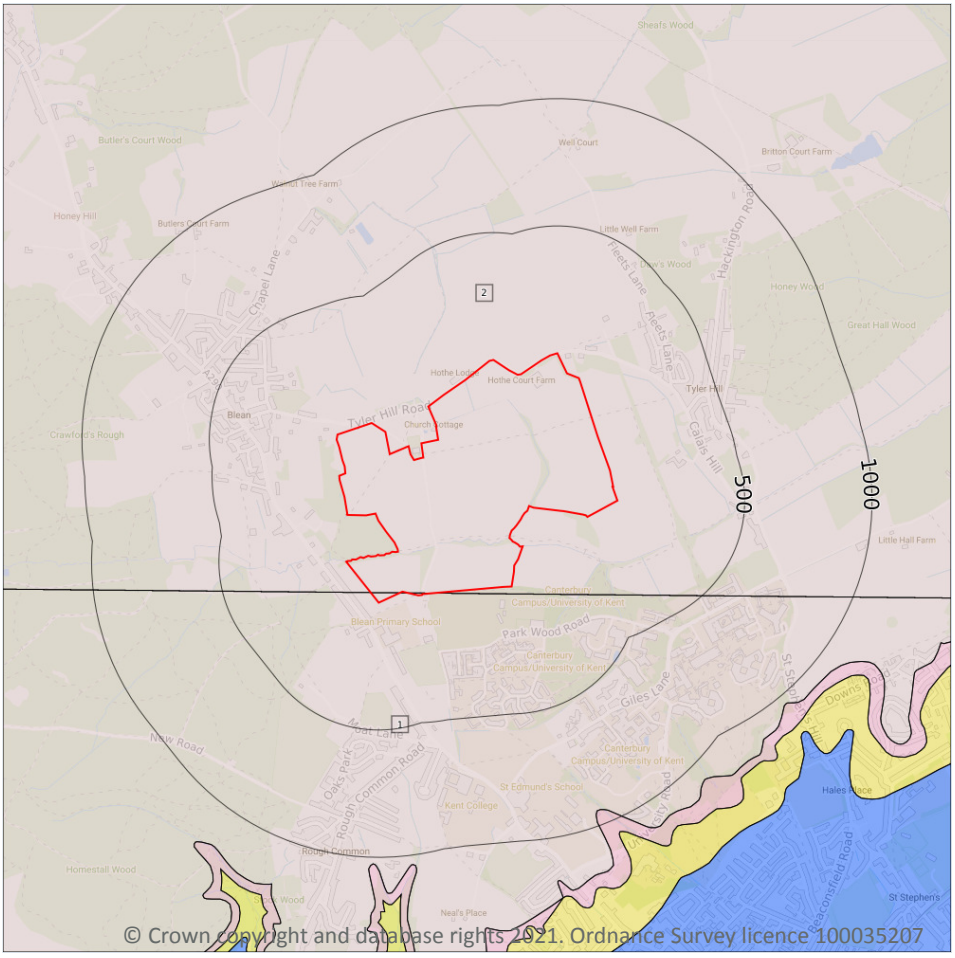
15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m **2**

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 100**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**LC-XCZ**	**LONDON CLAY FORMATION - CLAY AND SILT**	**YPRESIAN**
2	**On site**	**LC-XCZ**	**LONDON CLAY FORMATION - CLAY AND SILT**	**YPRESIAN**

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Low**	**Very Low**

This data is sourced from the British Geological Survey.

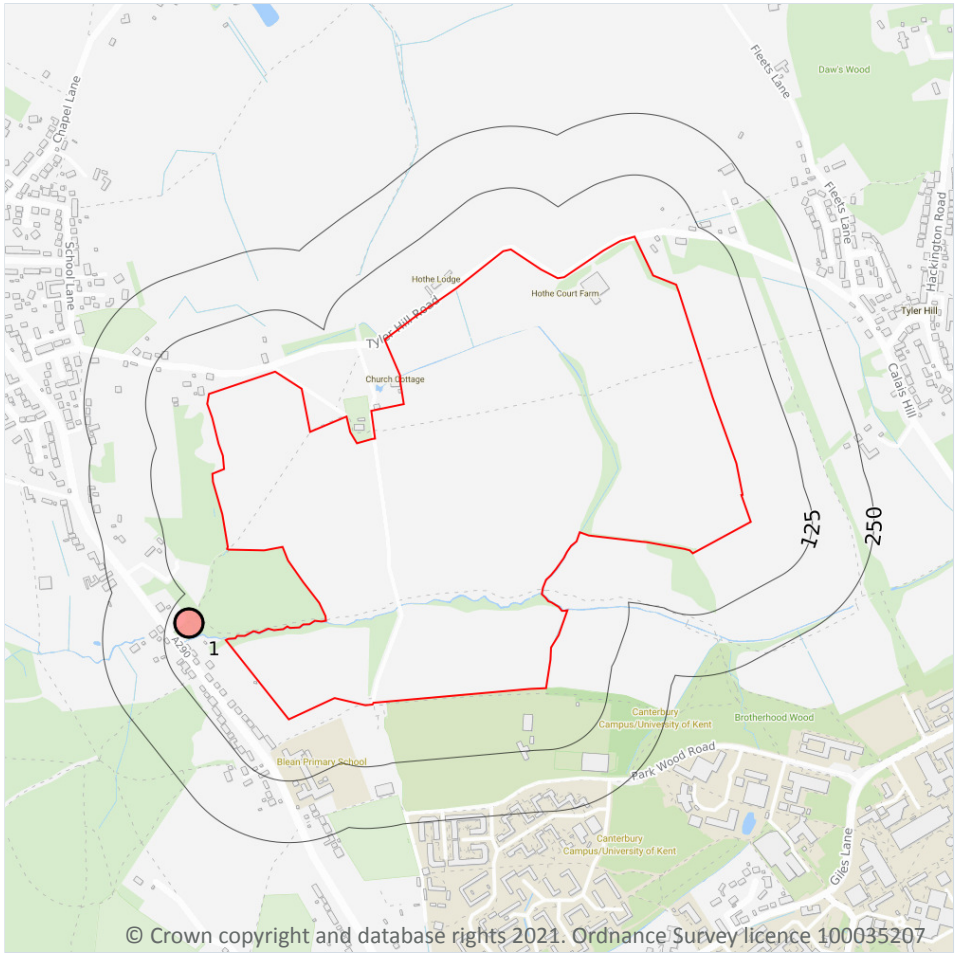
15.10 Bedrock faults and other linear features (50k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

16 Boreholes



16.1 BGS Boreholes

Records within 250m	1

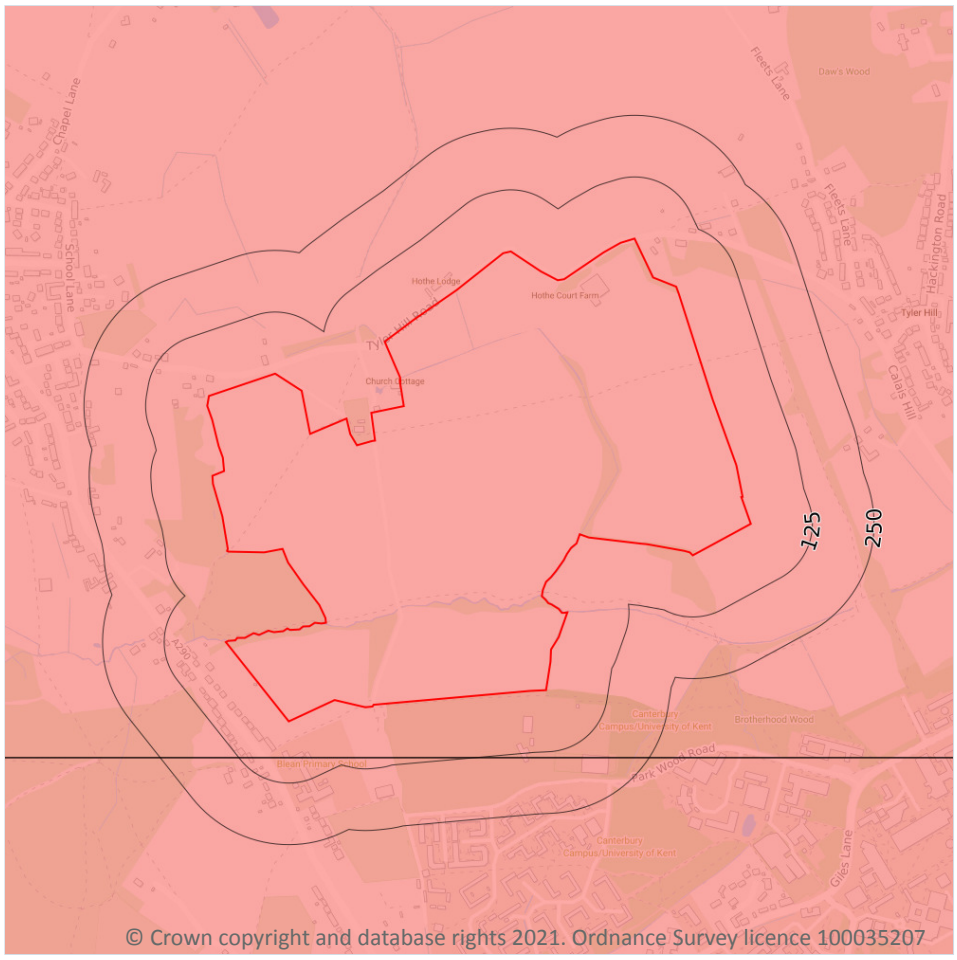
The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 102**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	83m NW	612560 160270	HARE AND HOUNDS BLEAN HILL BLEAN	48.76	N	615533

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	1

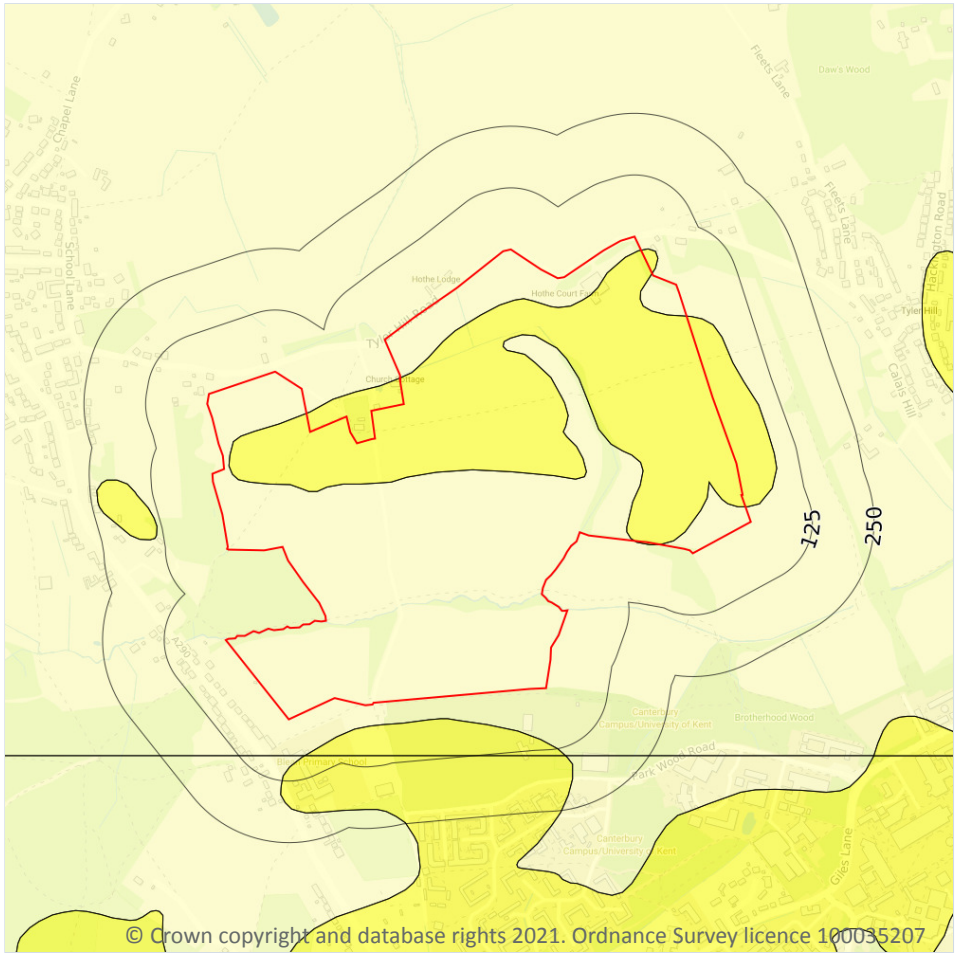
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 103**

Location	Hazard rating	Details
On site	**Moderate**	**Ground conditions predominantly high plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	3

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

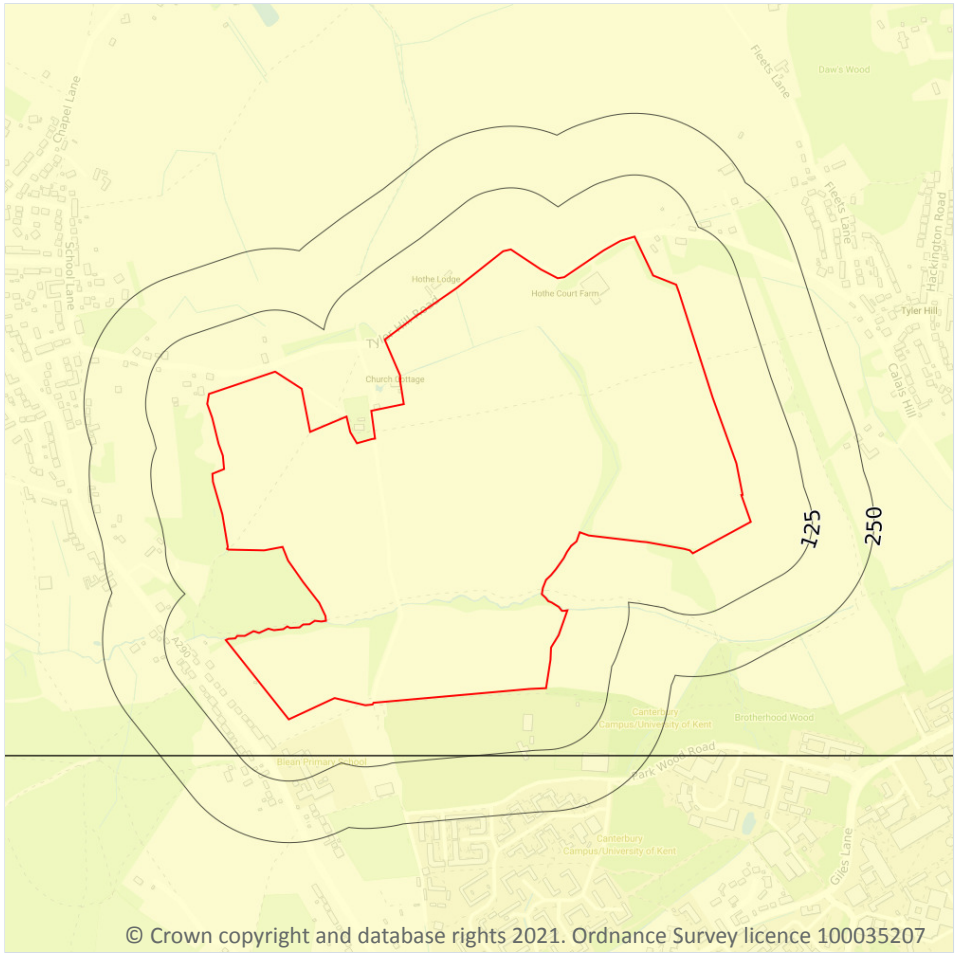
Features are displayed on the Natural ground subsidence - Running sands map on **page 104**

Location	Hazard rating	Details
On site	**Negligible**	**Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**
43m S	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	1

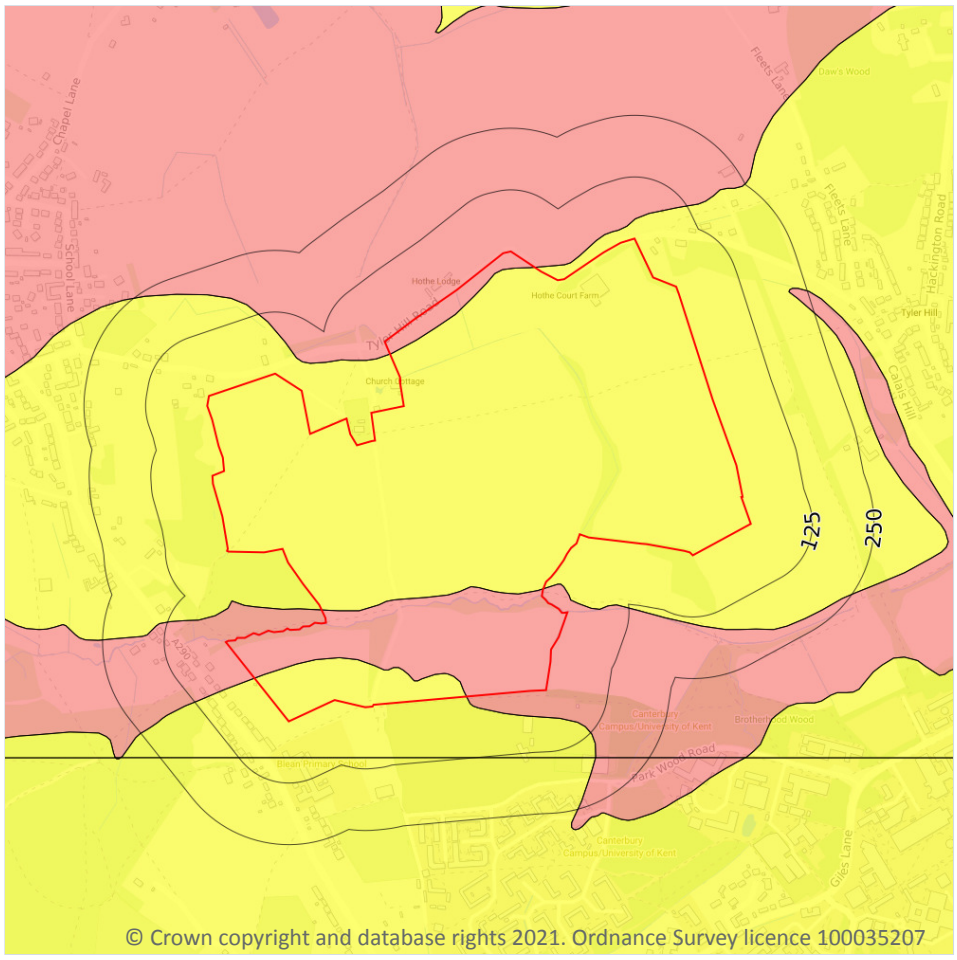
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 106**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



17.4 Collapsible deposits

Records within 50m	2

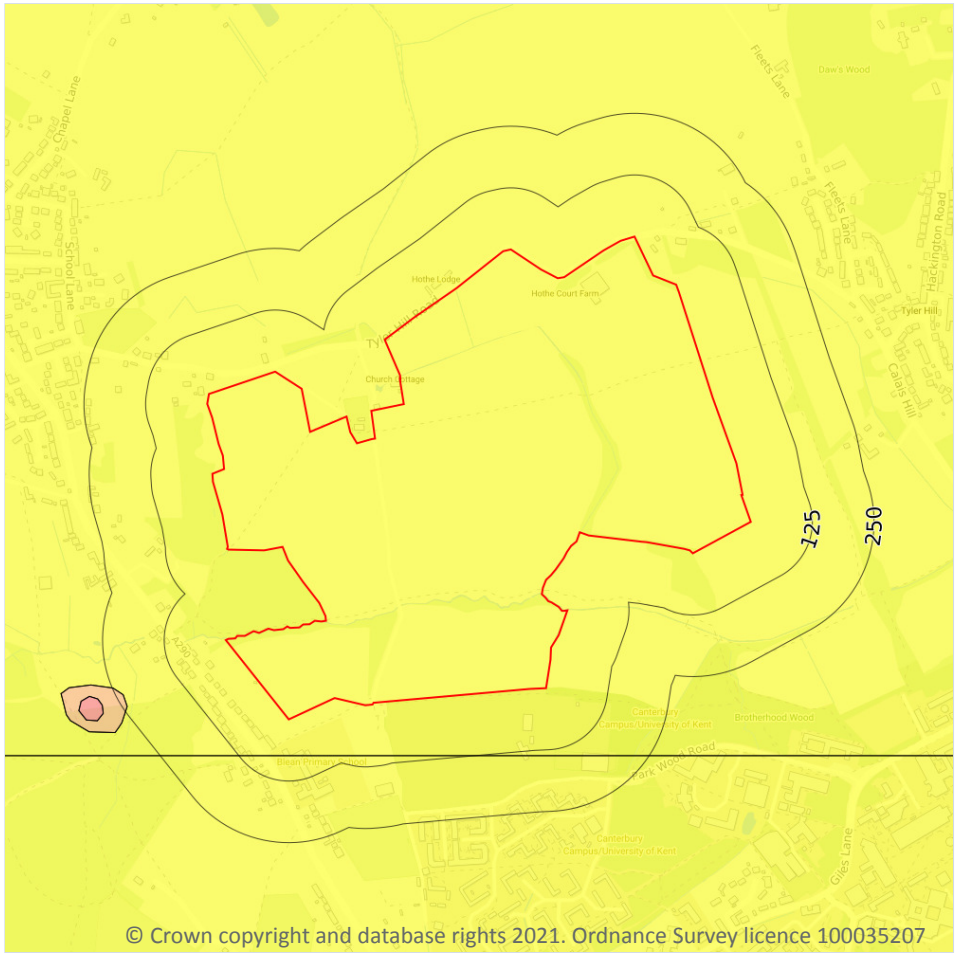
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 107**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**
On site	**Moderate**	**Deposits with potential to collapse when loaded and saturated are probably present in places.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	1

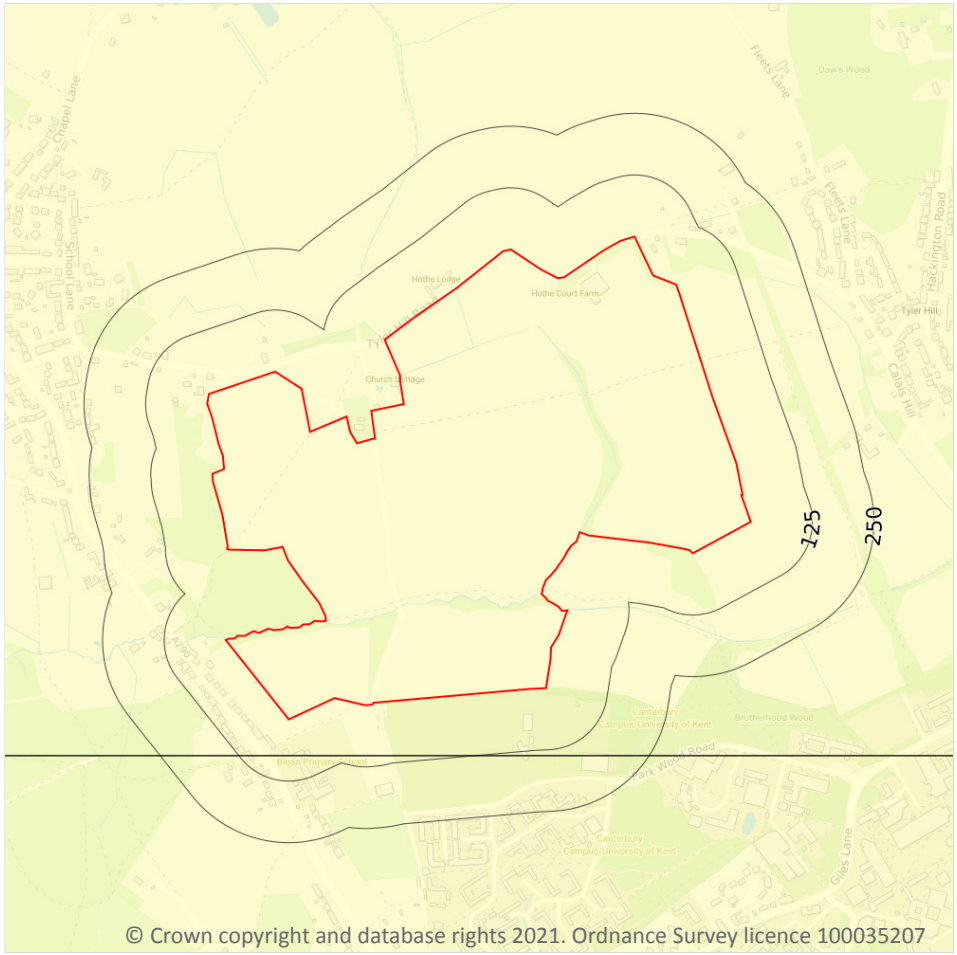
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 108**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	1

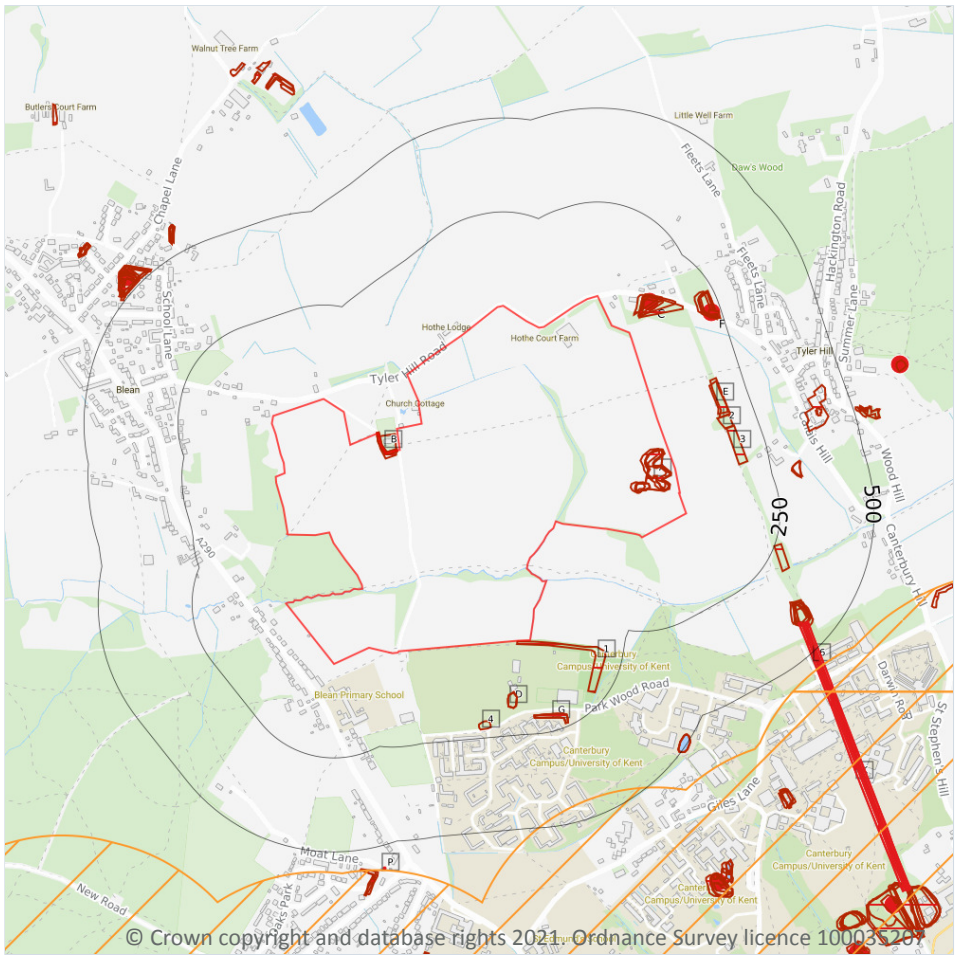
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 109**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



Site Outline

Search buffers in metres (m)

- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities

Non Coal Mining

- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Peter Brett Associates (PBA).

18.2 BritPits

Records within 500m	2

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining, ground workings and natural cavities map on **page 111**

ID	Location	Details	Description
C	98m NE	Name: Tylerhill Clay Pit Address: Tyler Hill, CANTERBURY, Kent Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
F	223m E	Name: Tyler Hill Clay Pit Address: Tyler Hill, CANTERBURY, Kent Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	35

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 111**

ID	Location	Land Use	Year of mapping	Mapping scale
A	**On site**	**Unspecified Pits**	**1974**	**1:10000**
A	**On site**	**Unspecified Pits**	**1957**	**1:10560**
A	**On site**	**Unspecified Pit**	**1947**	**1:10560**
A	**On site**	**Unspecified Pit**	**1947**	**1:10560**
A	**On site**	**Unspecified Pit**	**1938**	**1:10560**
A	**On site**	**Unspecified Pit**	**1938**	**1:10560**

ID	Location	Land Use	Year of mapping	Mapping scale
A	**On site**	**Unspecified Pit**	**1906**	**1:10560**
A	**On site**	**Unspecified Pit**	**1906**	**1:10560**
B	**On site**	**Grave Yard**	**1873**	**1:10560**
B	**On site**	**Unspecified Ground Workings**	**1906**	**1:10560**
B	**On site**	**Unspecified Ground Workings**	**1906**	**1:10560**
1	2m S	Unspecified Ground Workings	1974	1:10000
C	49m NE	Unspecified Ground Workings	1957	1:10560
C	49m N	Unspecified Pit	1938	1:10560
C	51m NE	Unspecified Pit	1873	1:10560
C	51m NE	Unspecified Pit	1947	1:10560
C	56m NE	Old Clay Pit	1896	1:10560
C	56m NE	Unspecified Pit	1906	1:10560
D	135m S	Unspecified Heap	1990	1:10000
D	135m S	Unspecified Heap	1983	1:10000
D	135m S	Unspecified Heap	1973	1:10000
2	151m E	Cuttings	1896	1:10560
E	156m E	Cuttings	1974	1:10000
E	157m E	Cuttings	1896	1:10560
3	165m E	Cuttings	1974	1:10000
F	192m E	Unspecified Pit	1938	1:10560
F	199m E	Unspecified Pit	1957	1:10560
G	201m S	Unspecified Ground Workings	1990	1:10000
G	201m S	Unspecified Ground Workings	1983	1:10000
G	201m S	Unspecified Ground Workings	1973	1:10000
F	202m E	Unspecified Pit	1947	1:10560
F	203m E	Unspecified Pit	1906	1:10560
4	206m S	Unspecified Heap	1973	1:10000
F	207m E	Old Clay Pit	1896	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
F	214m E	Clay Pit	1873	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	**8**

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

Features are displayed on the Mining, ground workings and natural cavities map on **page 111**

ID	Location	Land Use	Year of mapping	Mapping scale
K	419m SE	Tunnel	1872	1:10560
K	419m SE	Tunnel	1872	1:10560
K	429m SE	Tunnel	1947	1:10560
6	429m SE	Tunnel	1957	1:10560
K	430m SE	Tunnel	1906	1:10560
K	430m SE	Tunnel	1896	1:10560
P	558m S	Unspecified Shaft	1873	1:10560
9	609m SE	Tunnel	1957	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	**0**

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	2

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining, ground workings and natural cavities map on **page 111**

ID	Location	Name	Commodity	Class	Likelihood
7	452m S	Not available	Chalk	C	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
8	541m SE	Not available	Chalk	C	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Peter Brett Associates (PBA).

18.8 JPB mining areas

Records on site	0

Areas which could be affected by former coal mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

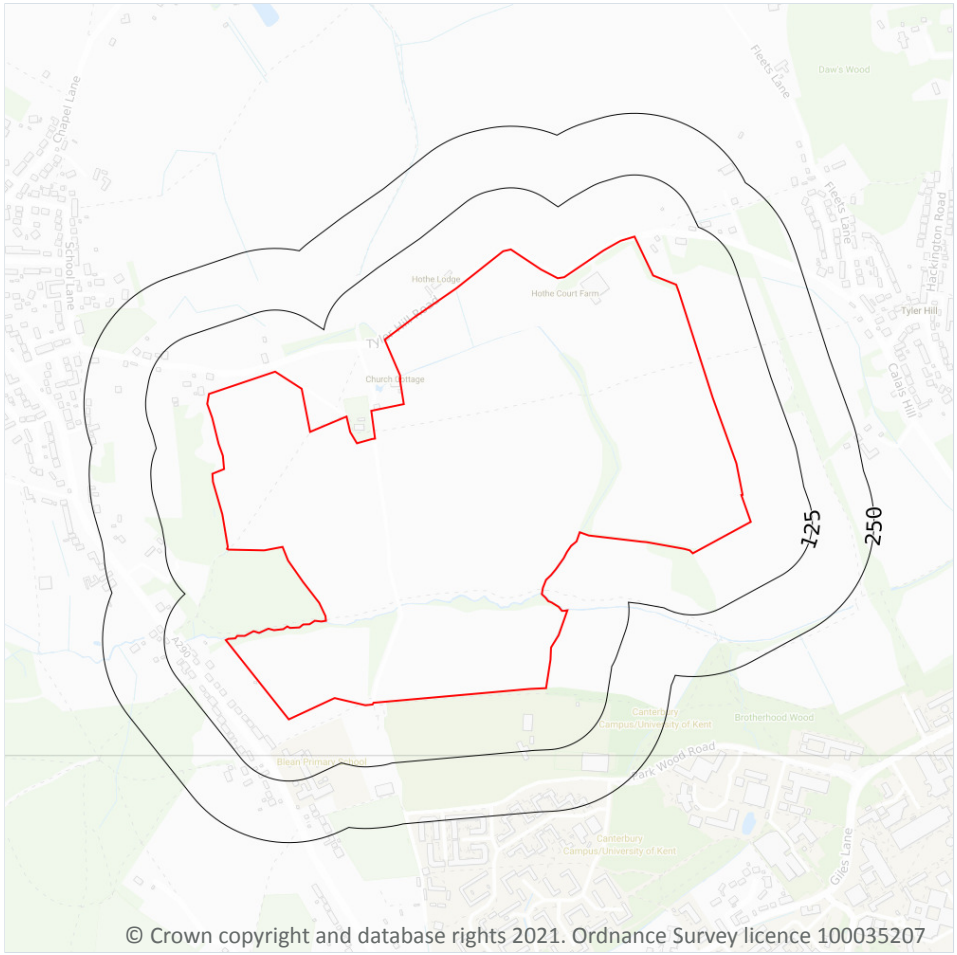
18.13 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

19.1 Radon

Records on site	1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 117**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None****

This data is sourced from the British Geological Survey and Public Health England.

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	44

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
1m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
2m S	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
2m S	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
10m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
10m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
15m SE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
18m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
18m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
43m SW	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
44m S	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
46m S	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m	**0**

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city

between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

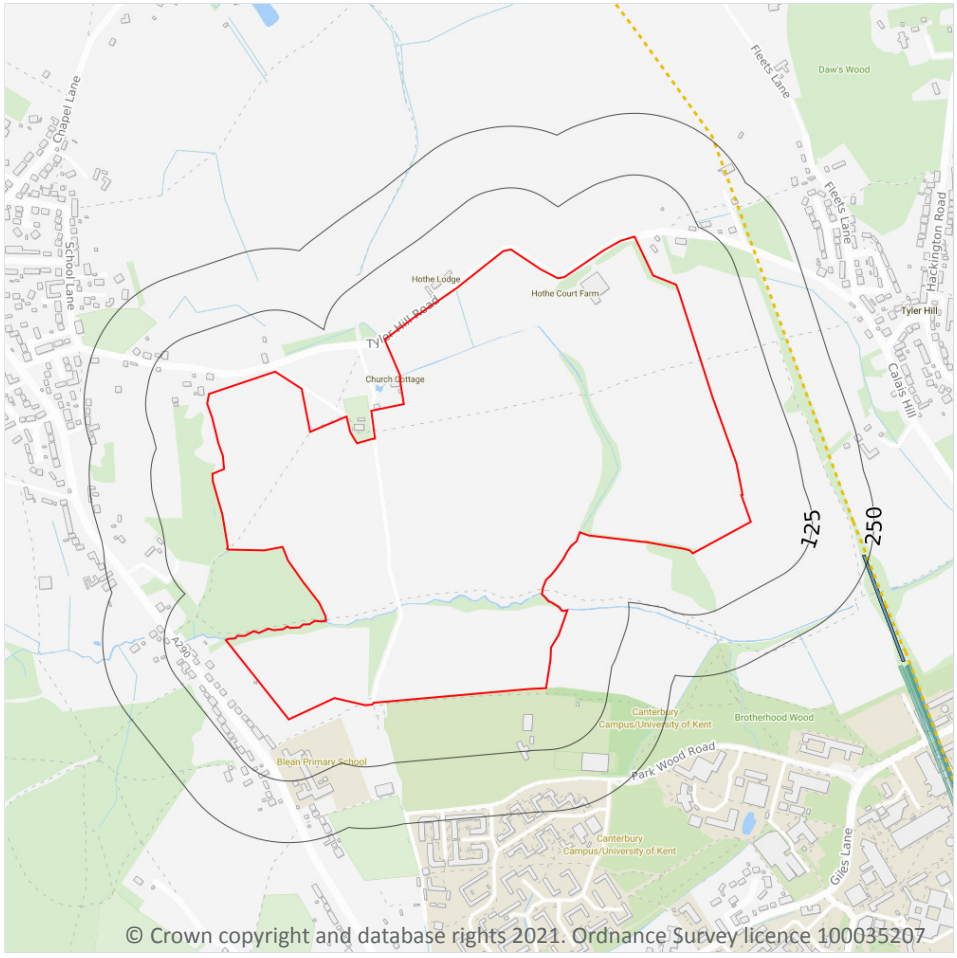
20.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

21.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	4

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 122**

Location	Land Use	Year of mapping	Mapping scale
237m E	Railway Sidings	1898	2500
237m E	Railway Sidings	1907	2500
237m E	Railway Sidings	1938	2500
237m E	Railway Sidings	1874	2500

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	2

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

Features are displayed on the Railway infrastructure and projects map on **page 122**

Location	Description
172m E	Abandoned
208m E	Abandoned

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

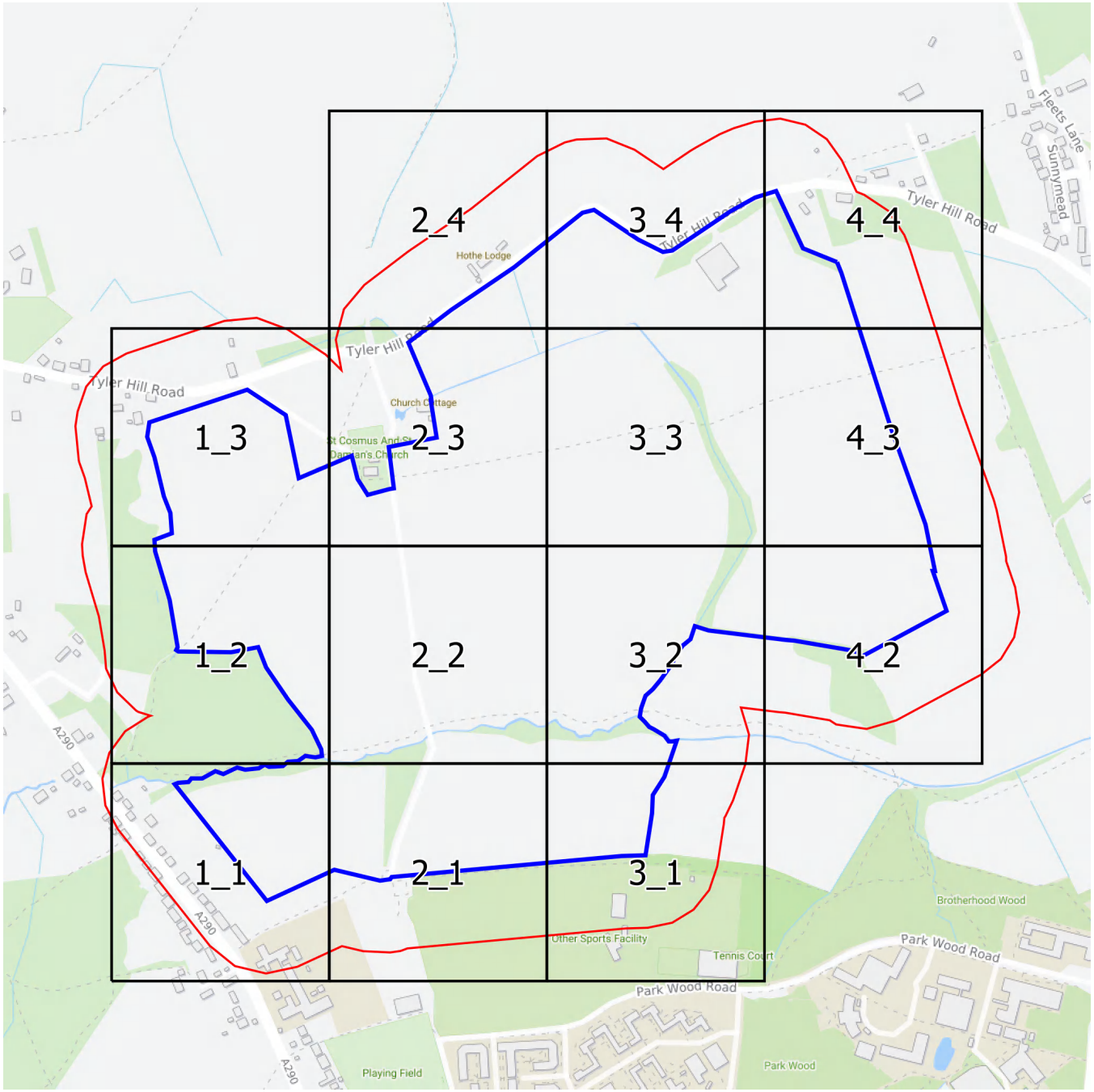
This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

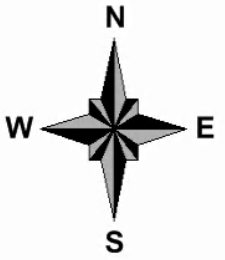
Terms and conditions

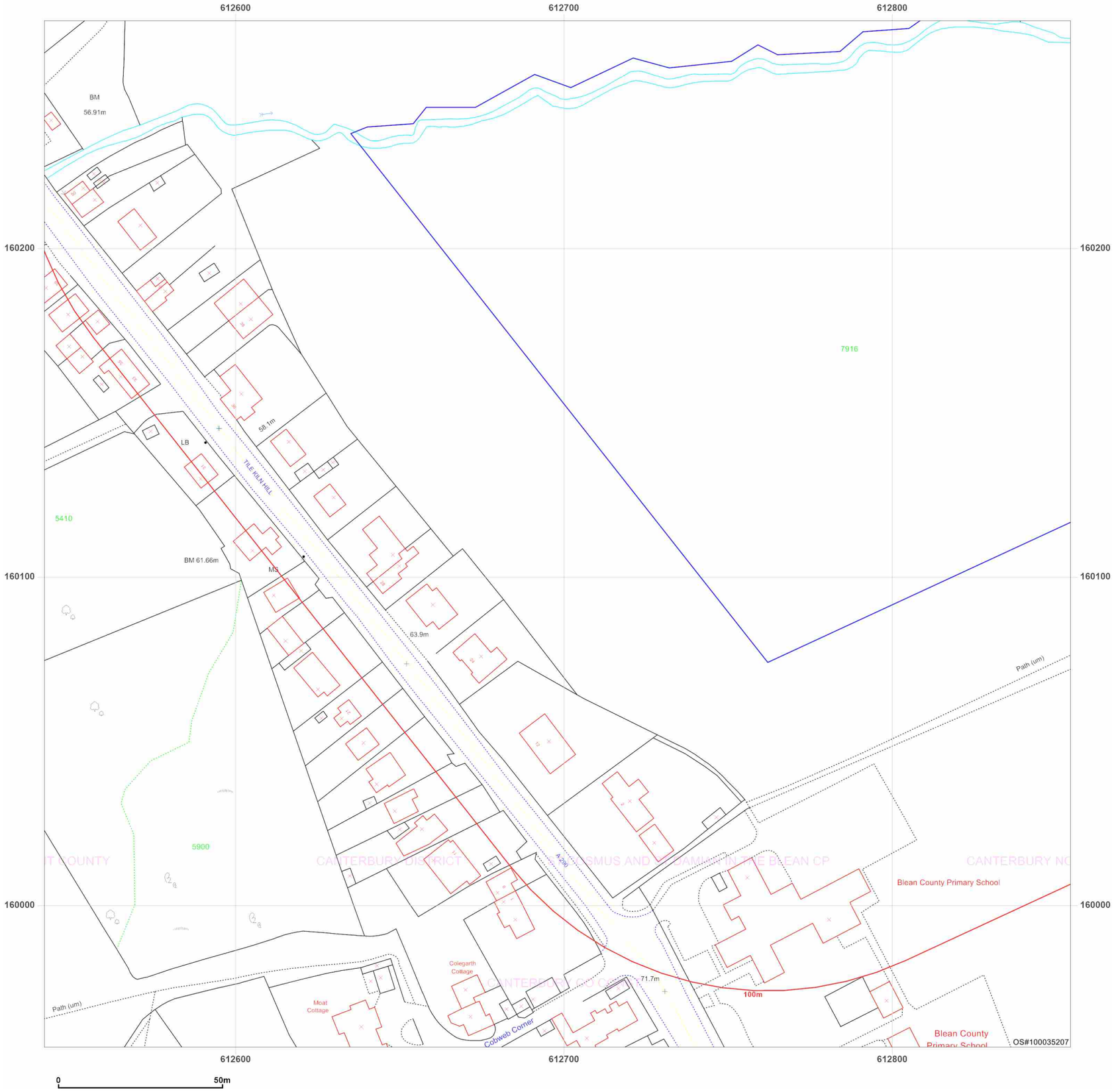
Groundsure's Terms and Conditions can be accessed at this link: https://www.groundsure.com/terms-and-conditions-jan-2020/.



Groundsure INSIGHTS

Landline Scale Grid Index





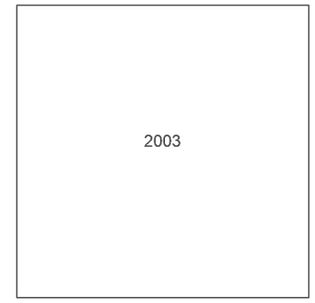
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_1_1
Grid Ref: 612698, 160113

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

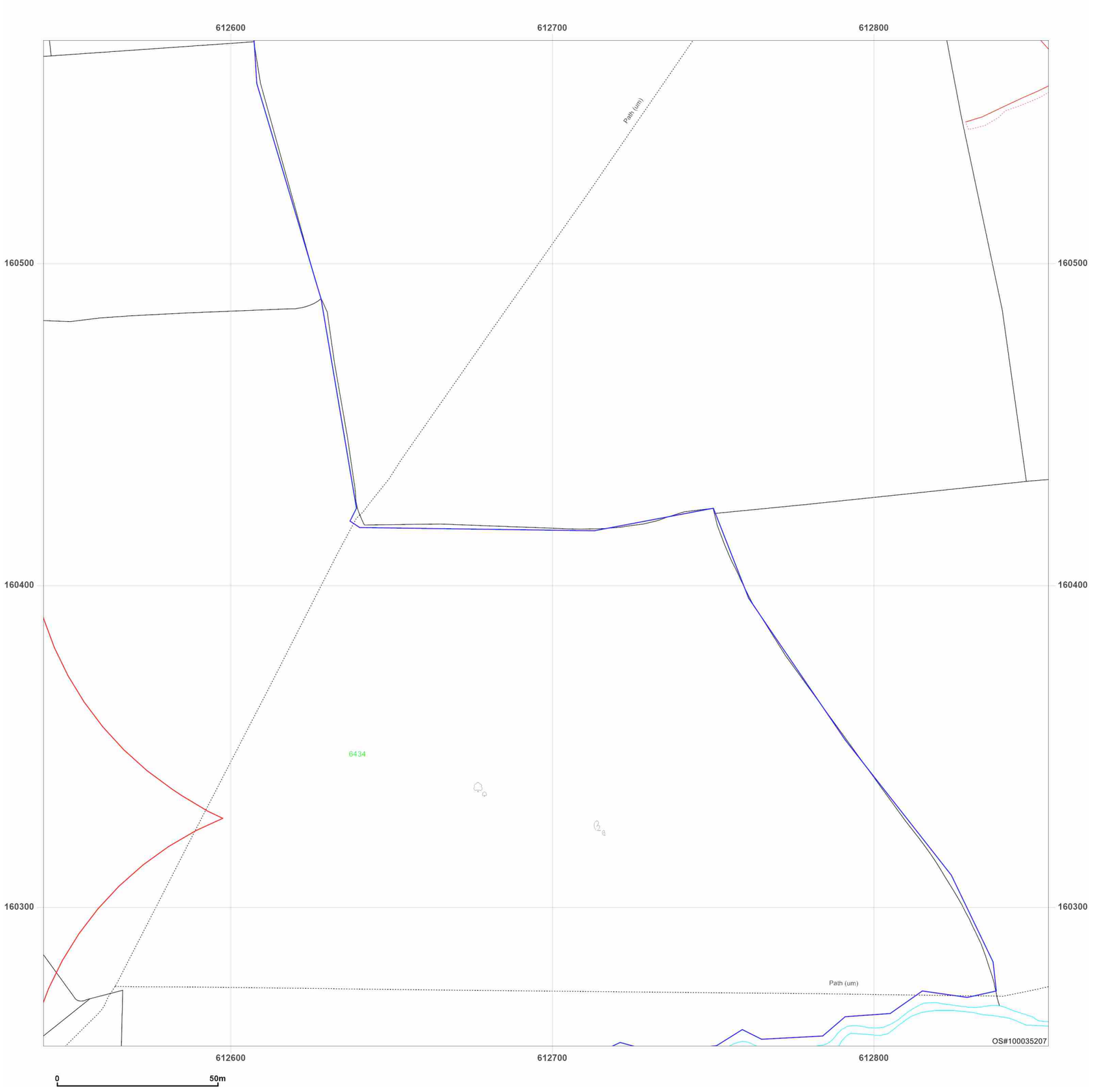
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



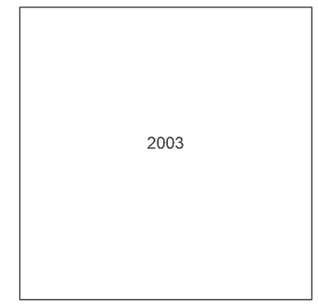
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_1_2
Grid Ref: 612698, 160413

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

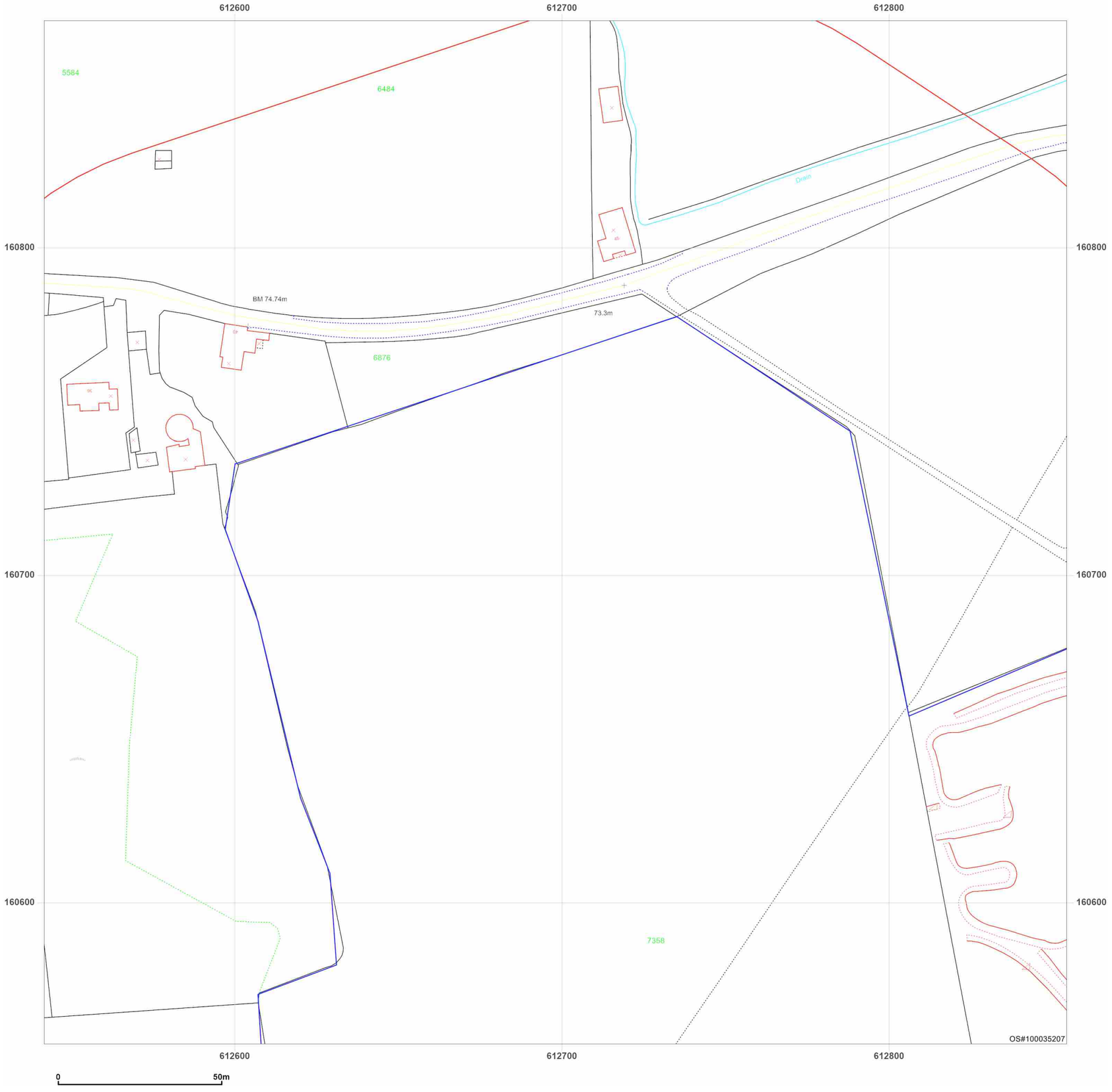
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_1_3
Grid Ref: 612698, 160713

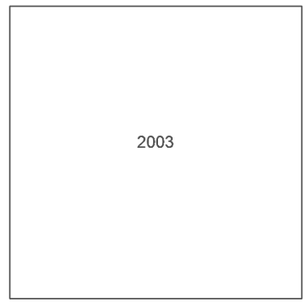
Map Name: LandLine

Map date: **2003**

Scale: 1:1,250

Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

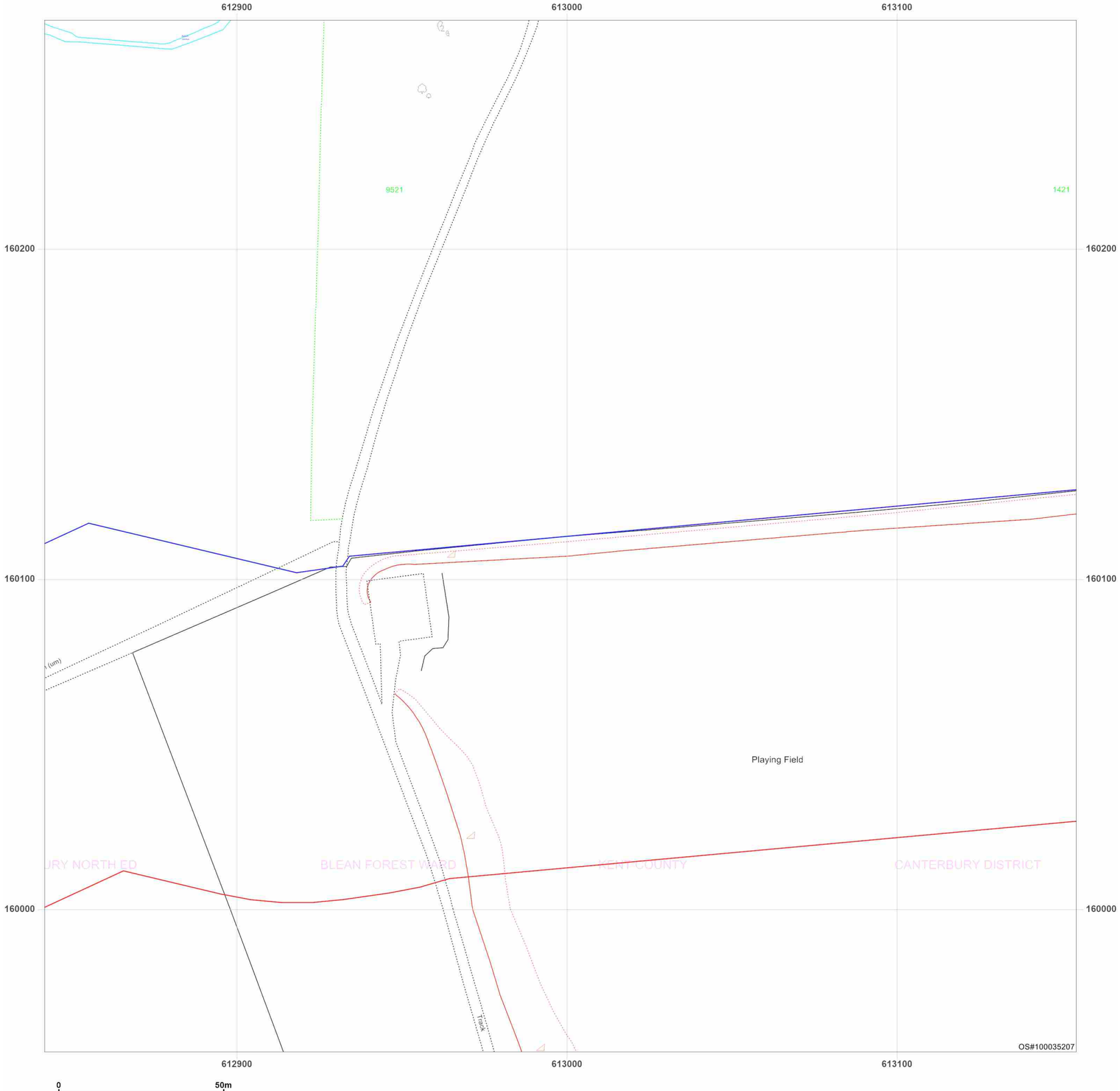
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_2_1
Grid Ref: 612998, 160113

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

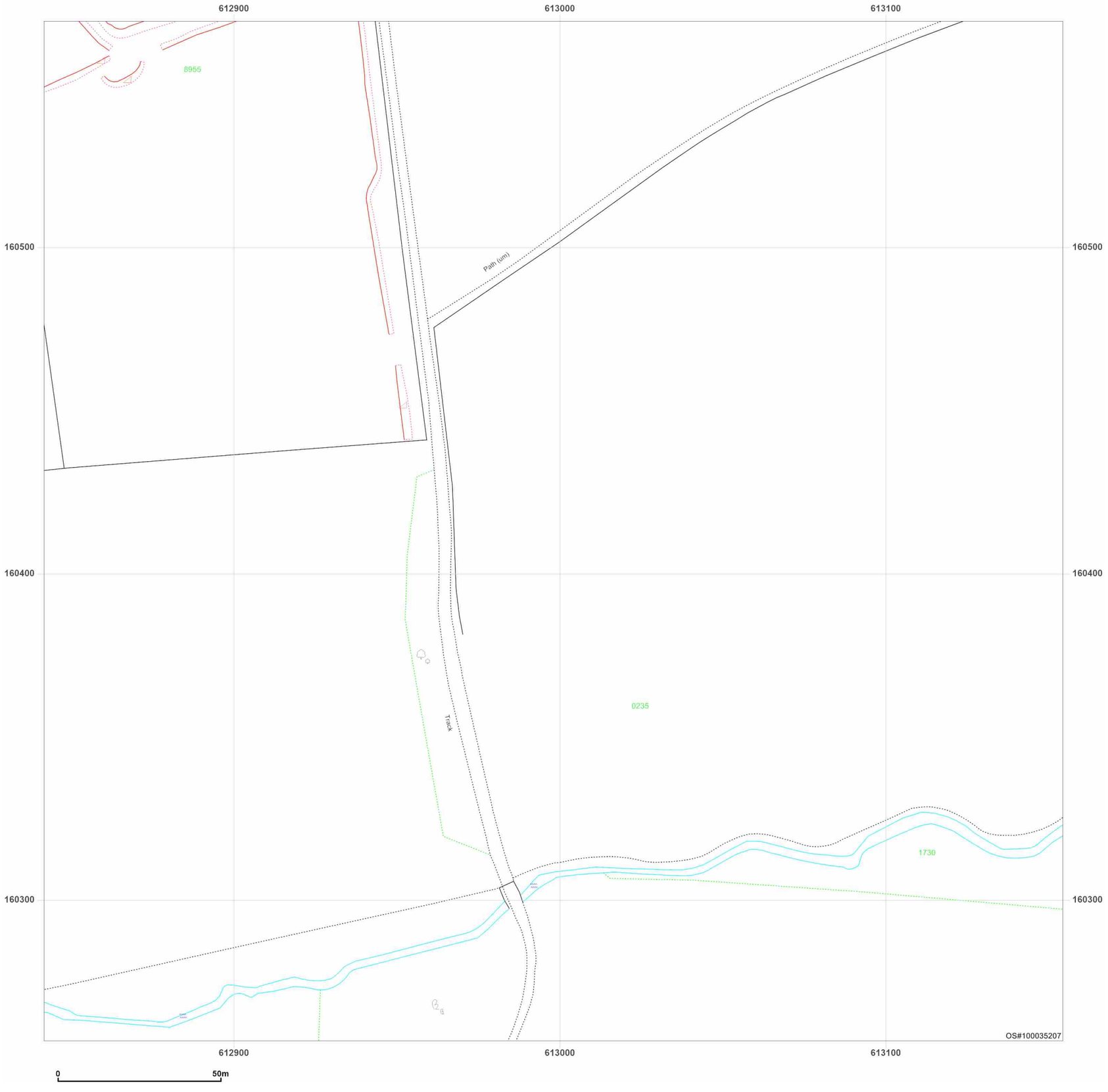
N
W E
S

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



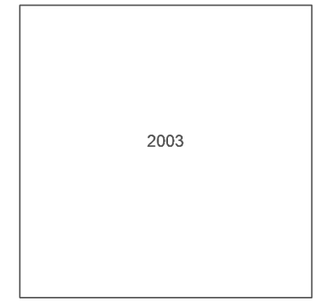
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_2_2
Grid Ref: 612998, 160413

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_2_3
Grid Ref: 612998, 160713

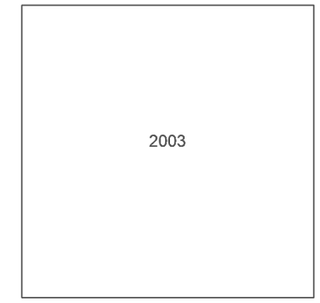
Map Name: LandLine

Map date: **2003**

Scale: 1:1,250

Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

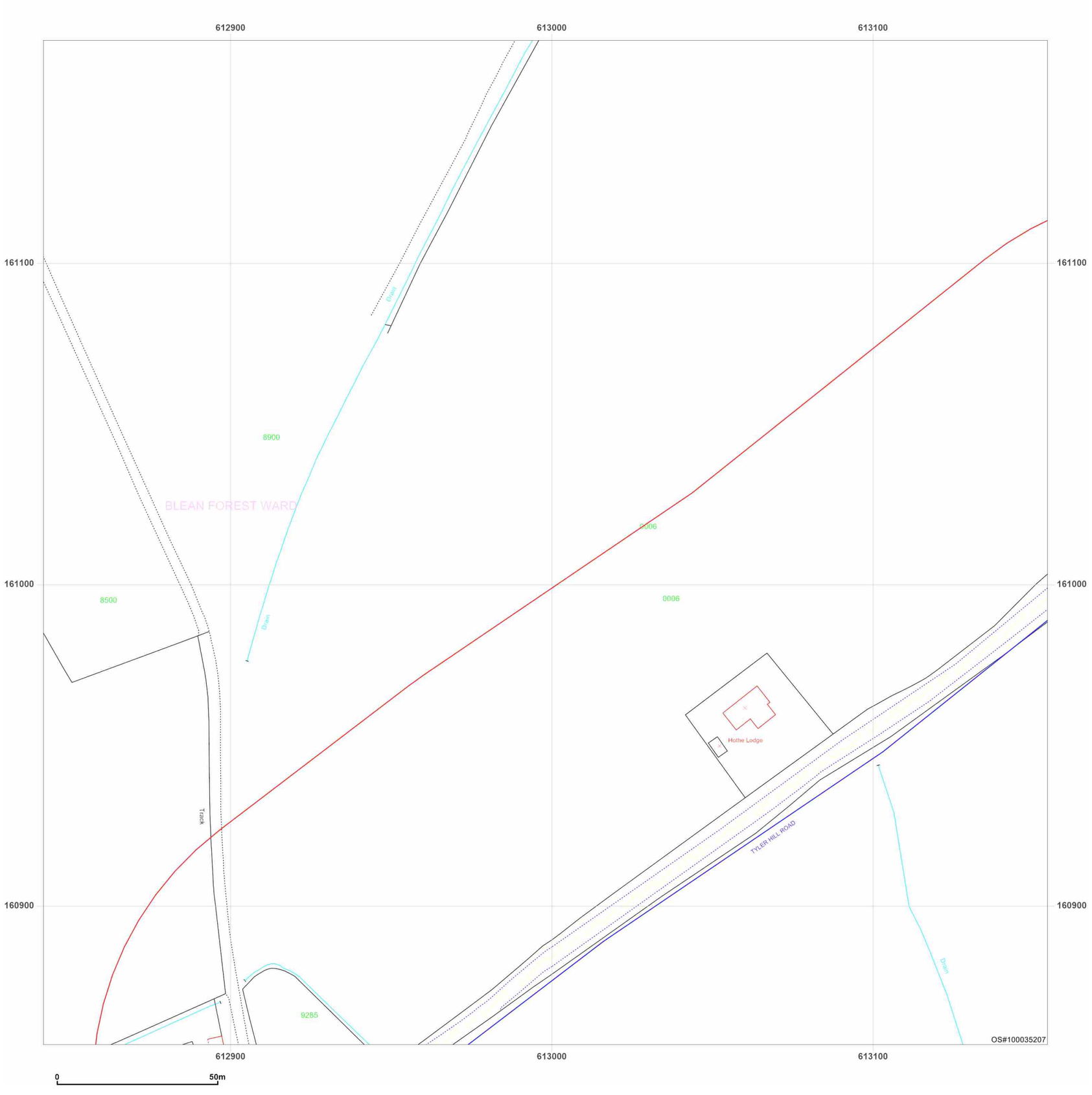
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



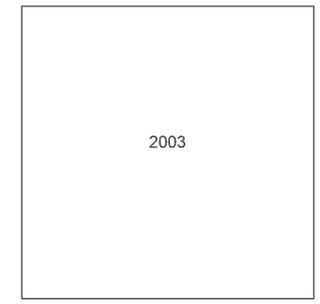
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_2_4
Grid Ref: 612998, 161013

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

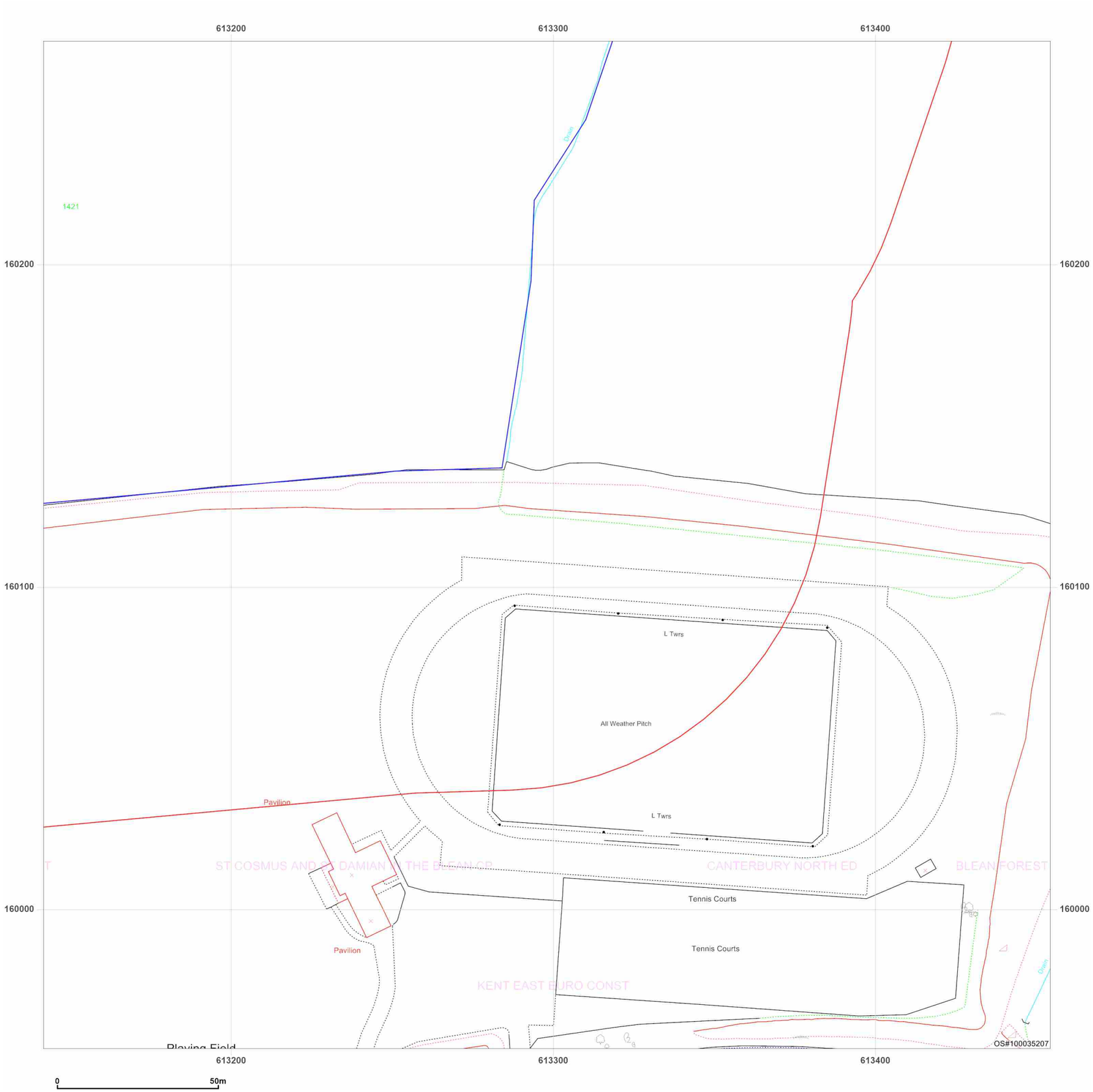
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_3_1
Grid Ref: 613298, 160113

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S

Groundsure INSIGHTS

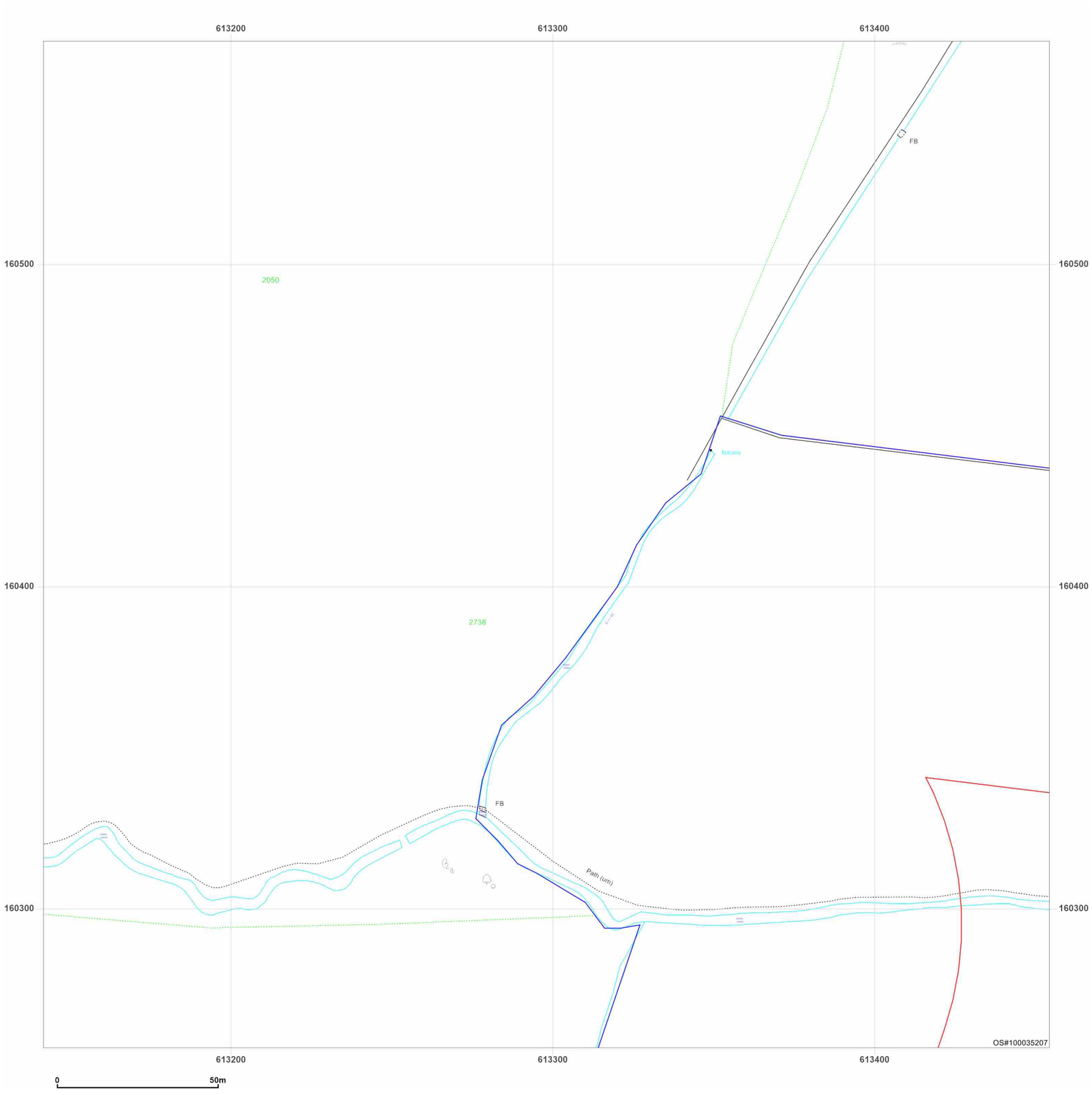
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



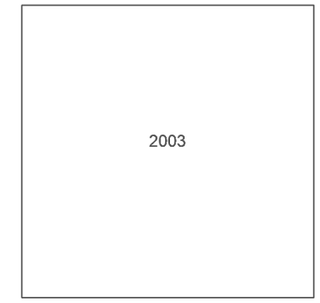
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_3_2
Grid Ref: 613298, 160413

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

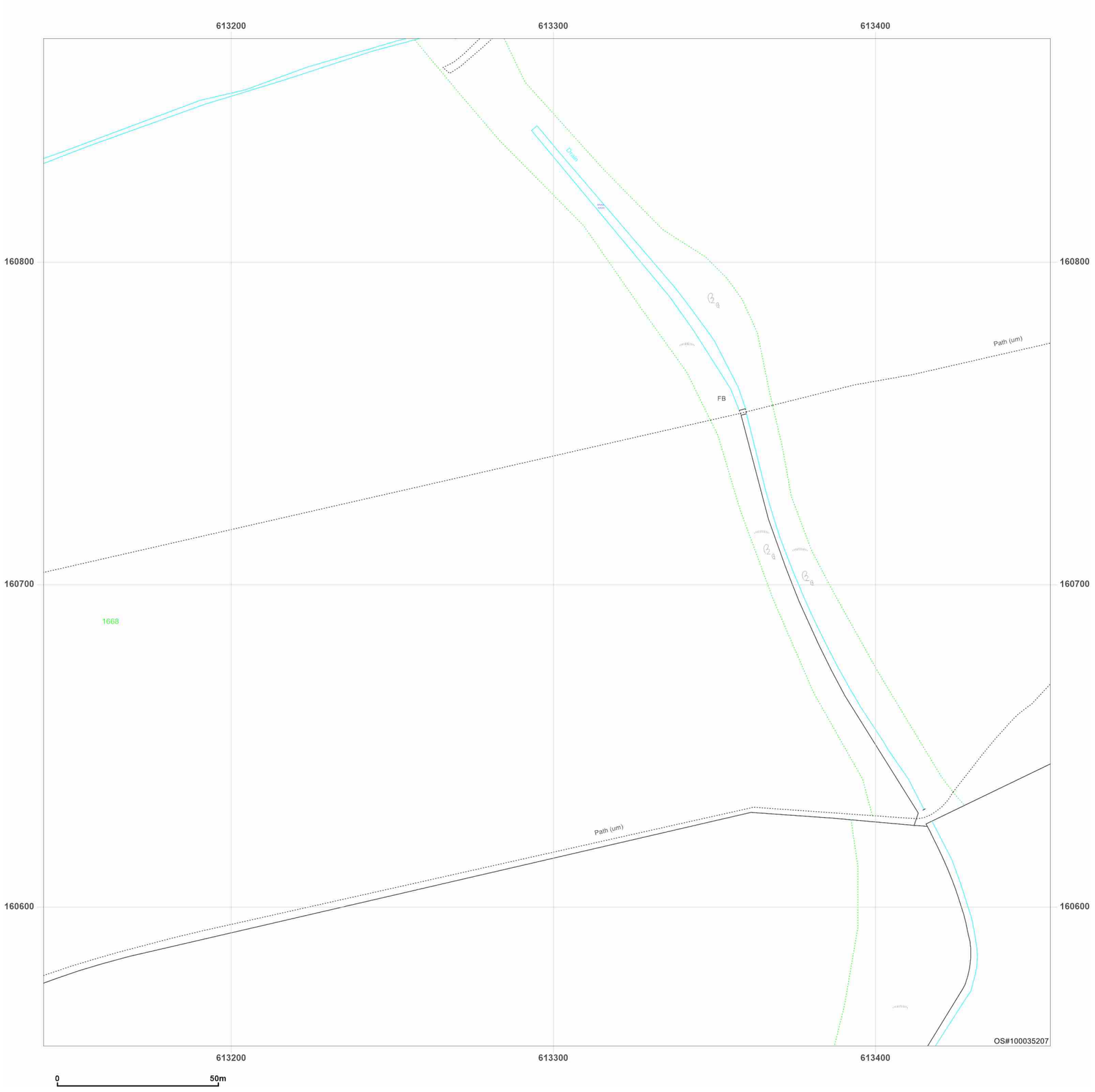
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_3_3
Grid Ref: 613298, 160713

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S

2003

Groundsure INSIGHTS

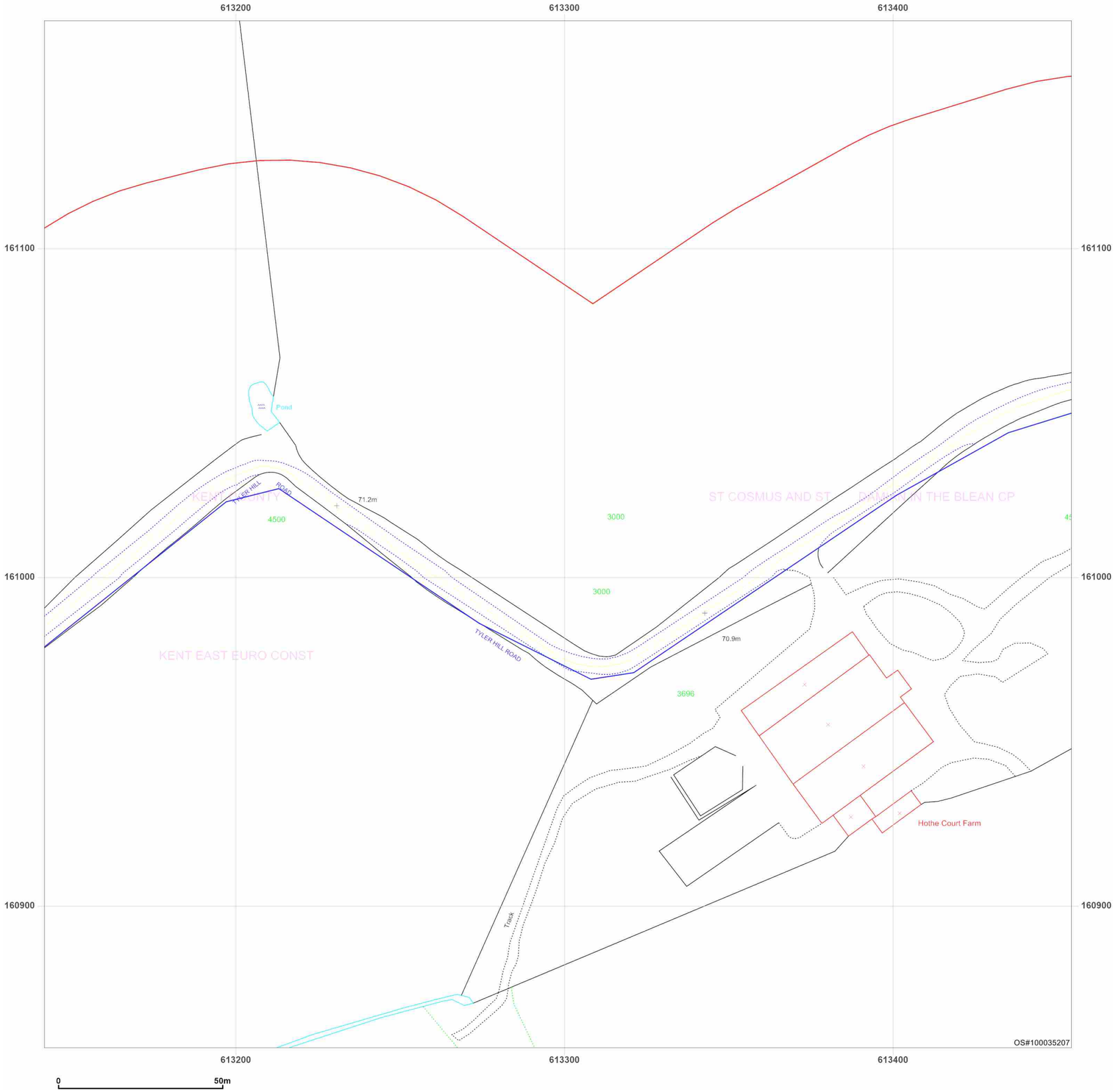
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



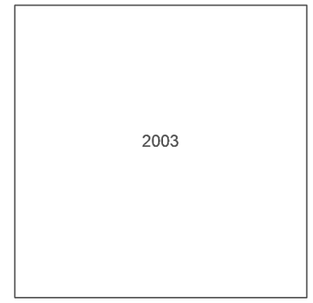
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_3_4
Grid Ref: 613298, 161013

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

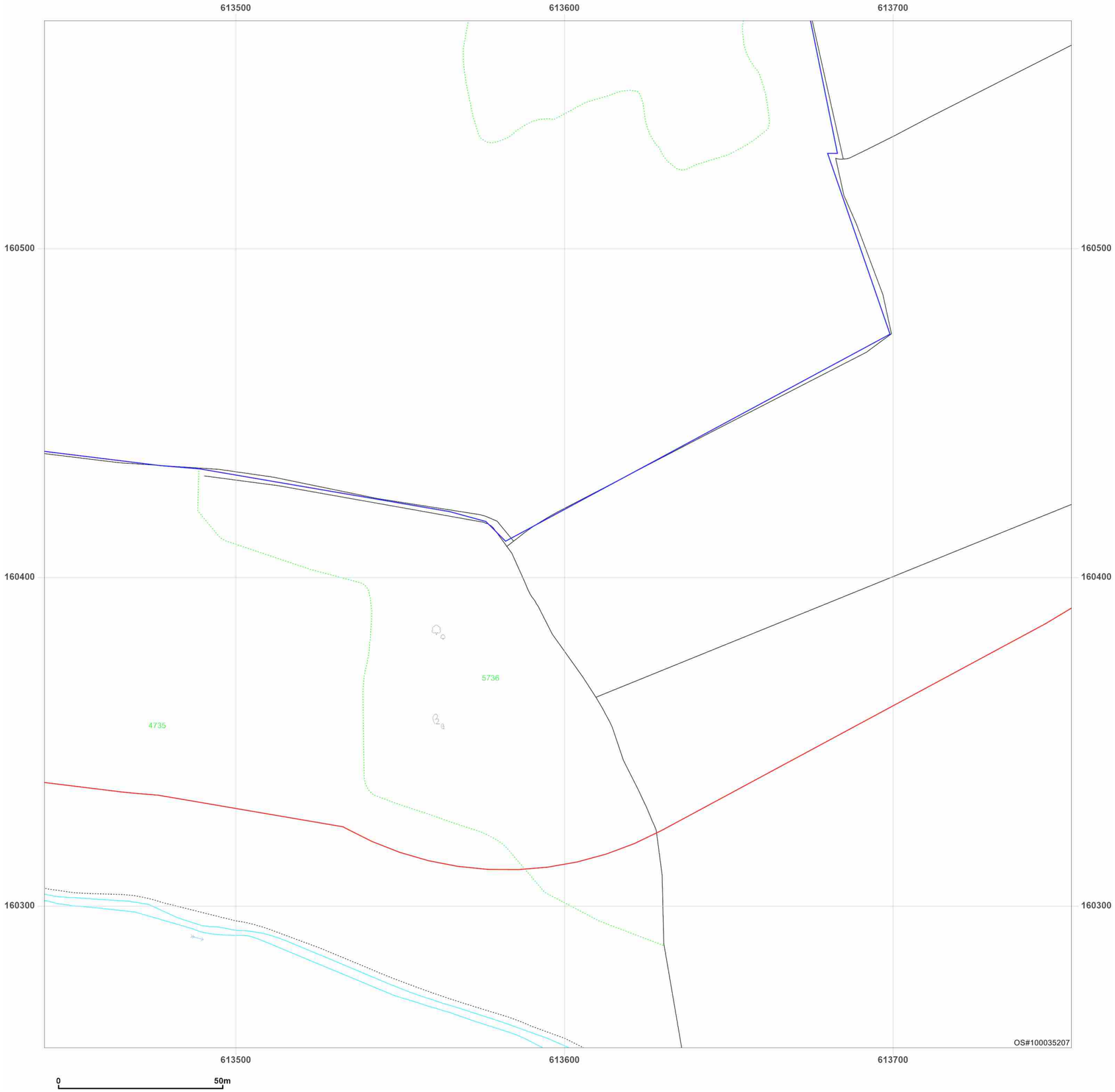
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_4_2
Grid Ref: 613598, 160413

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S

2003

Groundsure INSIGHTS

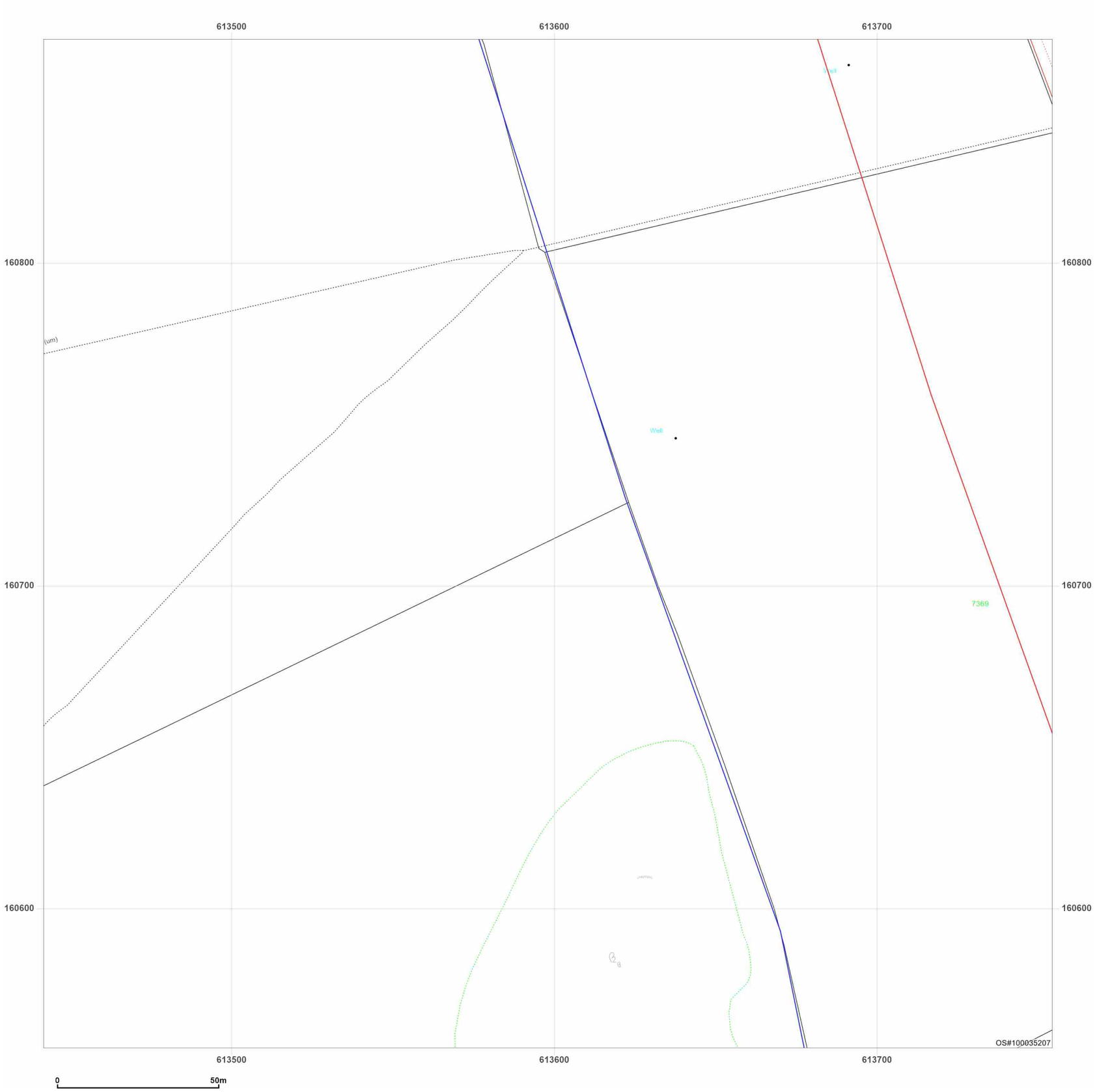
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



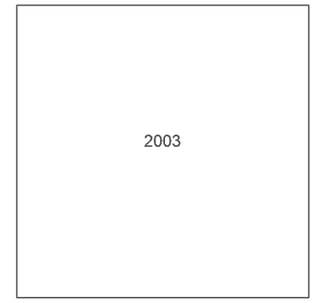
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_4_3
Grid Ref: 613598, 160713

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

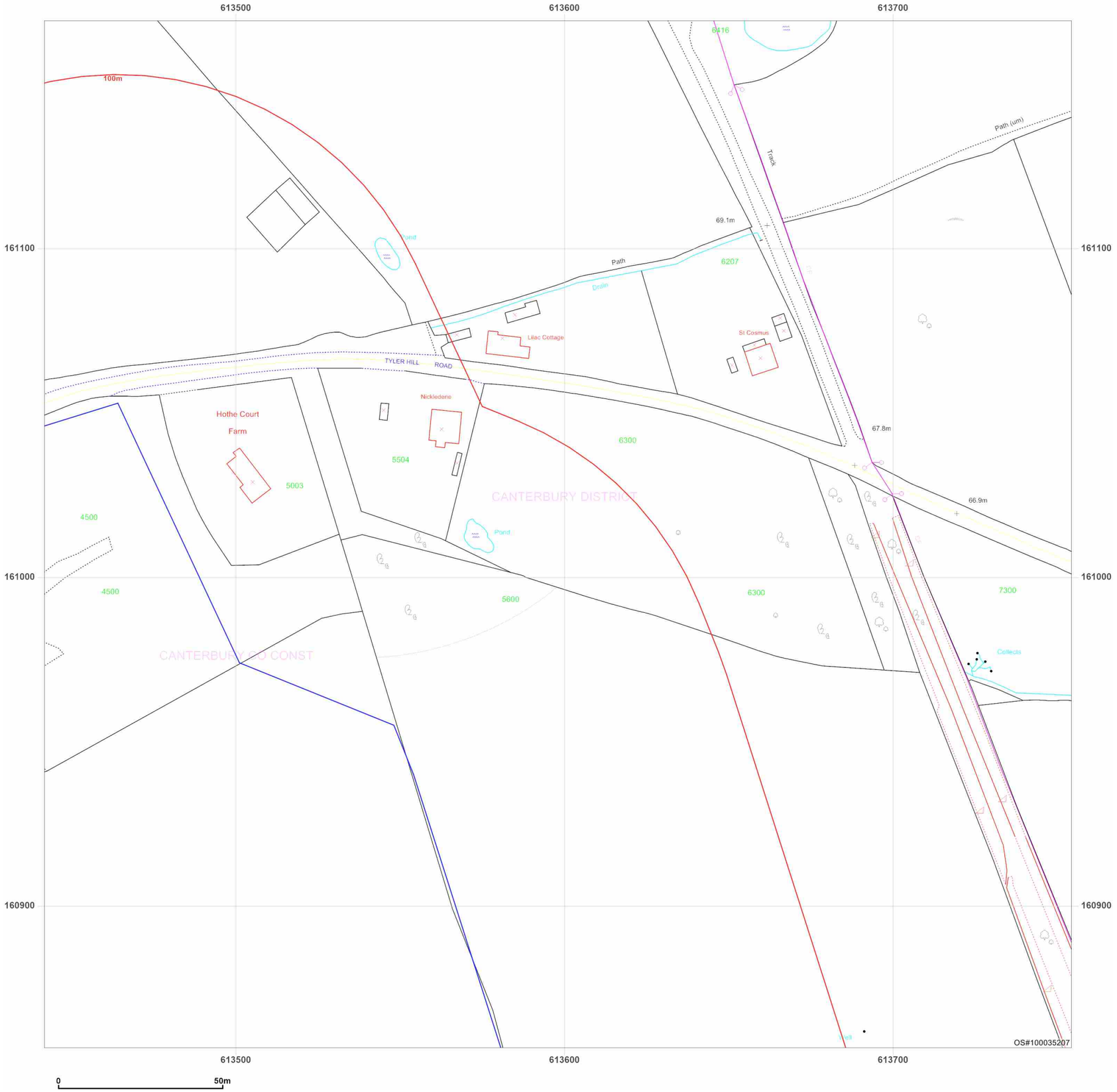
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



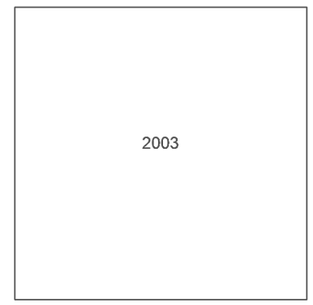
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_Landline_4_4
Grid Ref: 613598, 161013

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

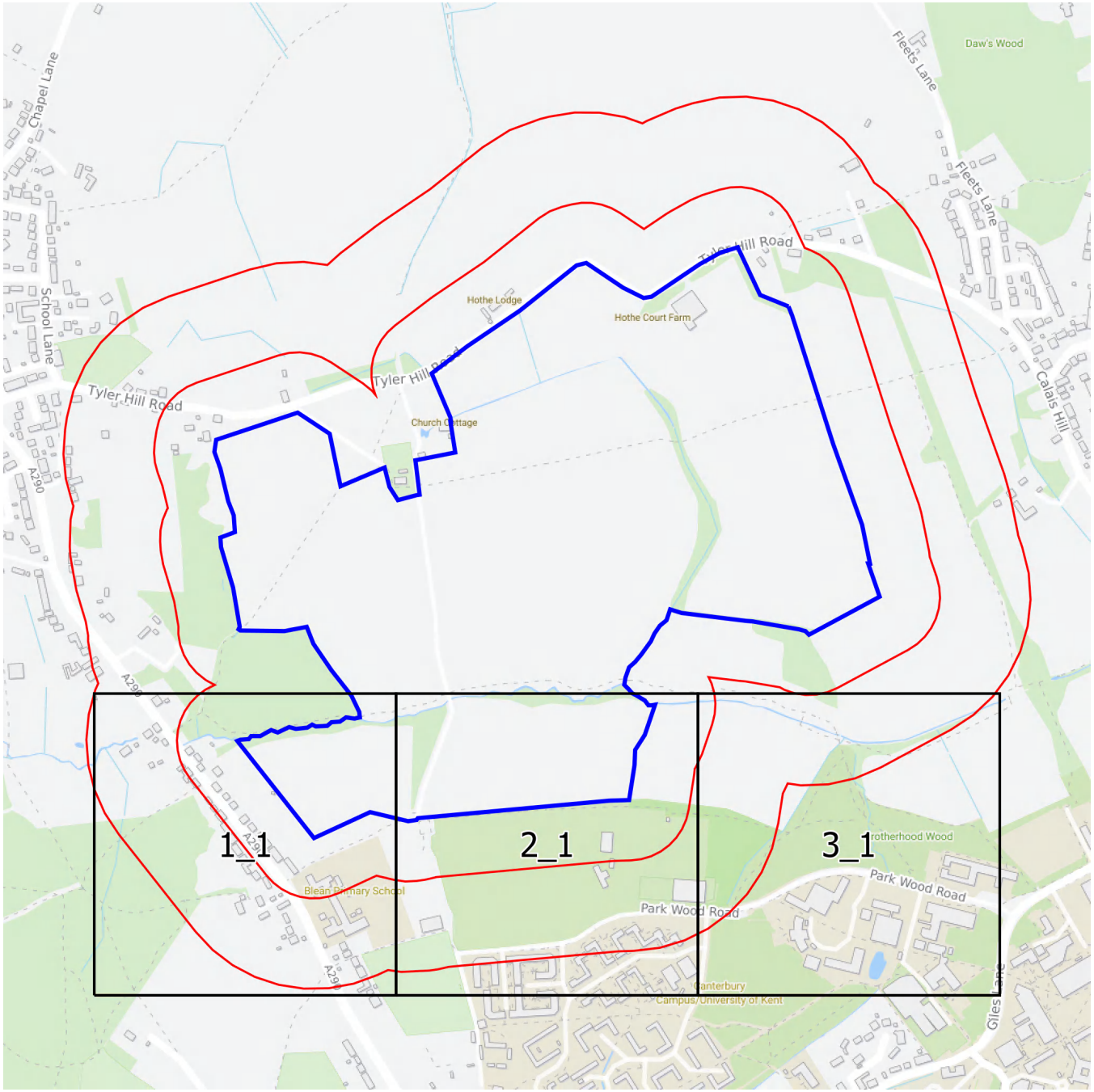
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

1:1,250 Scale Grid Index

N
W
E
S

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_1_1
Grid Ref: 612648, 160063

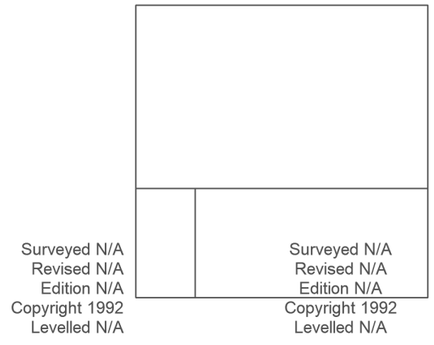
Map Name: National Grid

Map date: **1992**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

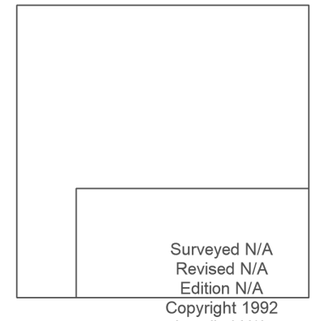
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_1_1
Grid Ref: 612648, 160063

Map Name: National Grid
Map date: **1992**
Scale: 1:1,250
Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

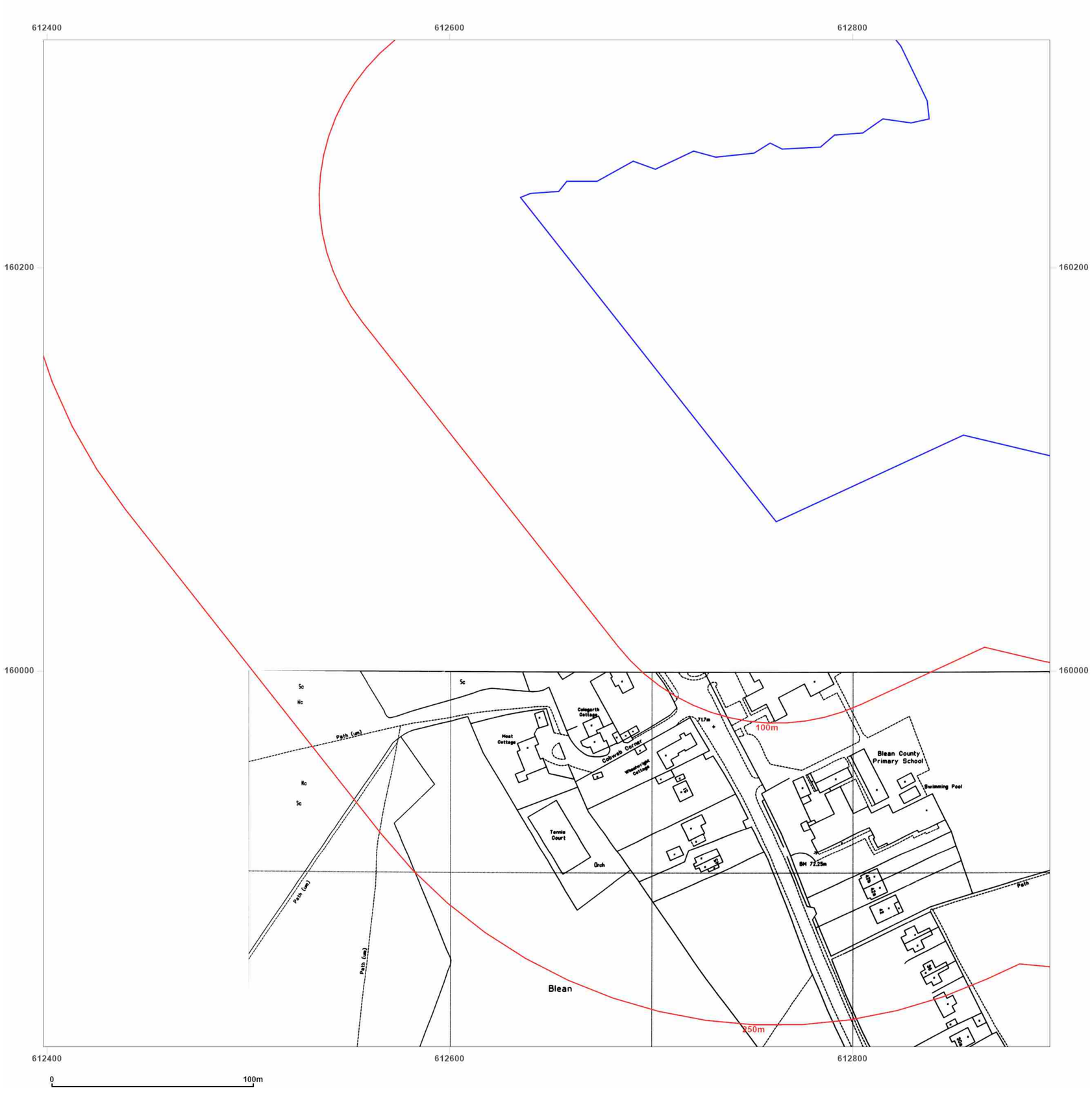
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_1_1
Grid Ref: 612648, 160063

Map Name: National Grid

Map date: **1992**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

Groundsure INSIGHTS

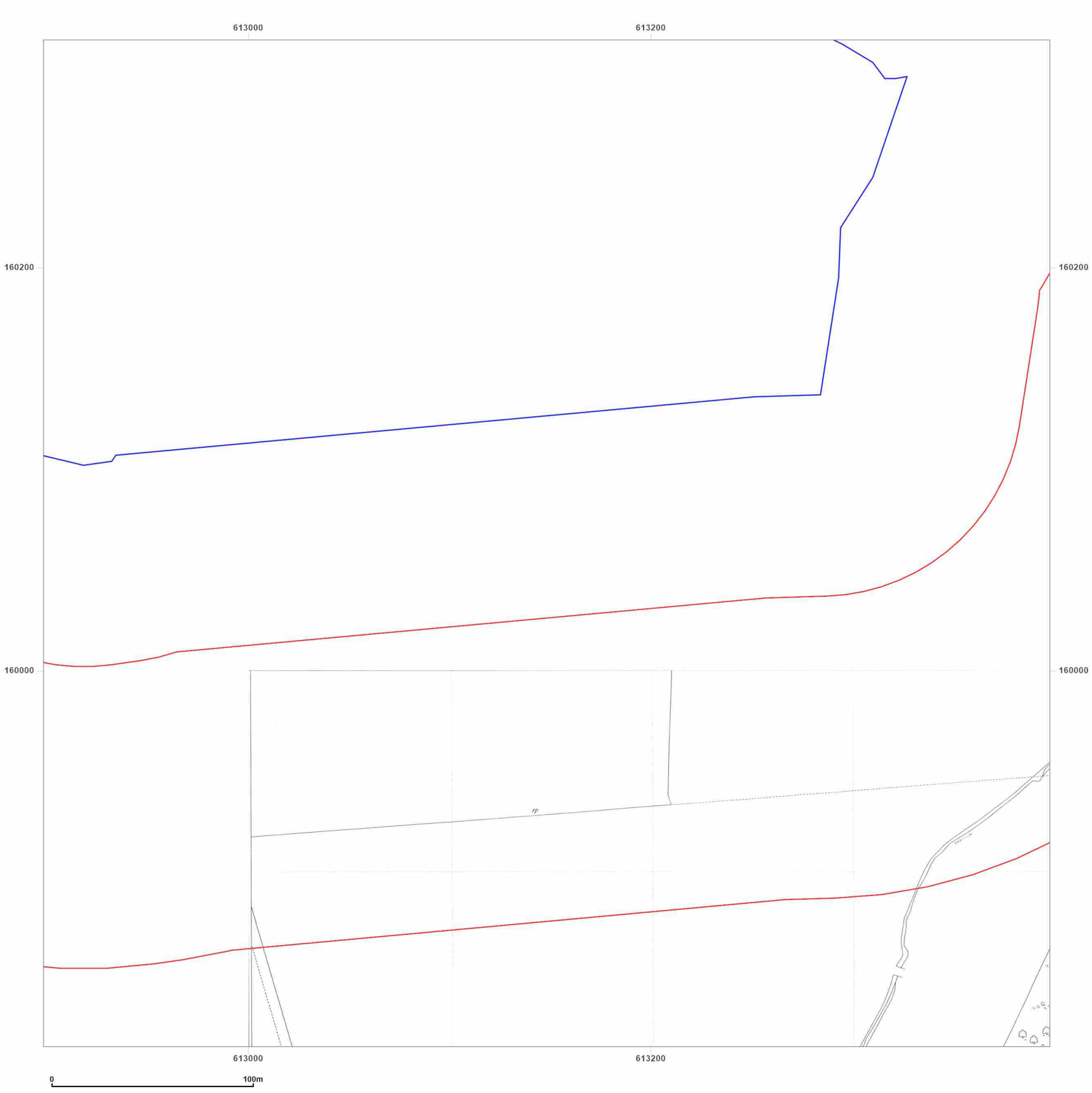
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_2_1
Grid Ref: 613148, 160063

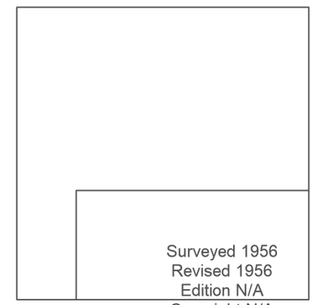
Map Name: National Grid

Map date: **1956**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

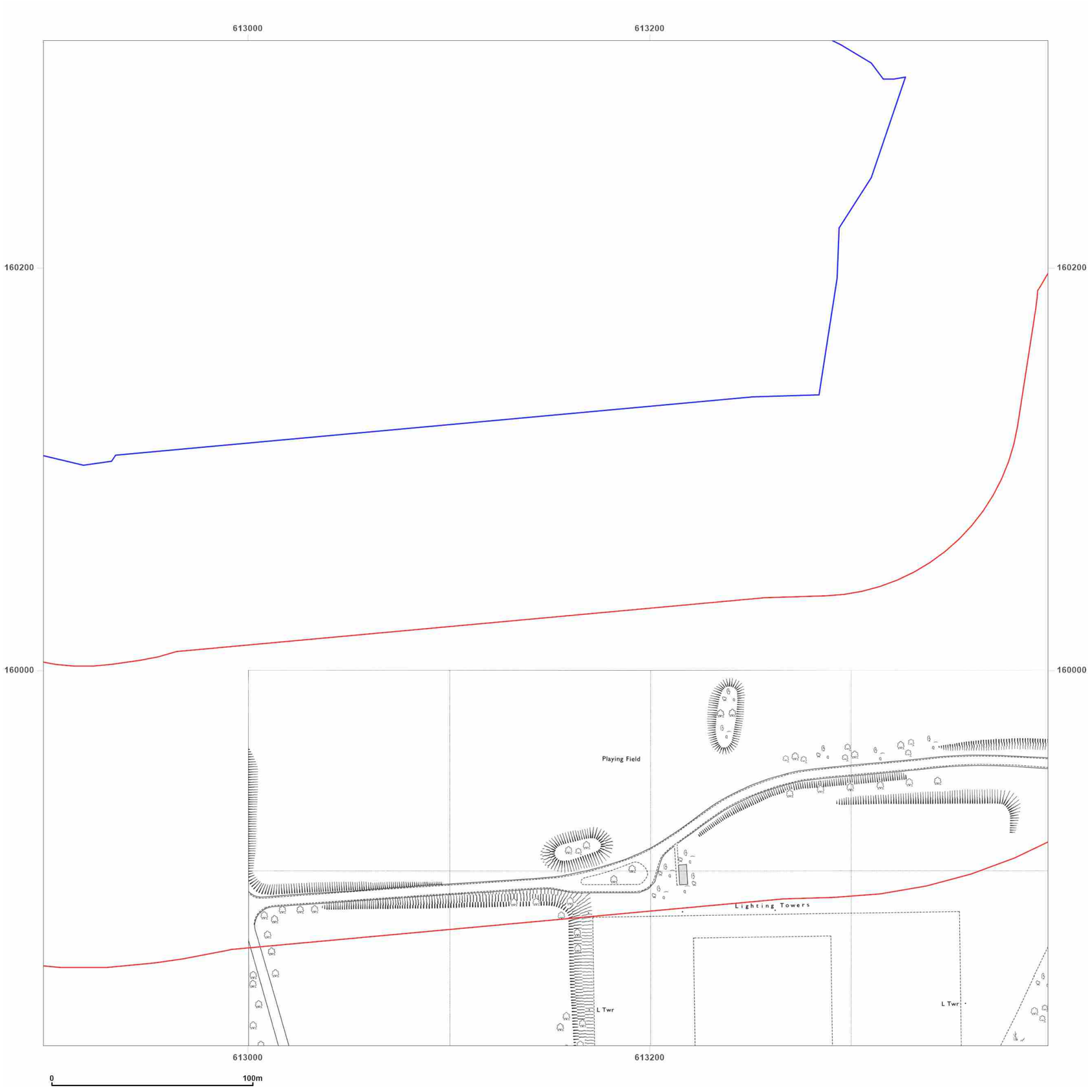
Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Powered by OS

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_2_1
Grid Ref: 613148, 160063

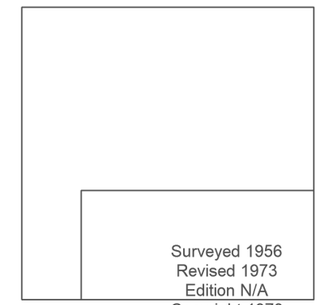
Map Name: National Grid

Map date: **1973**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

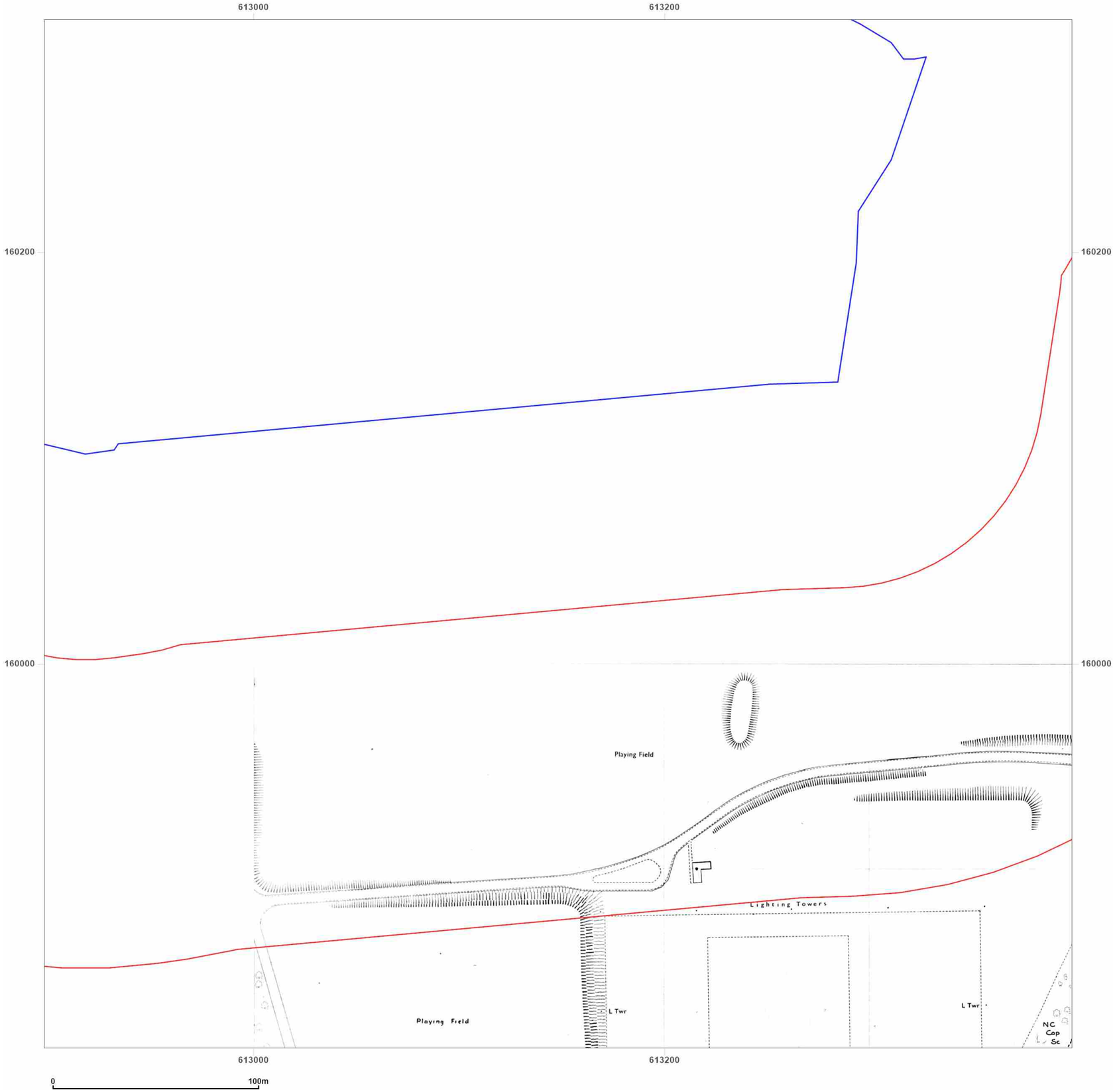
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_2_1
Grid Ref: 613148, 160063

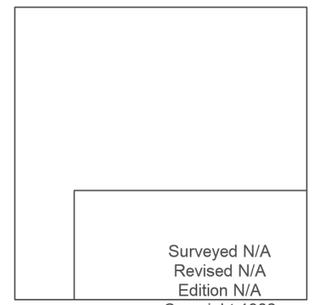
Map Name: National Grid

Map date: **1982**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

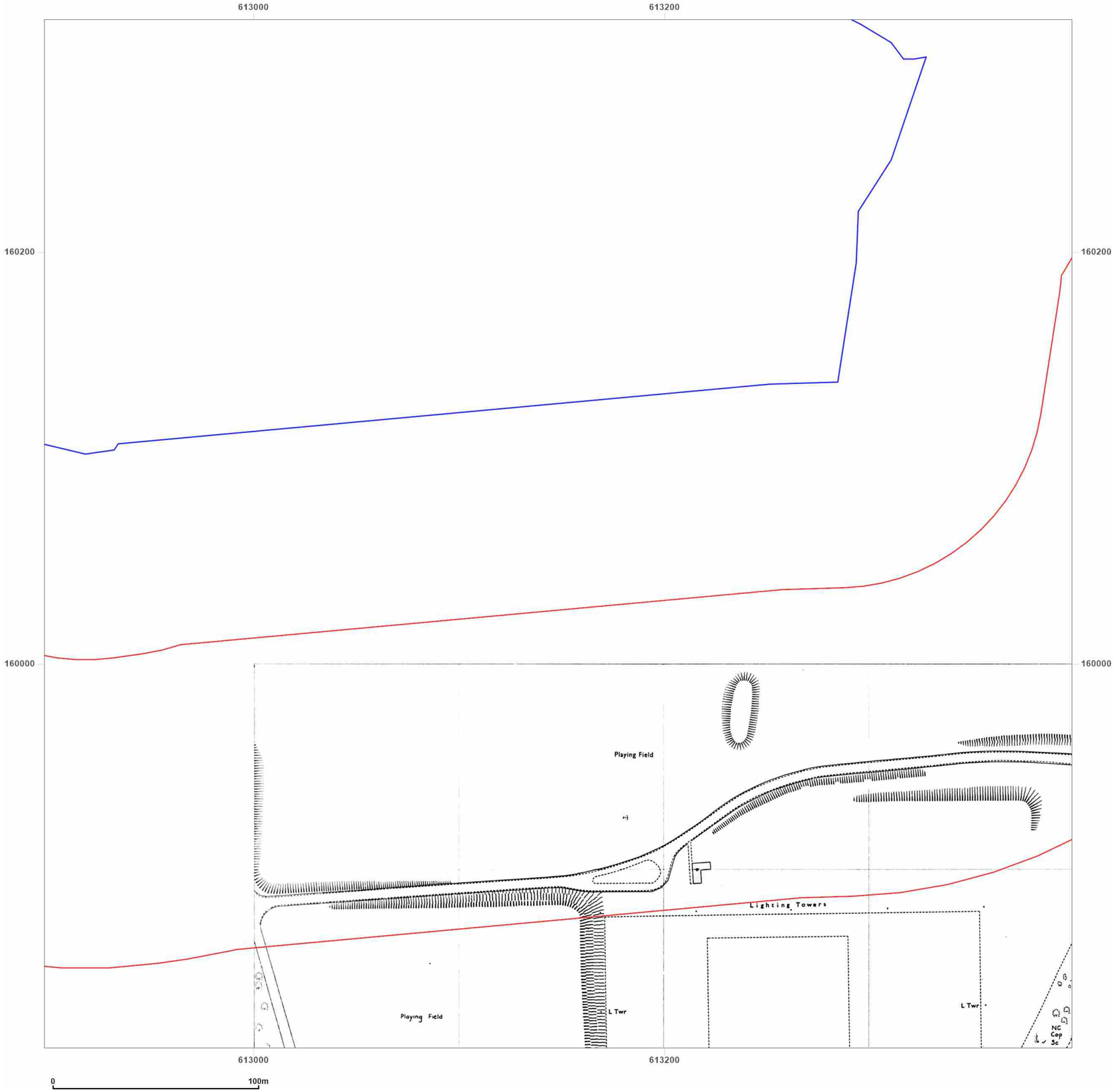
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_2_1
Grid Ref: 613148, 160063

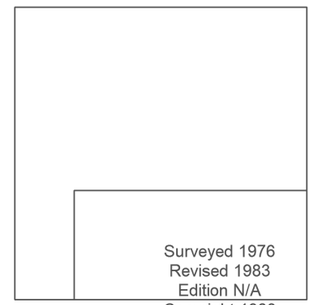
Map Name: National Grid

Map date: **1983**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

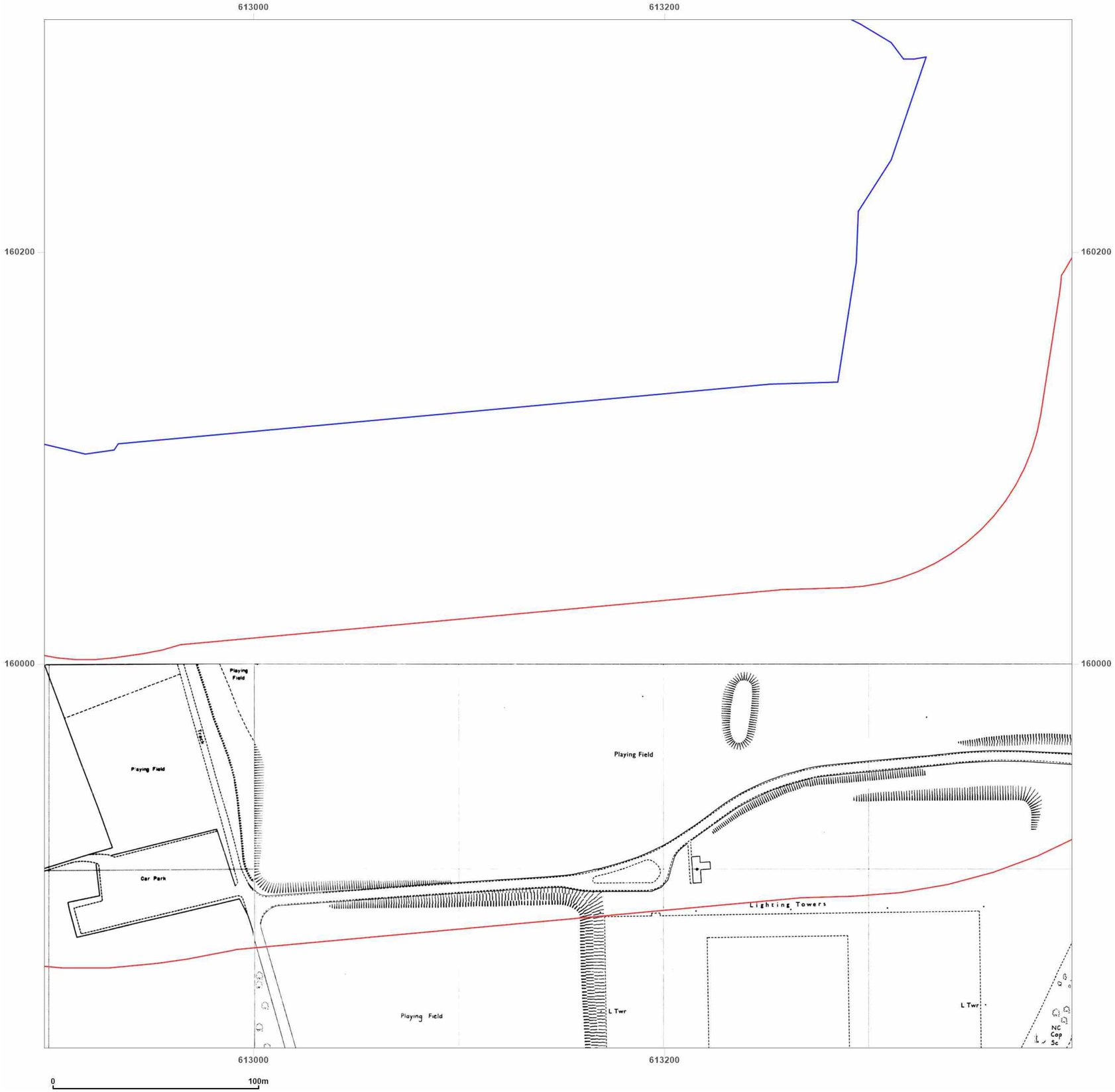
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_2_1
Grid Ref: 613148, 160063

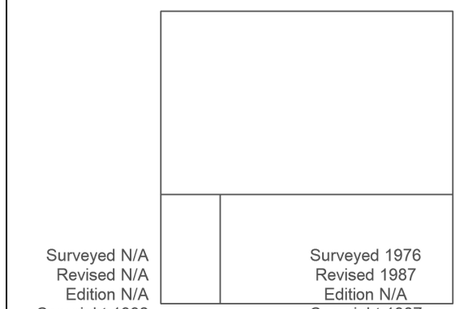
Map Name: National Grid

Map date: **1987-1992**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_2_1
Grid Ref: 613148, 160063

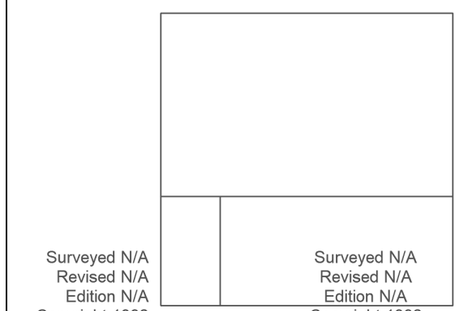
Map Name: National Grid

Map date: **1992**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_2_1
Grid Ref: 613148, 160063

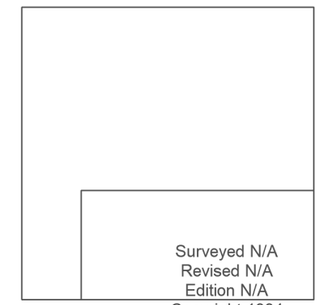
Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_2_1
Grid Ref: 613148, 160063

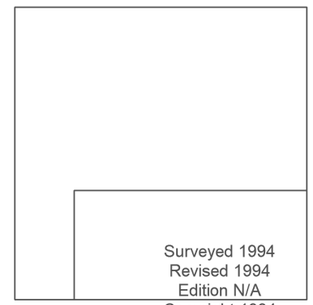
Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

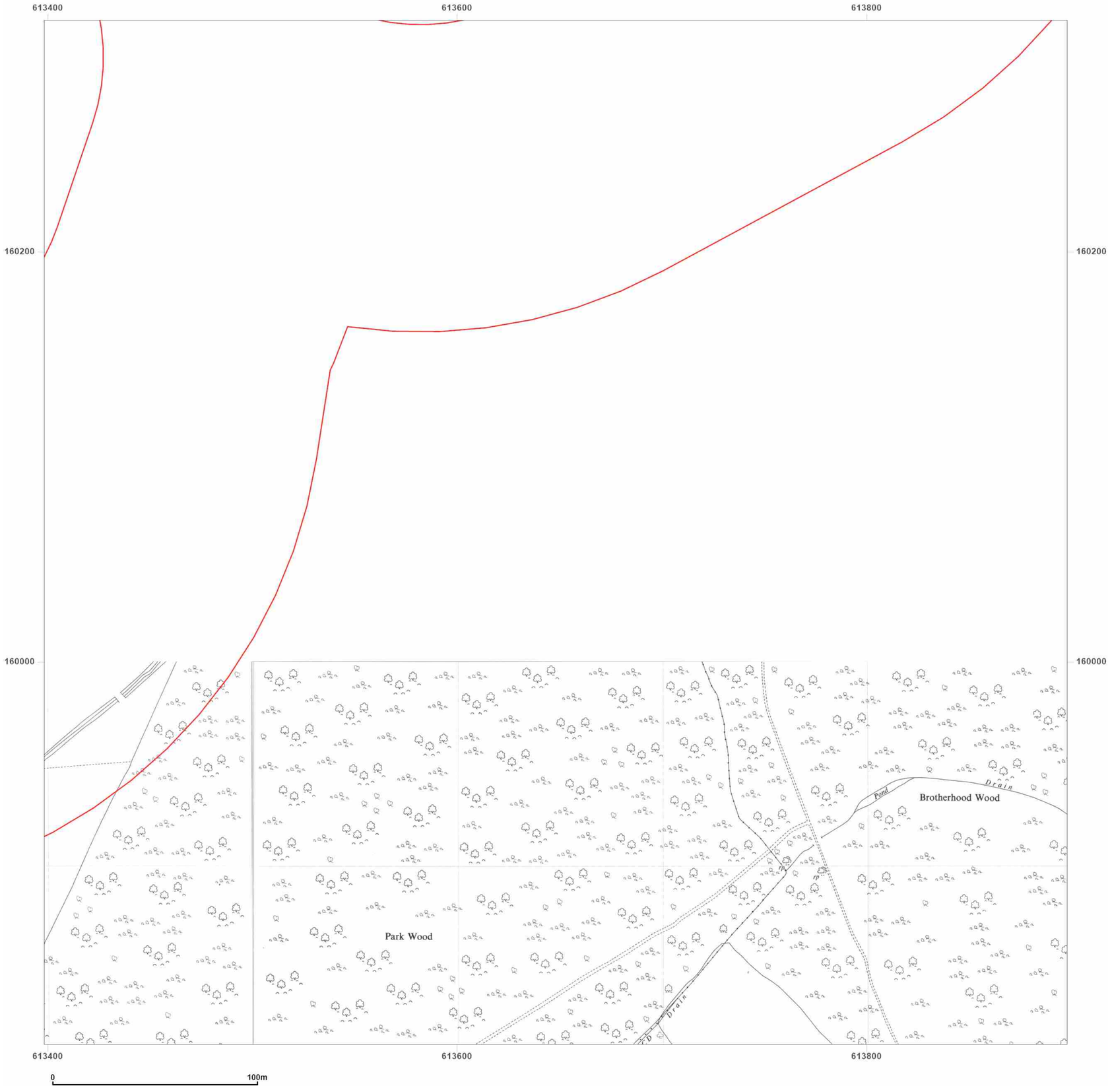
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_3_1
Grid Ref: 613648, 160063

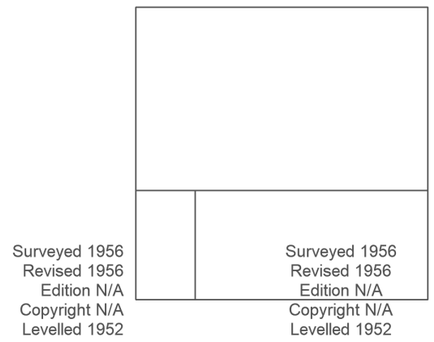
Map Name: National Grid

Map date: **1956**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

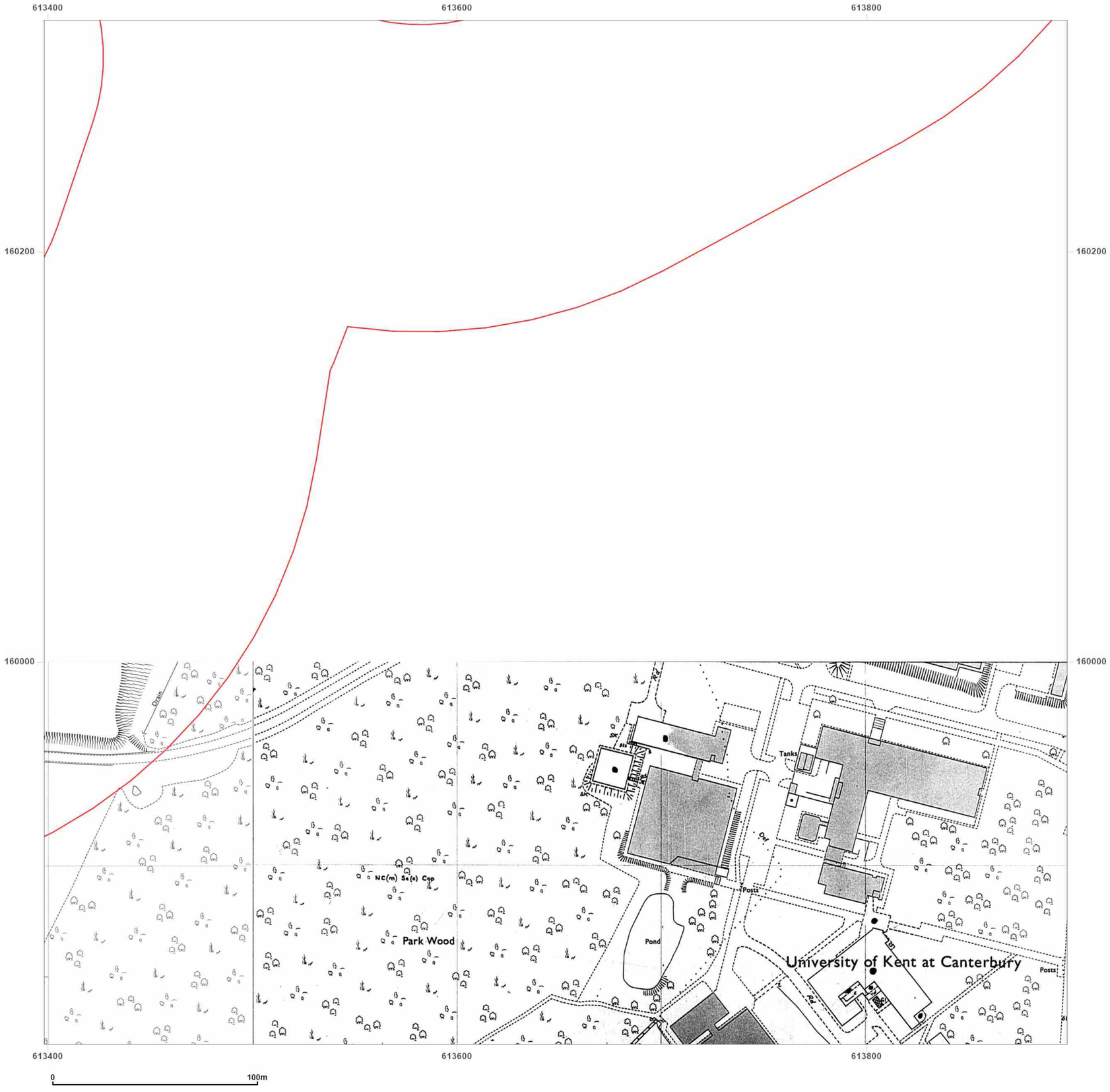
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_3_1
Grid Ref: 613648, 160063

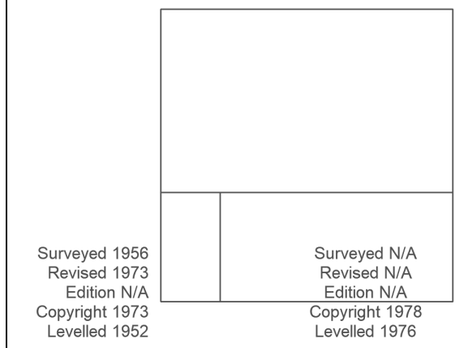
Map Name: National Grid

Map date: **1973-1978**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

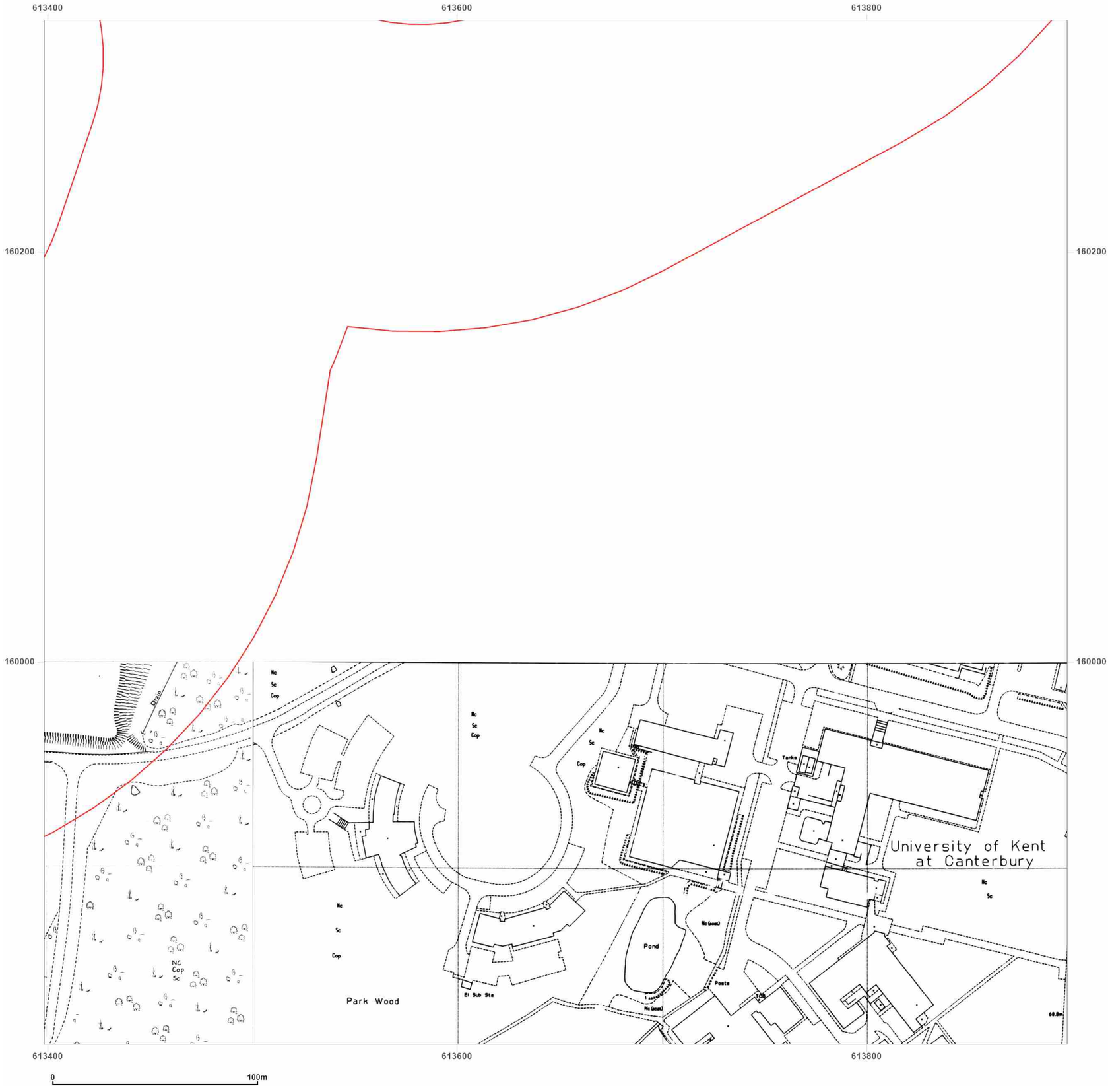
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_3_1
Grid Ref: 613648, 160063

Map Name: National Grid

Map date: **1987-1992**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Groundsure INSIGHTS

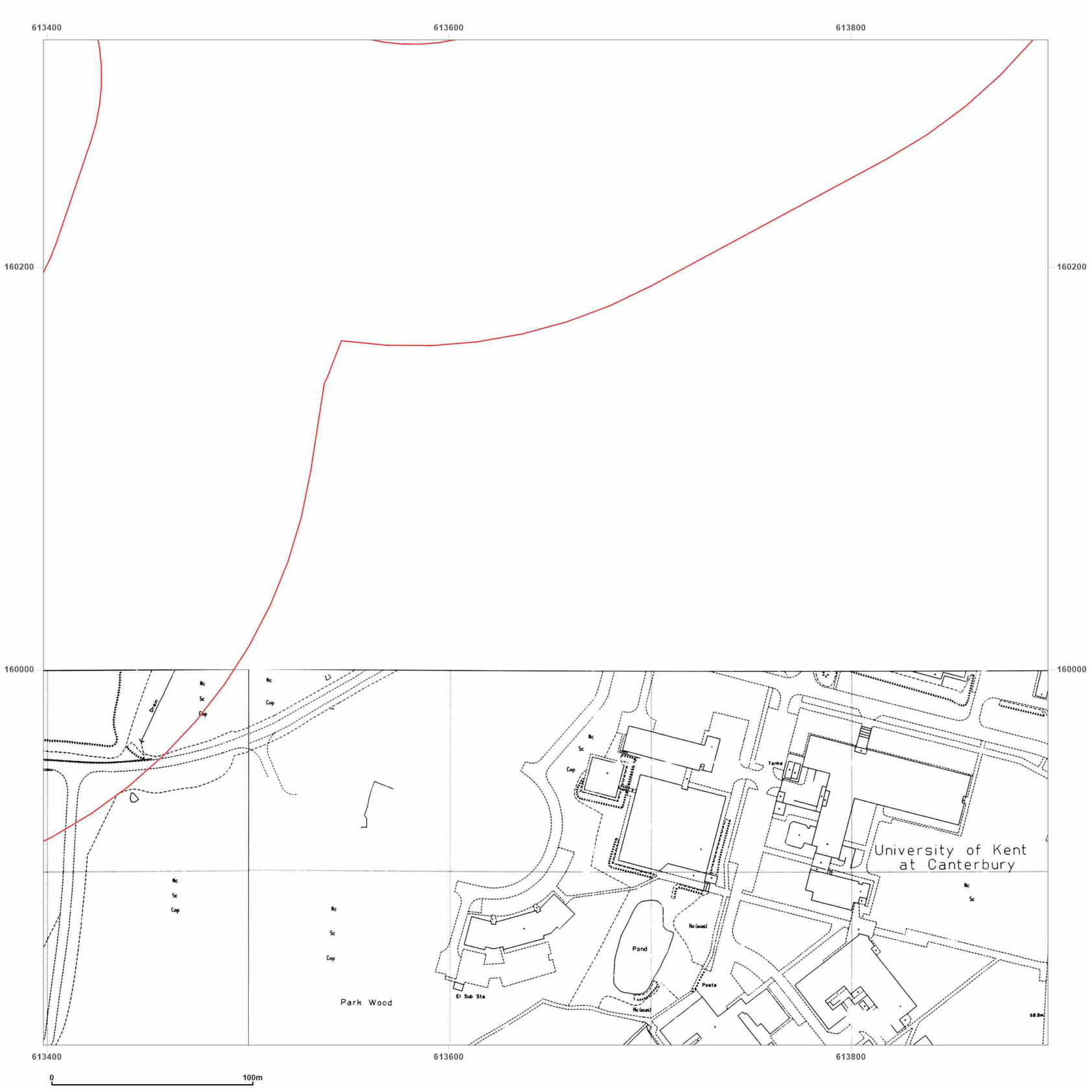
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_3_1
Grid Ref: 613648, 160063

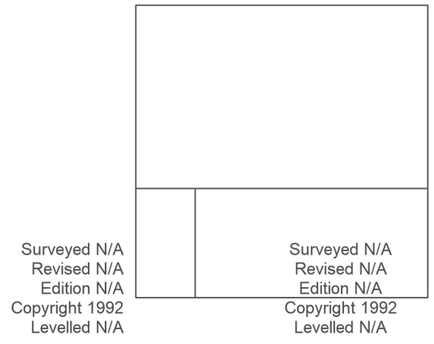
Map Name: National Grid

Map date: **1992**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

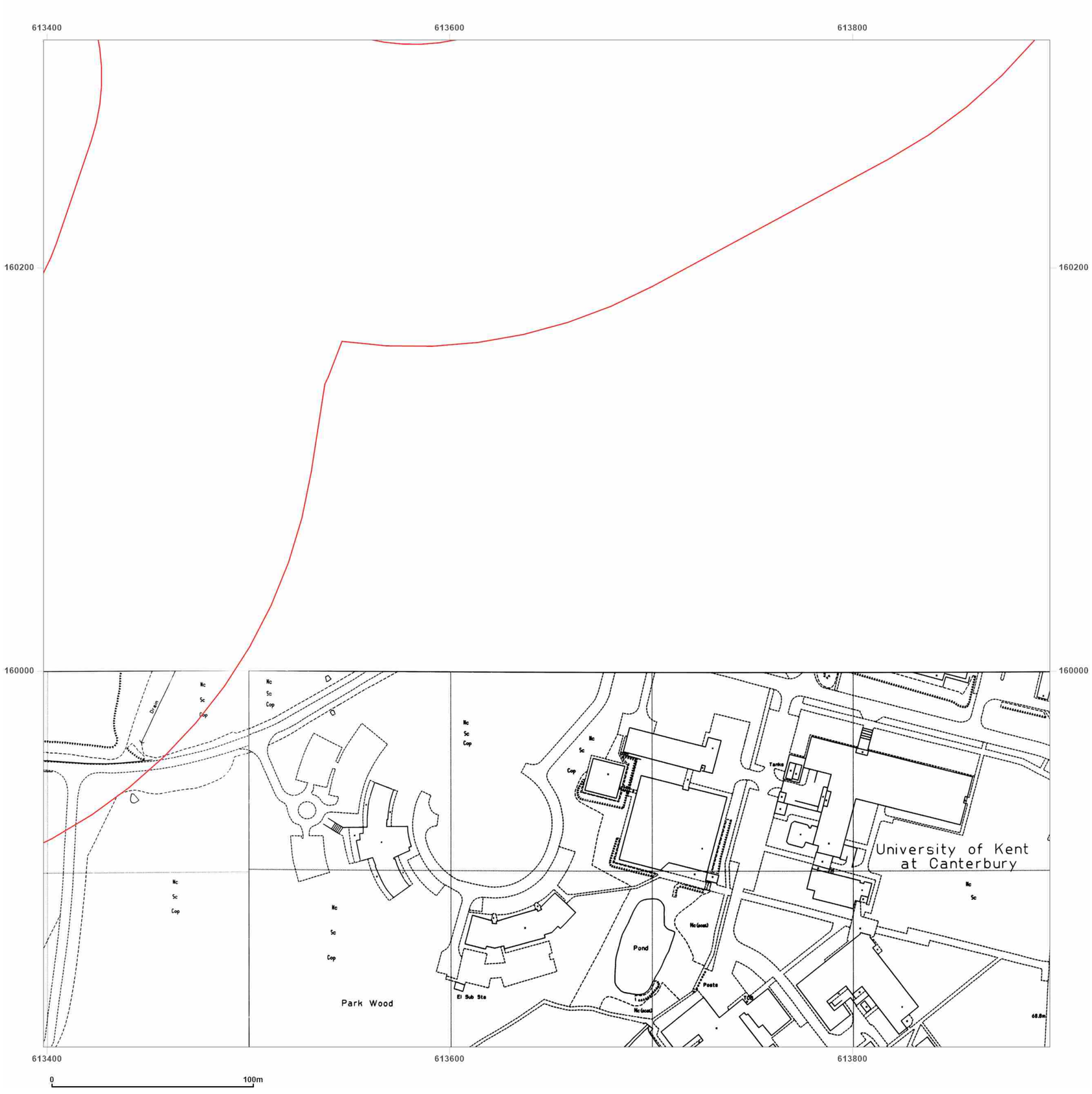
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_1250_3_1
Grid Ref: 613648, 160063

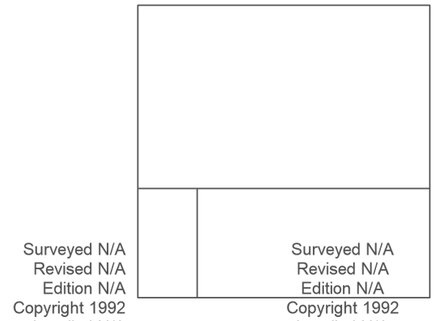
Map Name: National Grid

Map date: **1992**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Groundsure INSIGHTS

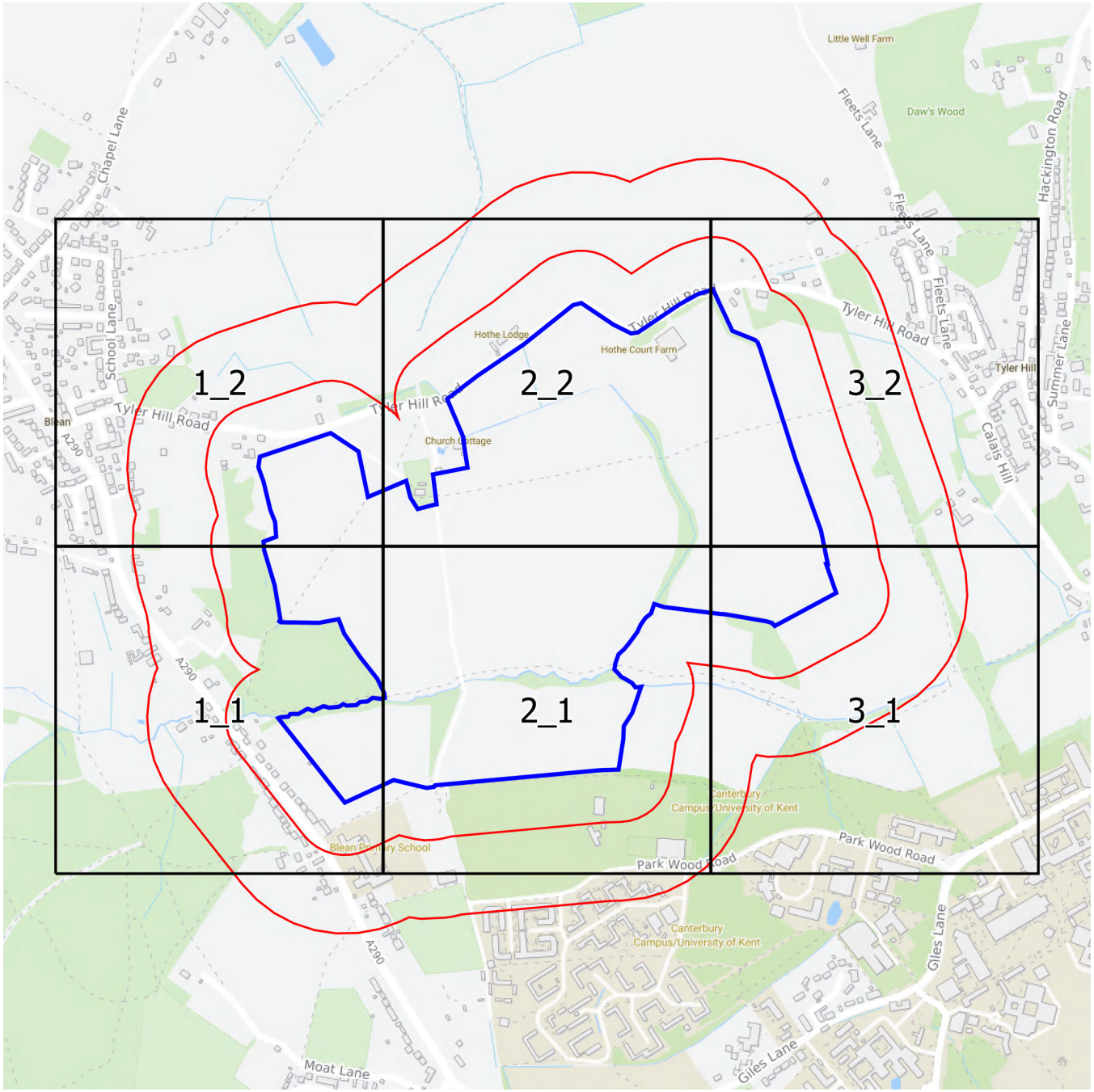
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

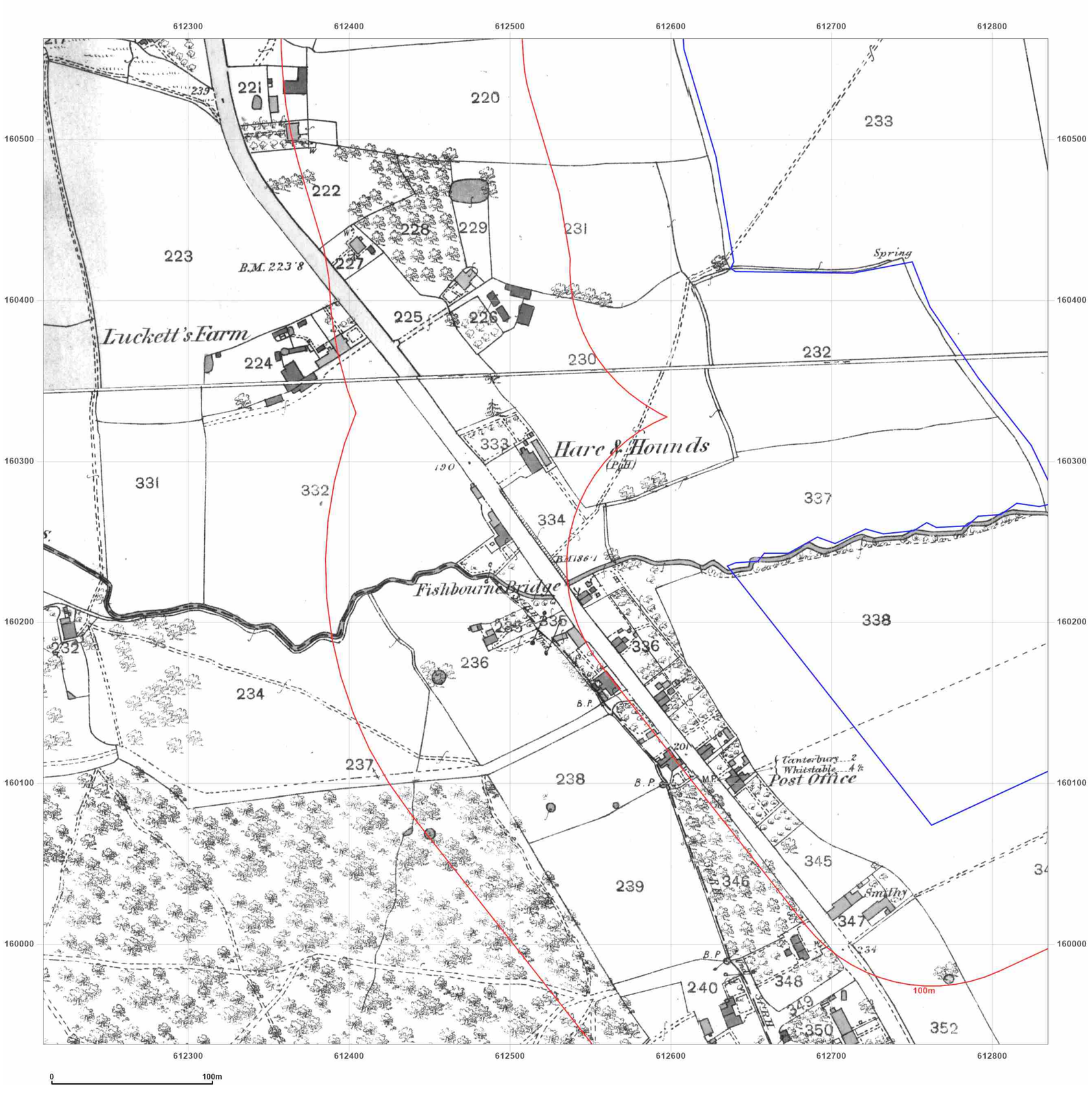
Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

1:2,500 Scale Grid Index

N
W
E
S



WSP

Site Details:

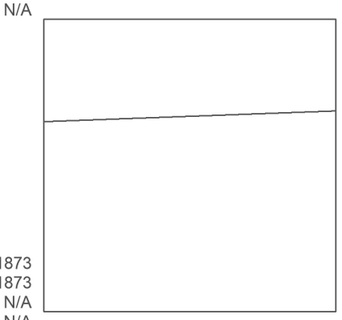
UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_1
Grid Ref: 612522, 160250

Map Name: County Series
Map date: **1873**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

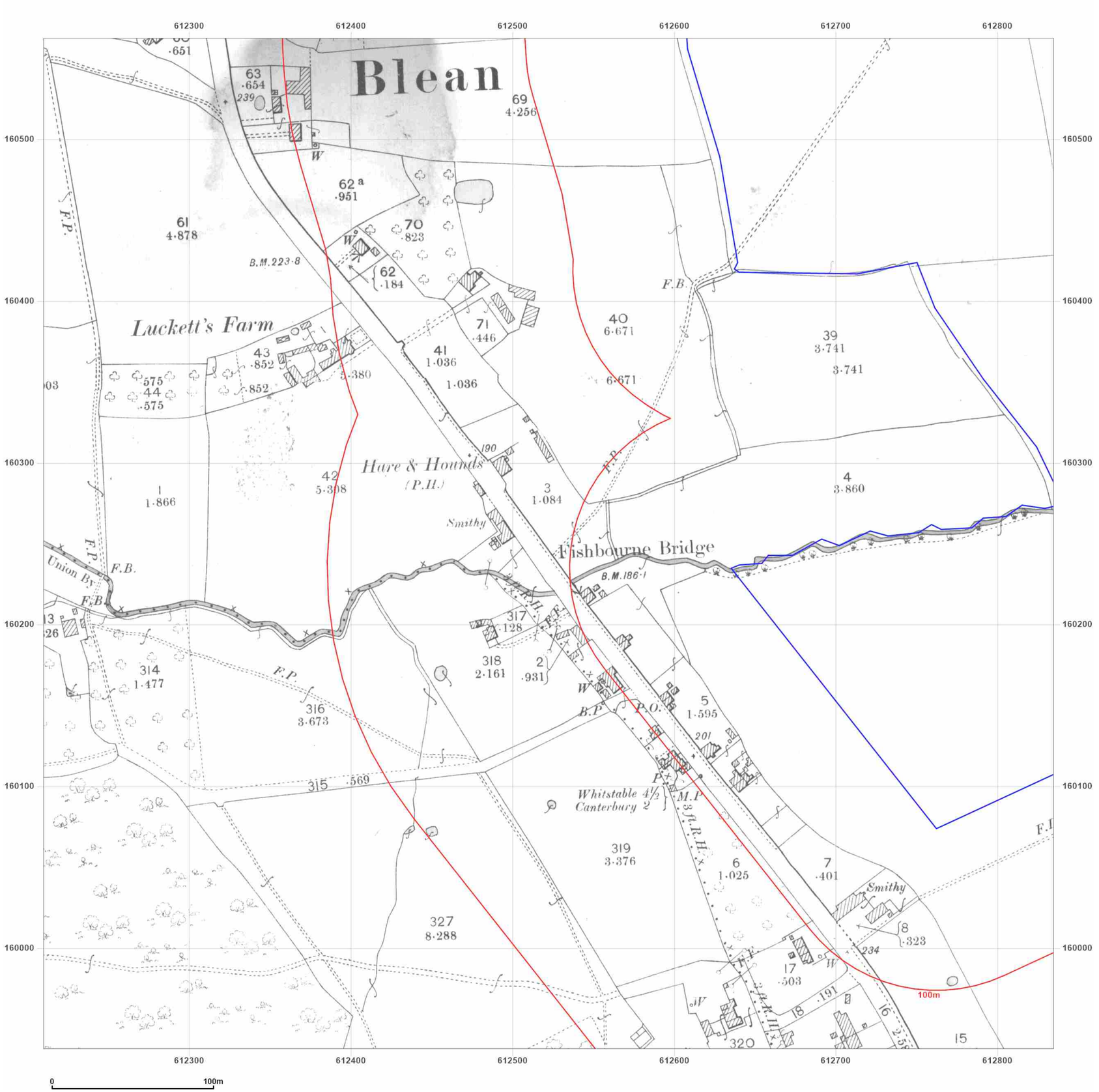
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

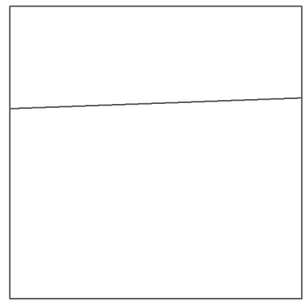
UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_1
Grid Ref: 612522, 160250

Map Name: County Series
Map date: **1898**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

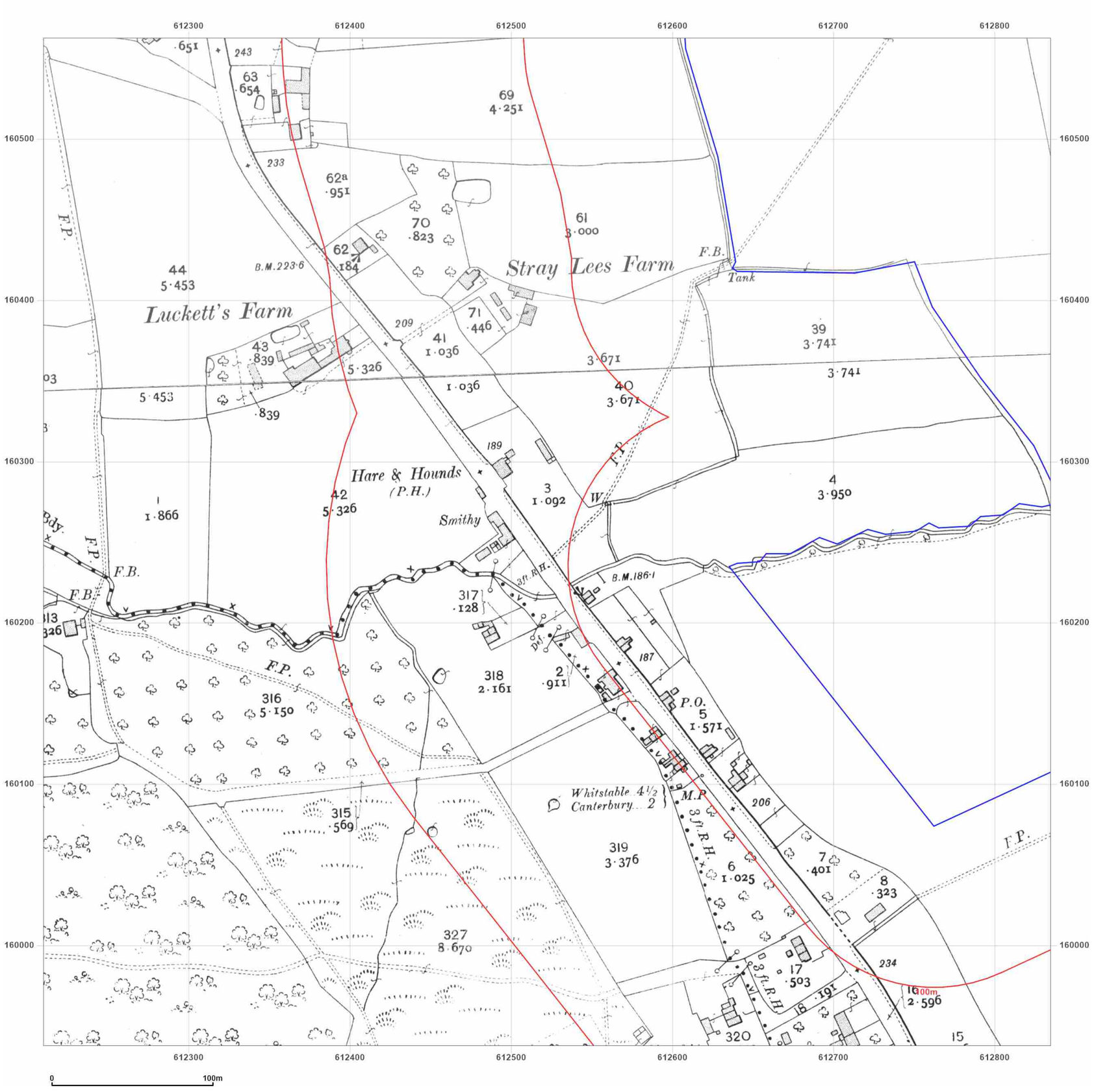
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

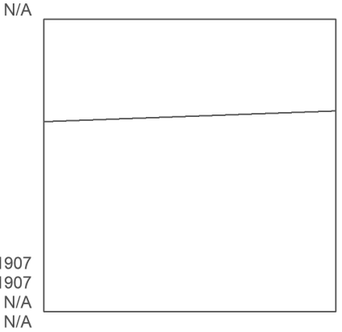
UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_1
Grid Ref: 612522, 160250

Map Name: County Series
Map date: **1907**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_1
Grid Ref: 612522, 160250

Map Name: County Series

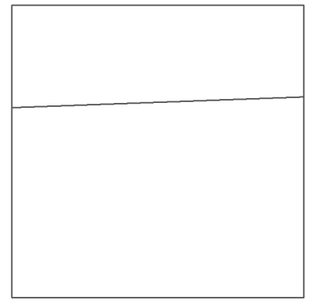
Map date: **1937-1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1937
Revised 1937
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

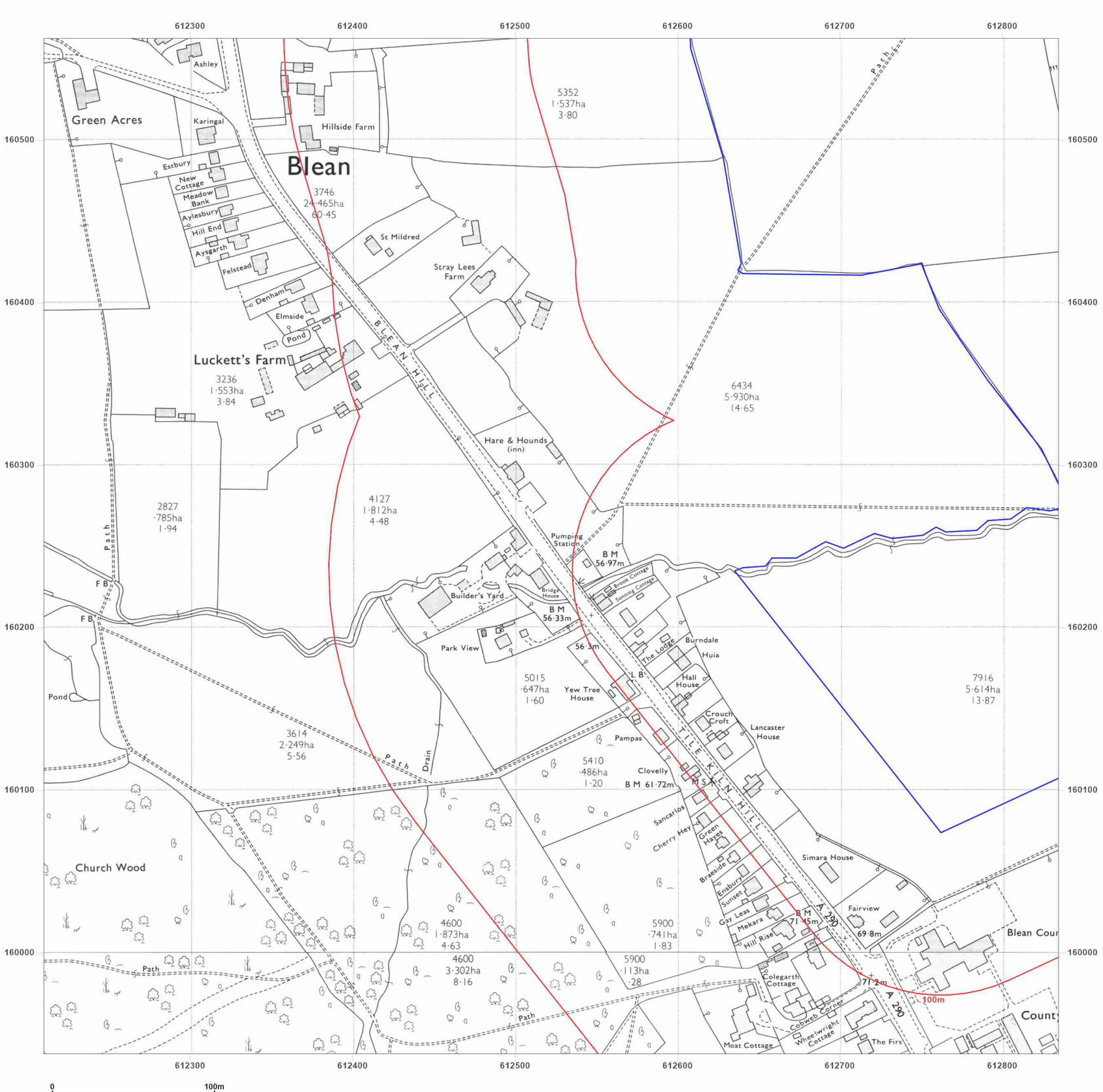
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_1
Grid Ref: 612522, 160250

Map Name: National Grid

Map date: **1970-1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Surveyed 1970
Revised 1970
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

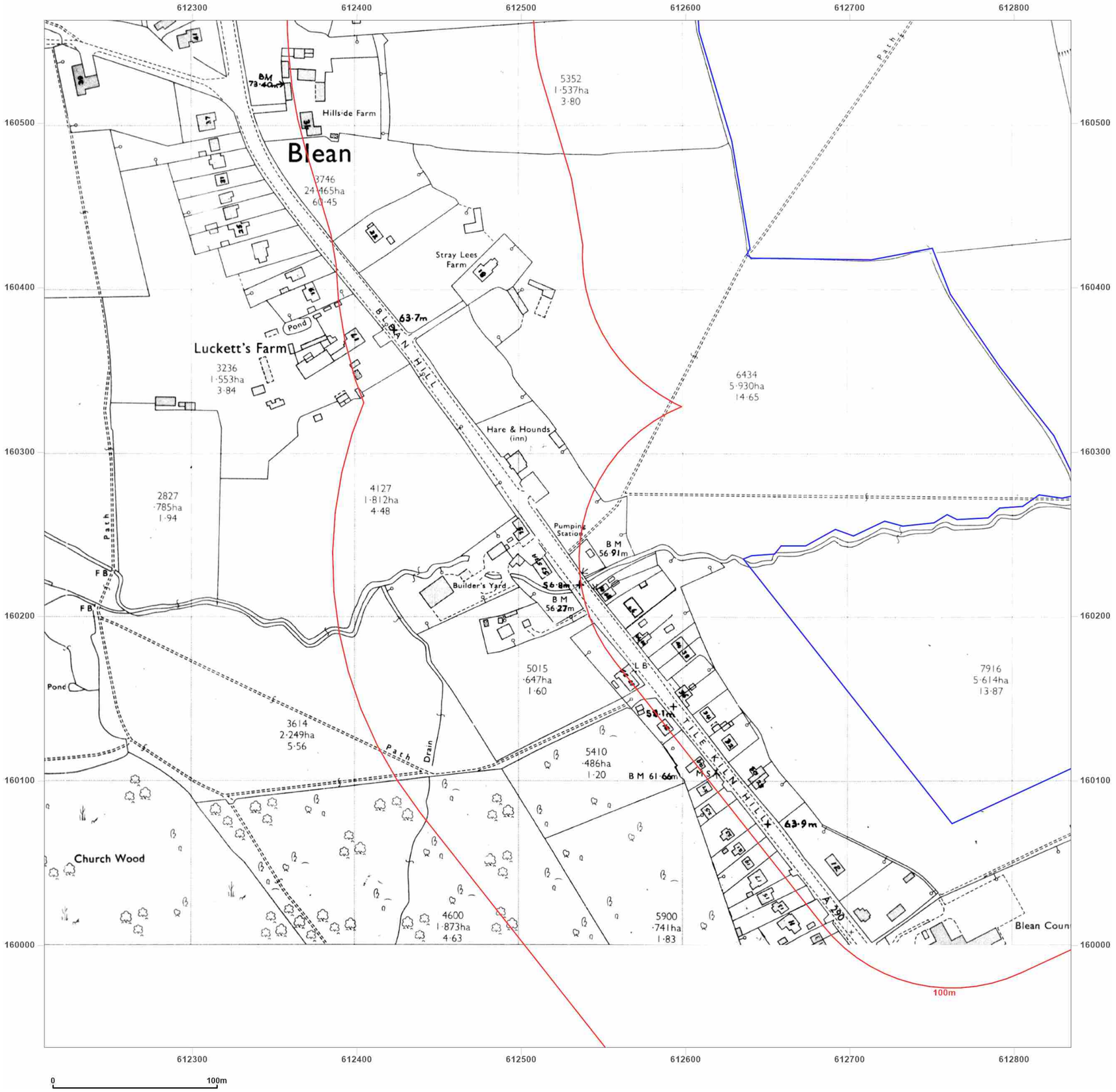
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_1
Grid Ref: 612522, 160250

Map Name: National Grid

Map date: **1989**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1976
Revised 1989
Edition N/A
Copyright 1989
Levelled 1976

Groundsure INSIGHTS

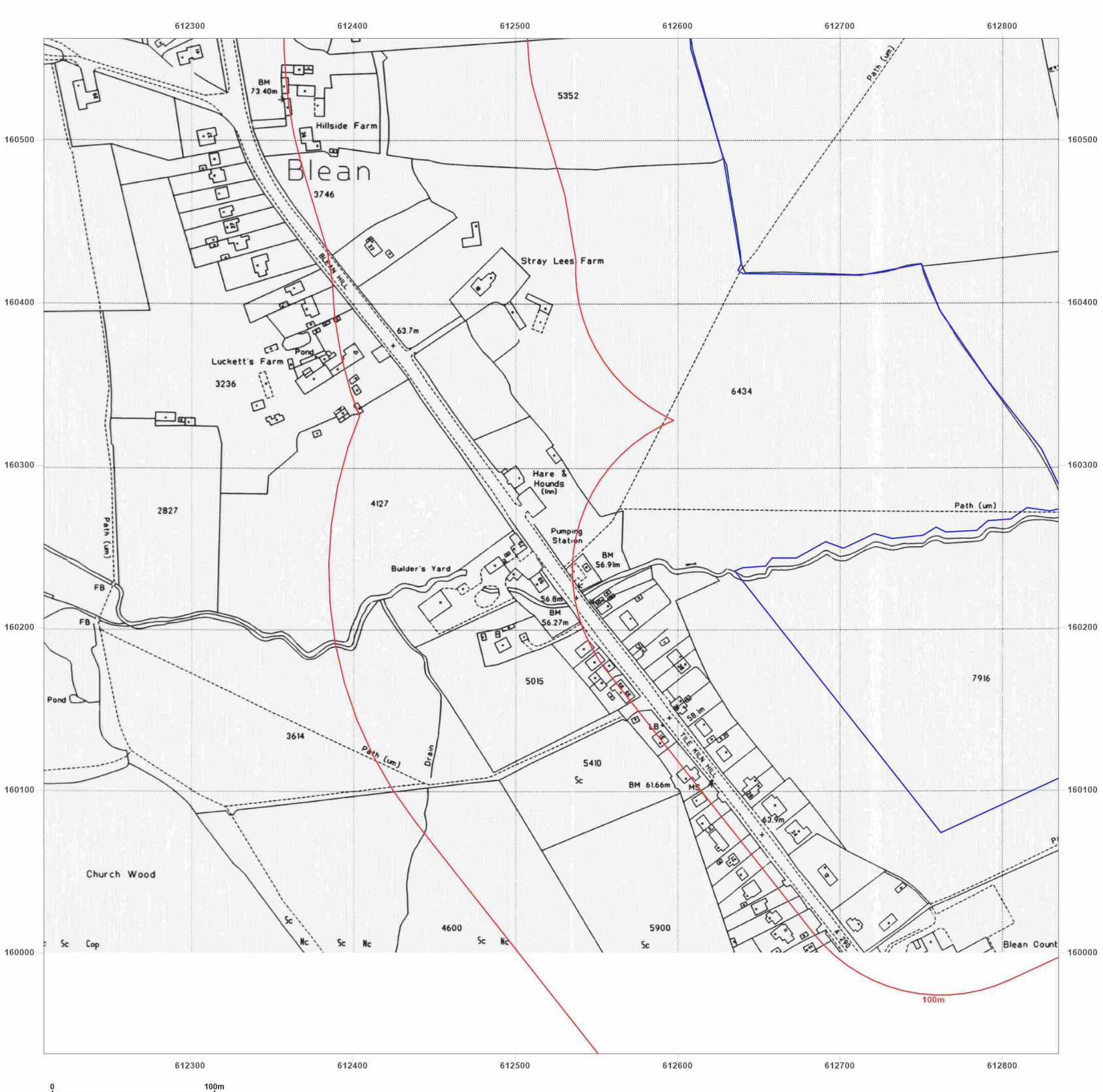
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_1
Grid Ref: 612522, 160250

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Groundsure INSIGHTS

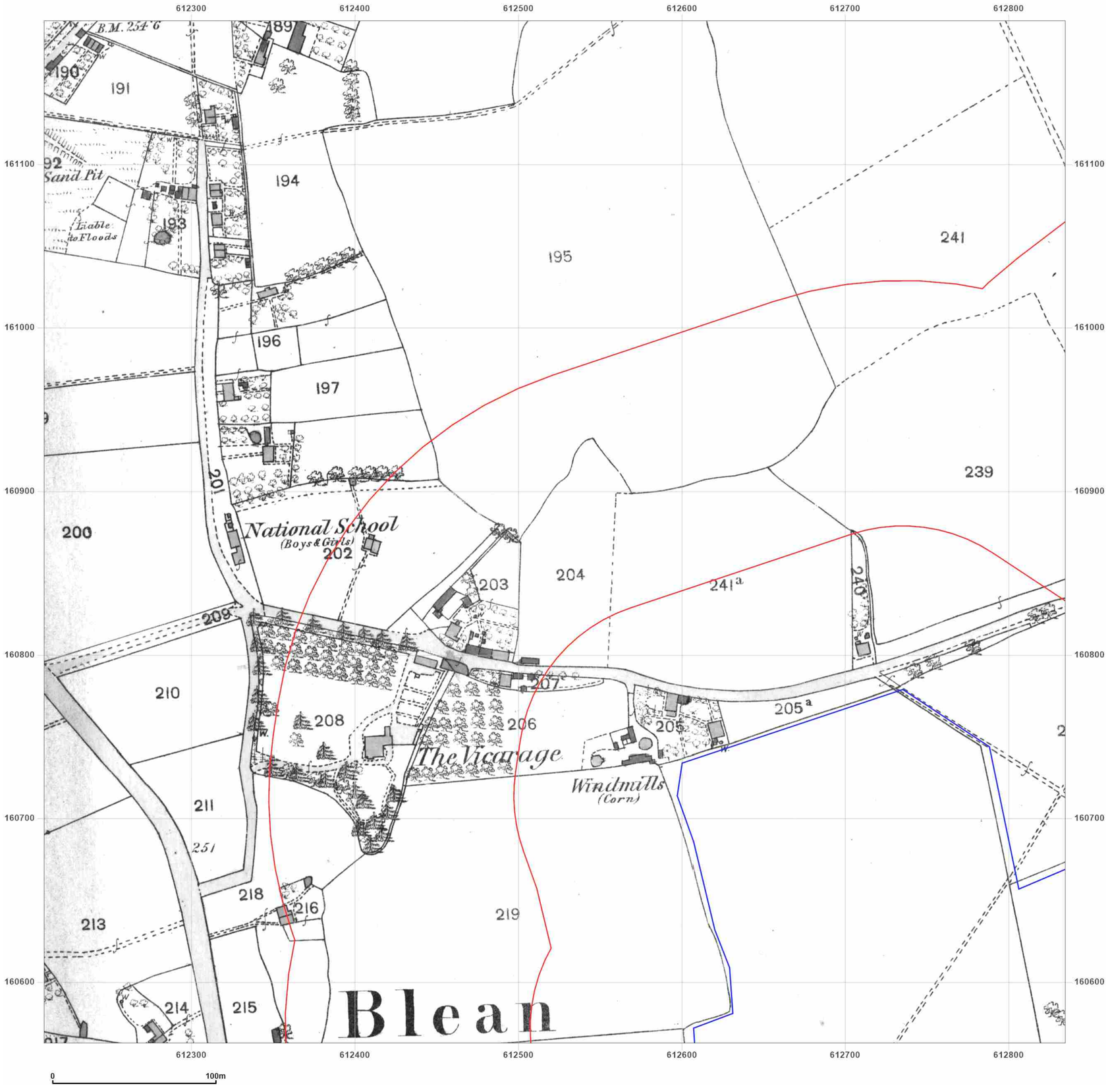
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_2
Grid Ref: 612522, 160875

Map Name: County Series

Map date: **1873**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

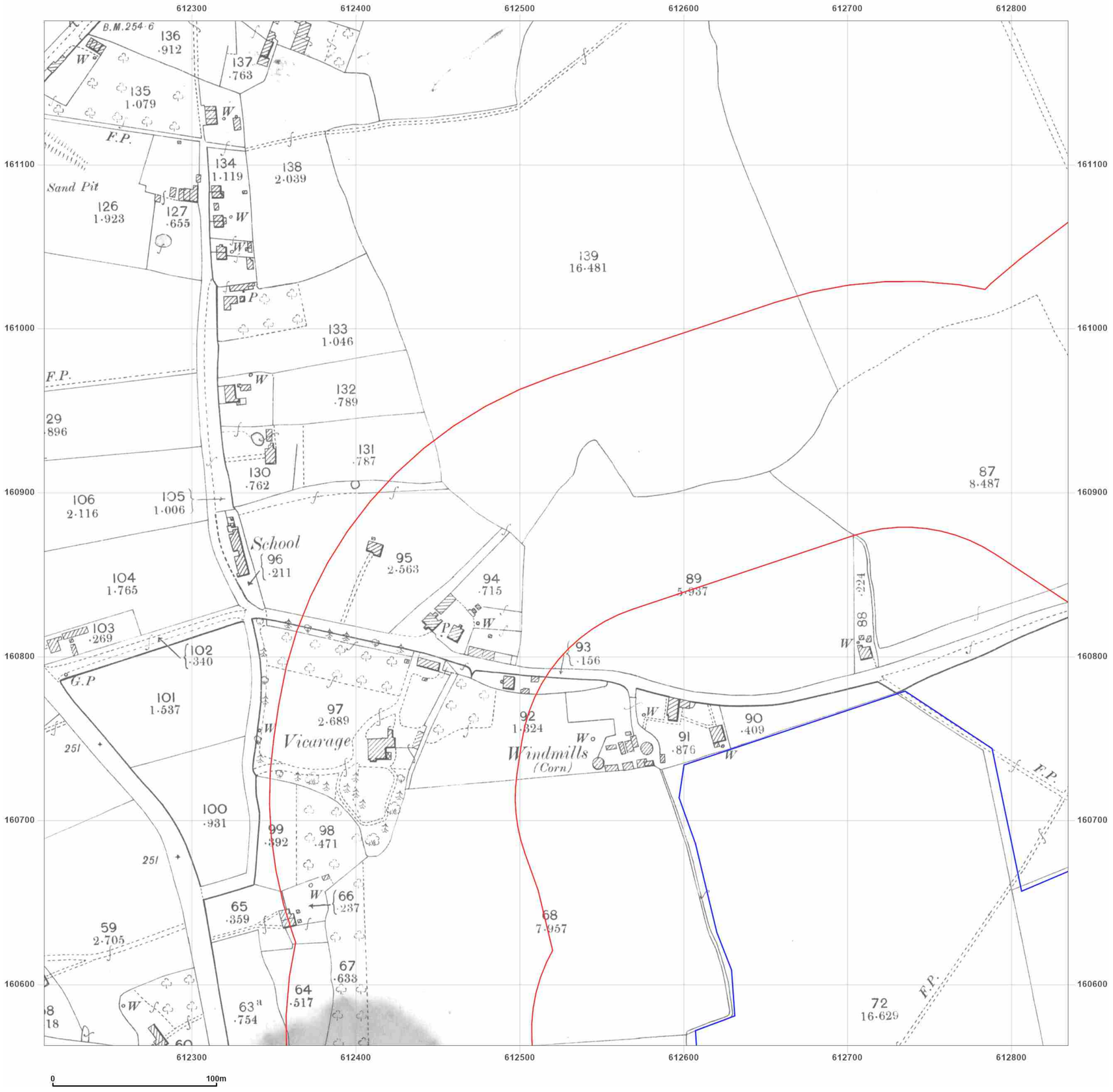
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_2
Grid Ref: 612522, 160875

Map Name: County Series

Map date: **1898**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

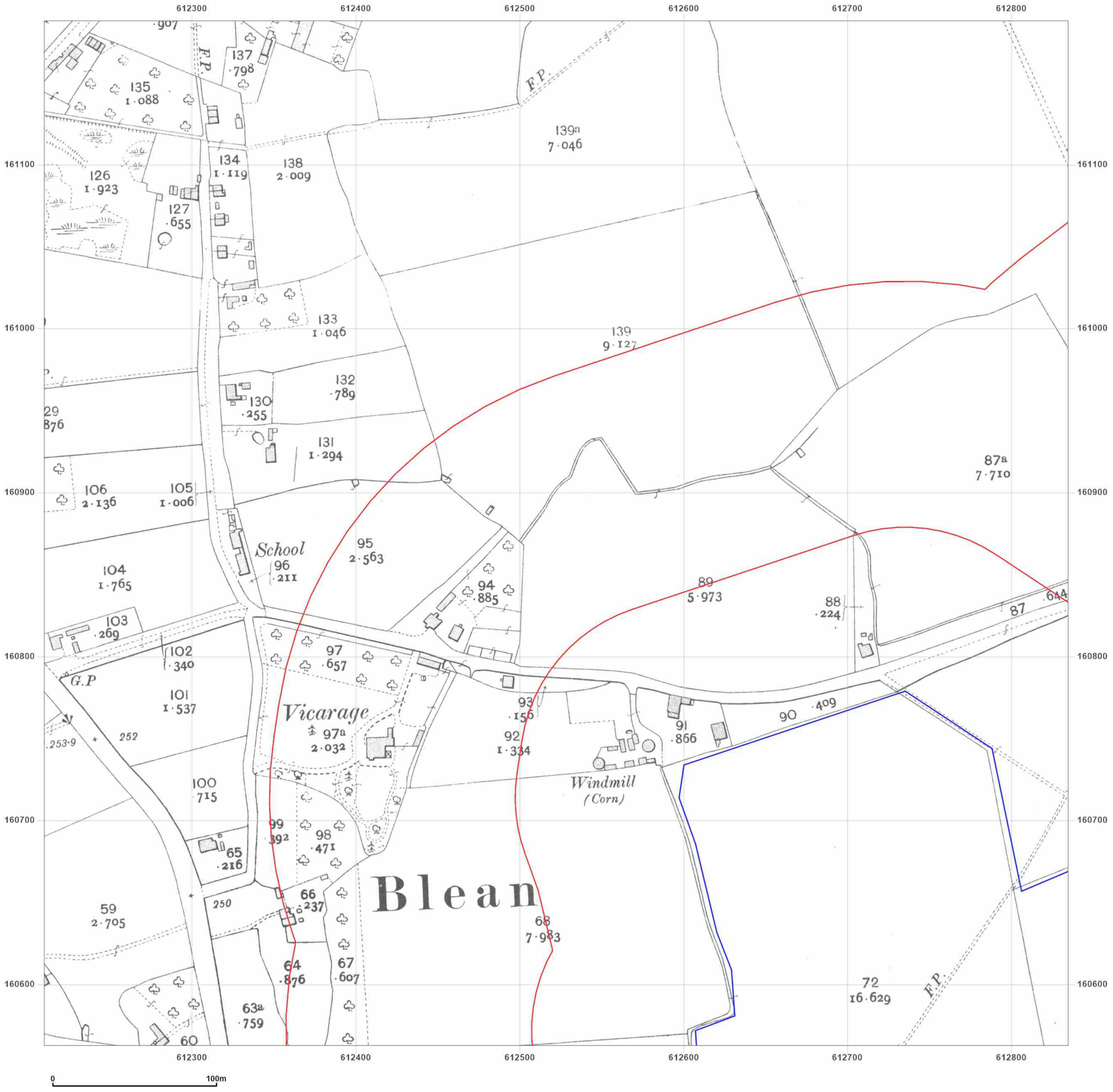
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_2
Grid Ref: 612522, 160875

Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

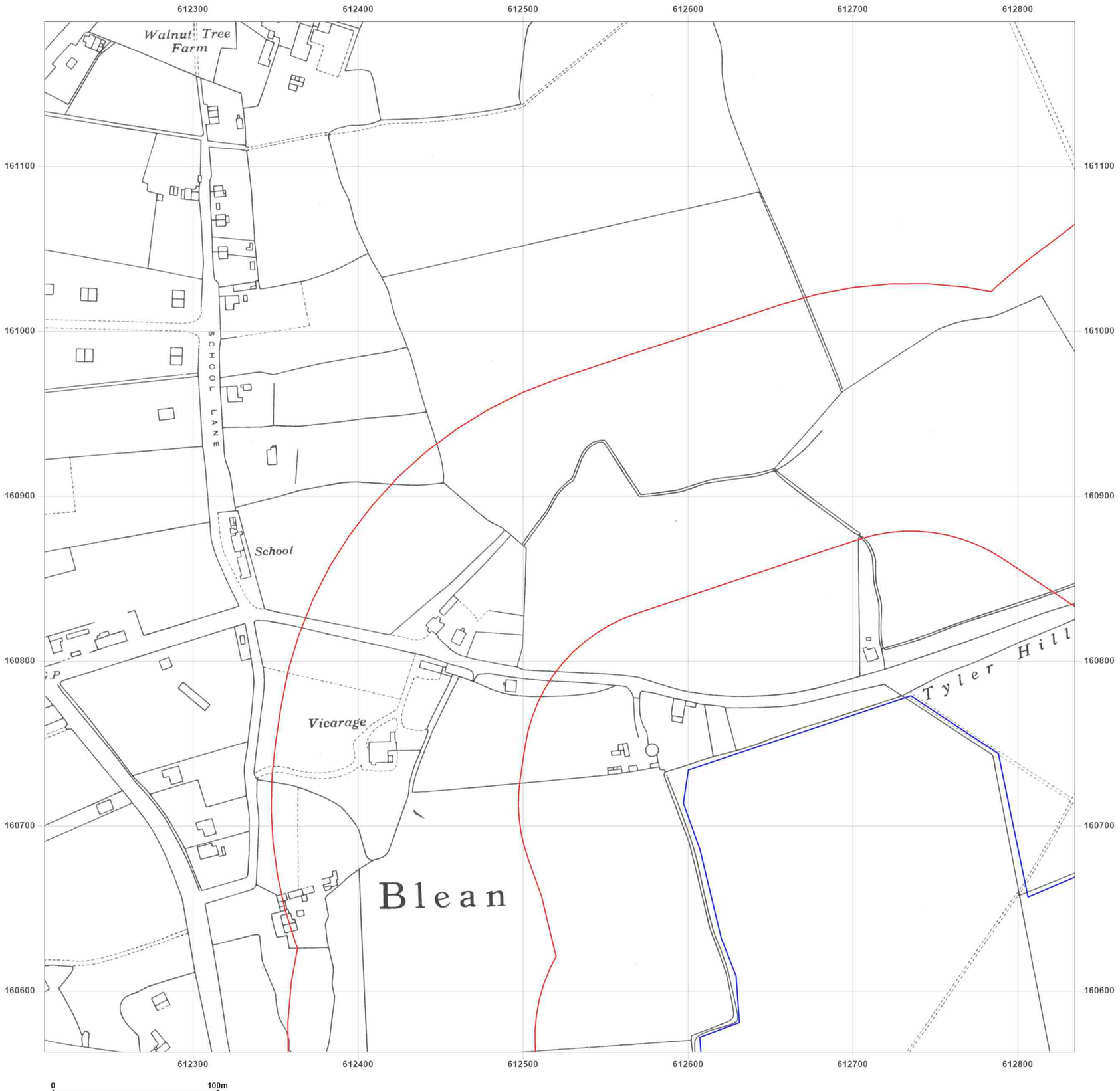
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_2
Grid Ref: 612522, 160875

Map Name: County Series

Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_2
Grid Ref: 612522, 160875

Map Name: National Grid

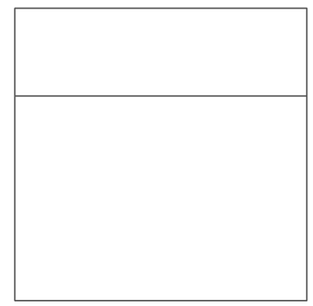
Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952



Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

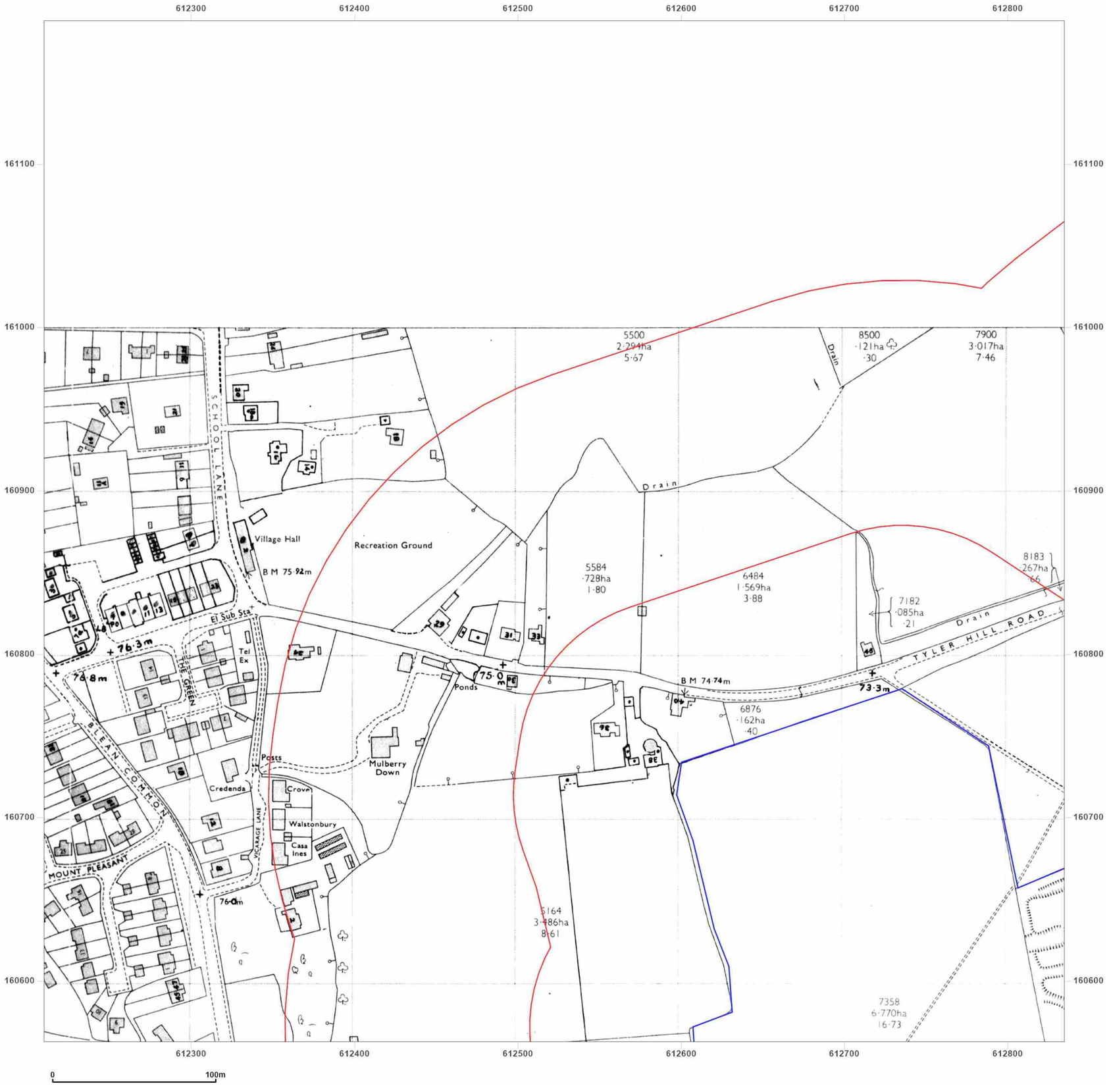
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_2
Grid Ref: 612522, 160875

Map Name: National Grid

Map date: **1989**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1976
Revised 1989
Edition N/A
Copyright 1989
Levelled 1976

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_1_2
Grid Ref: 612522, 160875

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Groundsure INSIGHTS

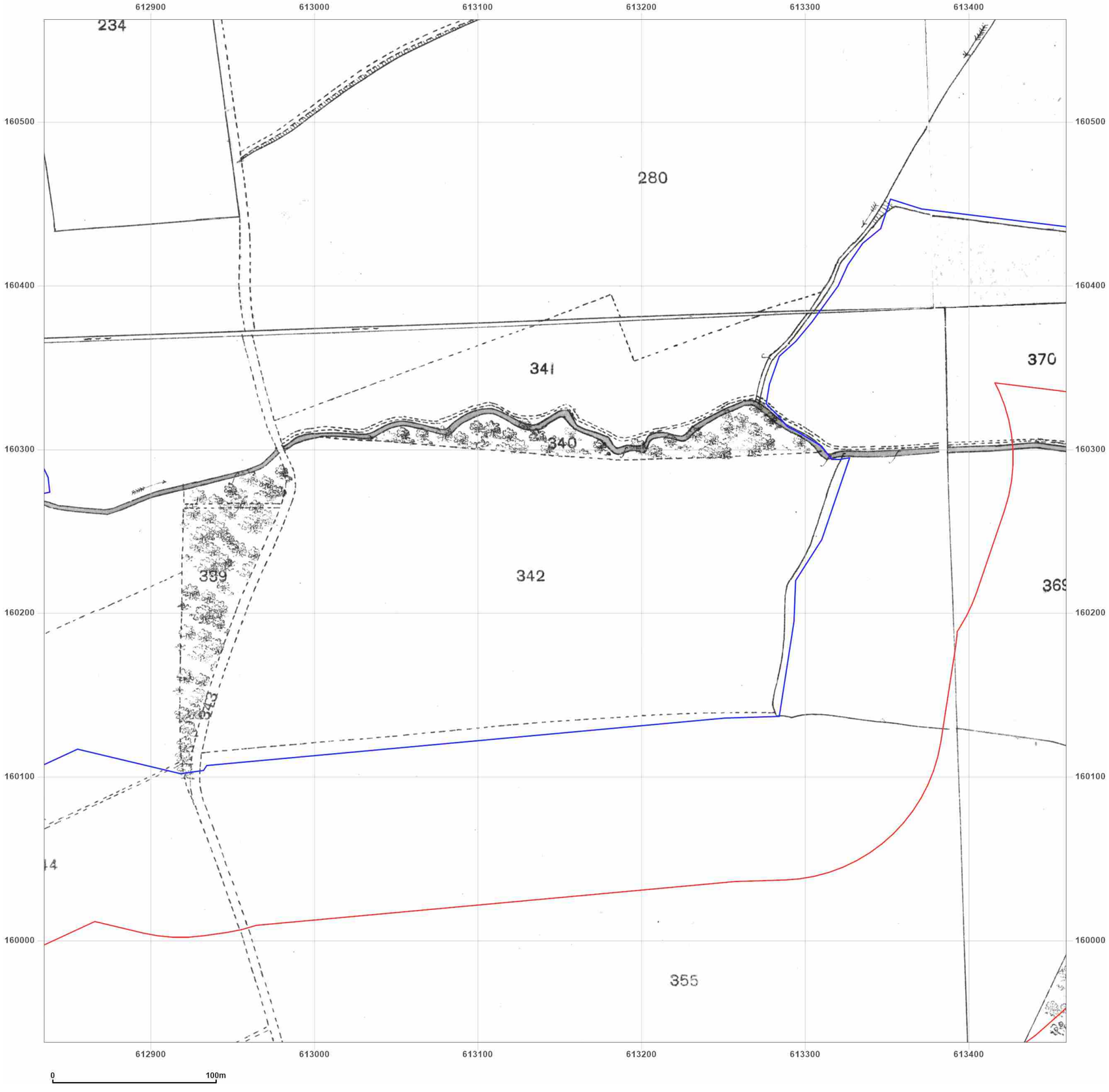
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_1
Grid Ref: 613147, 160250

Map Name: County Series

Map date: **1873-1874**

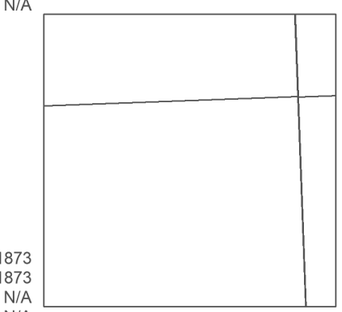
Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1874
Revised 1874
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

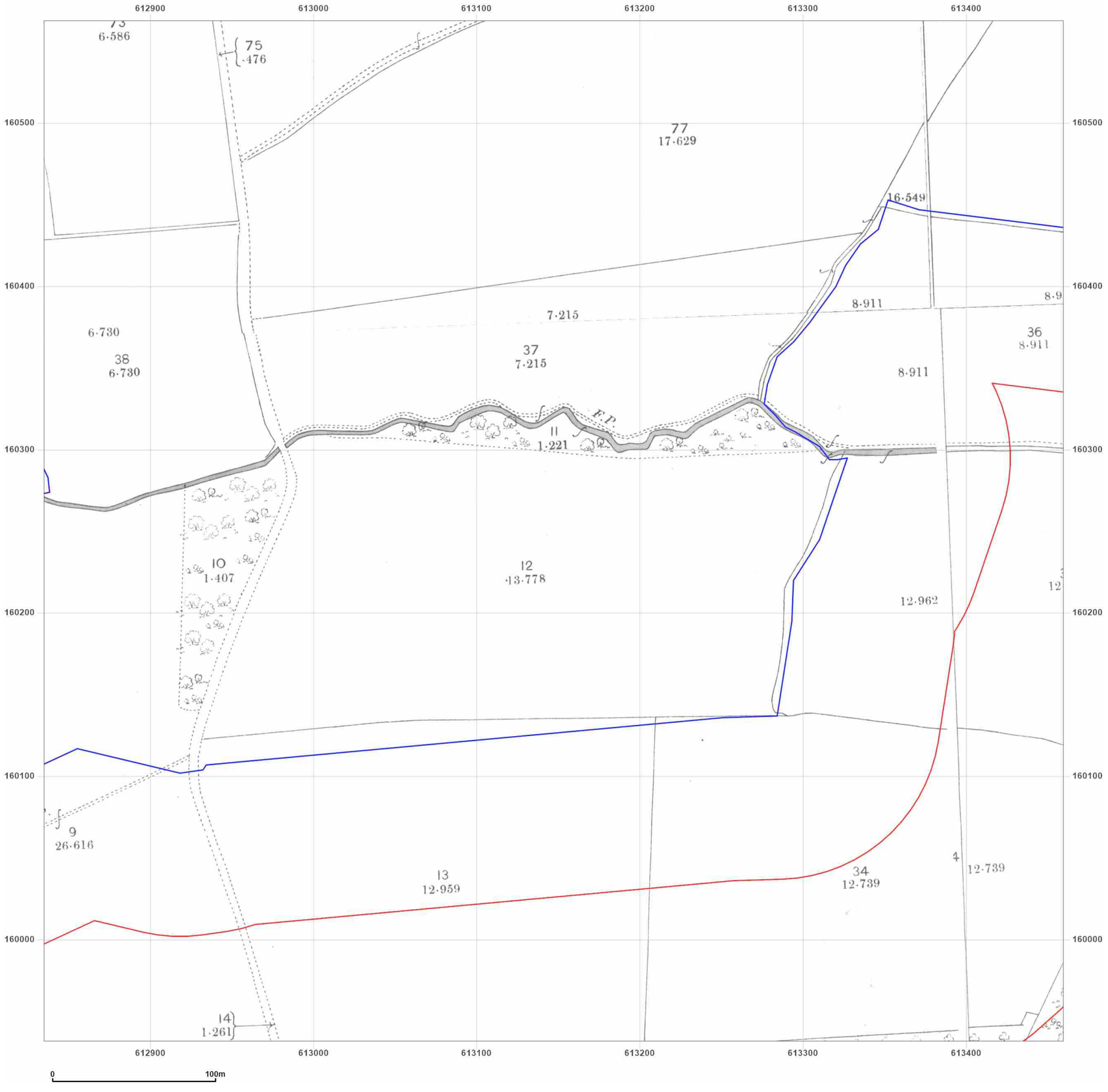
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_1
Grid Ref: 613147, 160250

Map Name: County Series

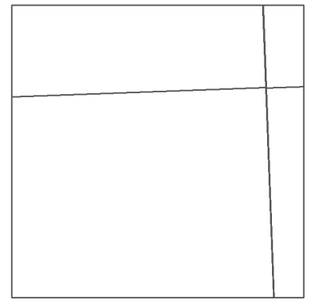
Map date: **1898**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

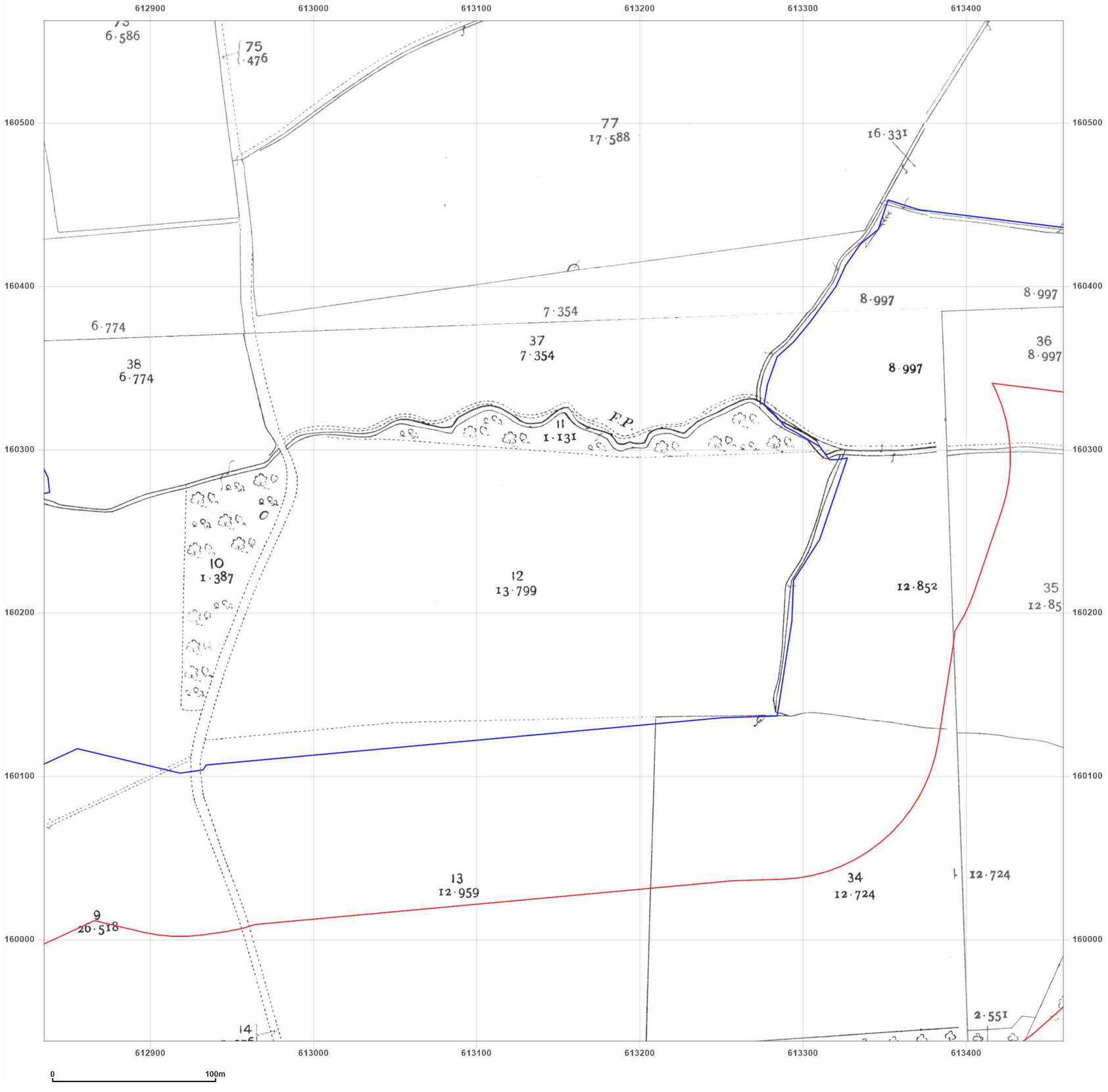
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_1
Grid Ref: 613147, 160250

Map Name: County Series

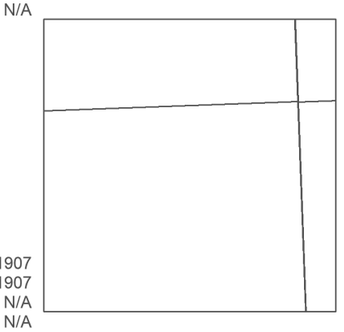
Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

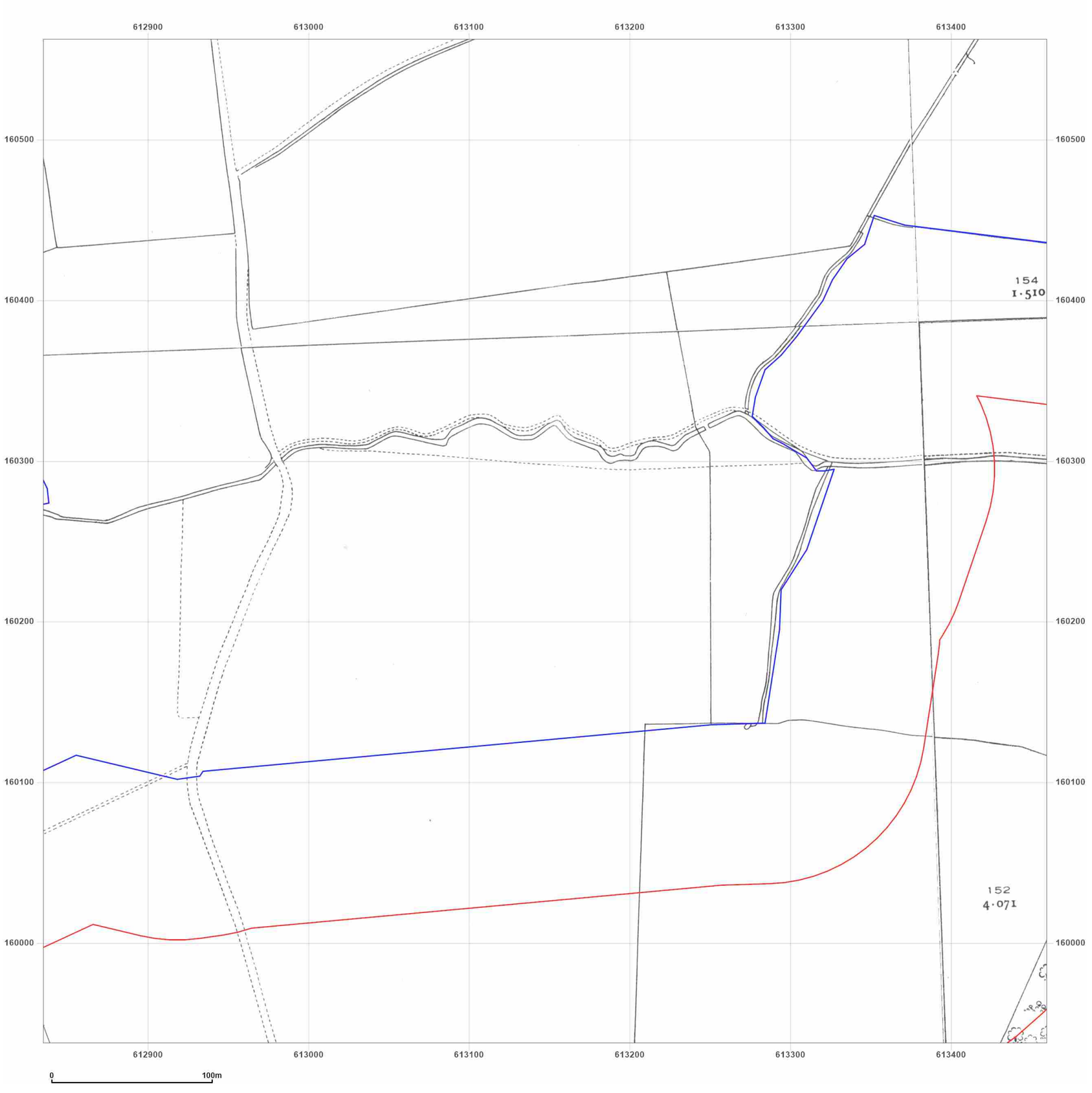
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_1
Grid Ref: 613147, 160250

Map Name: County Series

Map date: **1937-1938**

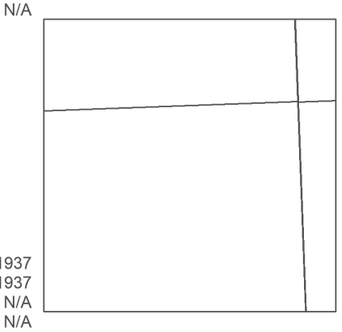
Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1937
Revised 1937
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_1
Grid Ref: 613147, 160250

Map Name: National Grid

Map date: **1970-1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Surveyed 1970
Revised 1970
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

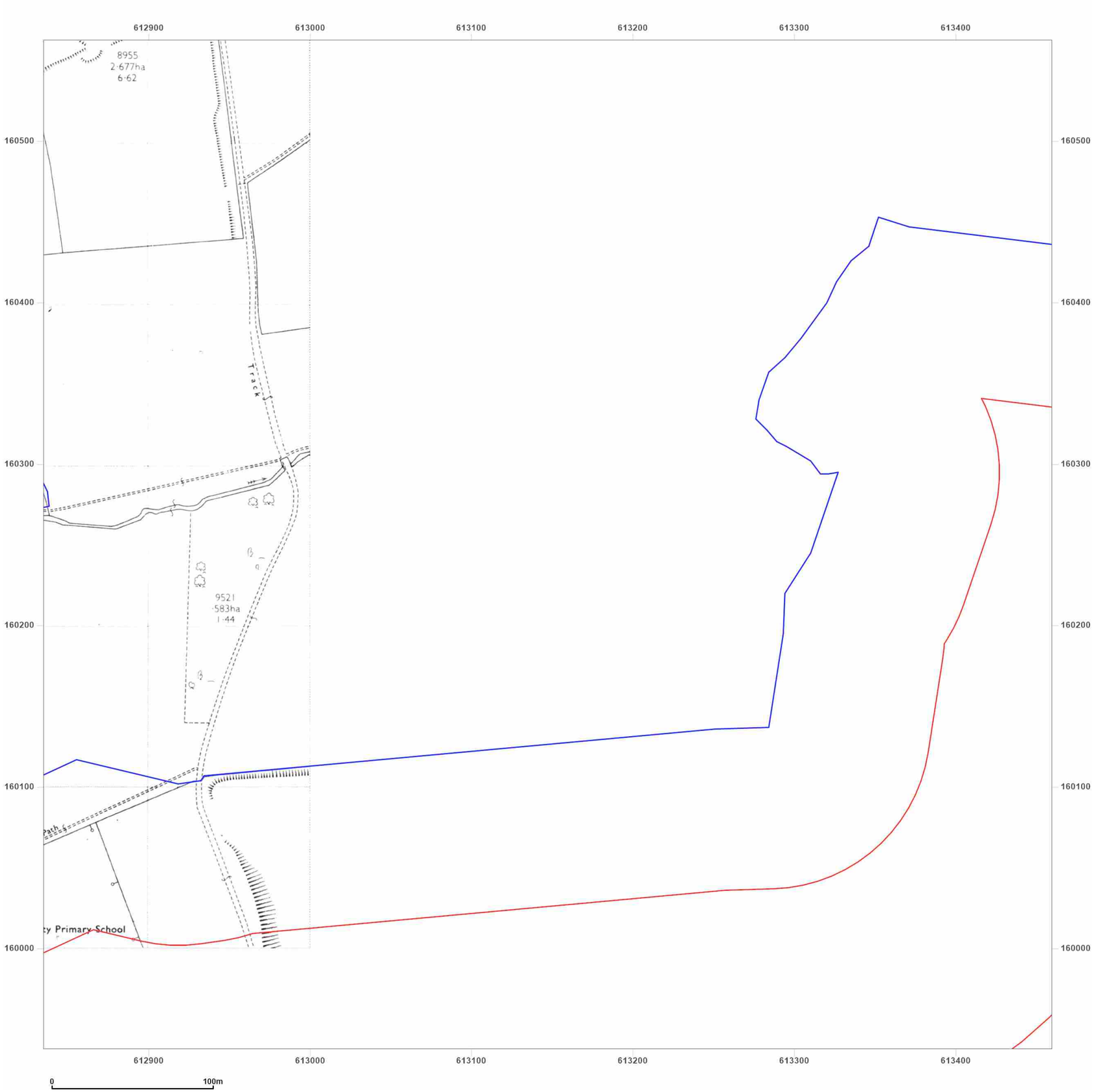
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_1
Grid Ref: 613147, 160250

Map Name: National Grid

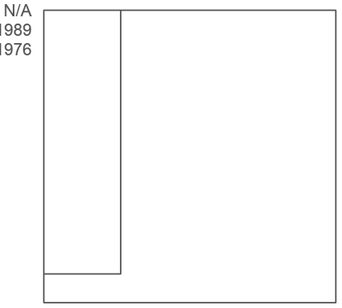
Map date: **1989**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1976
Revised 1989
Edition N/A
Copyright 1989
Levelled 1976



Groundsure INSIGHTS

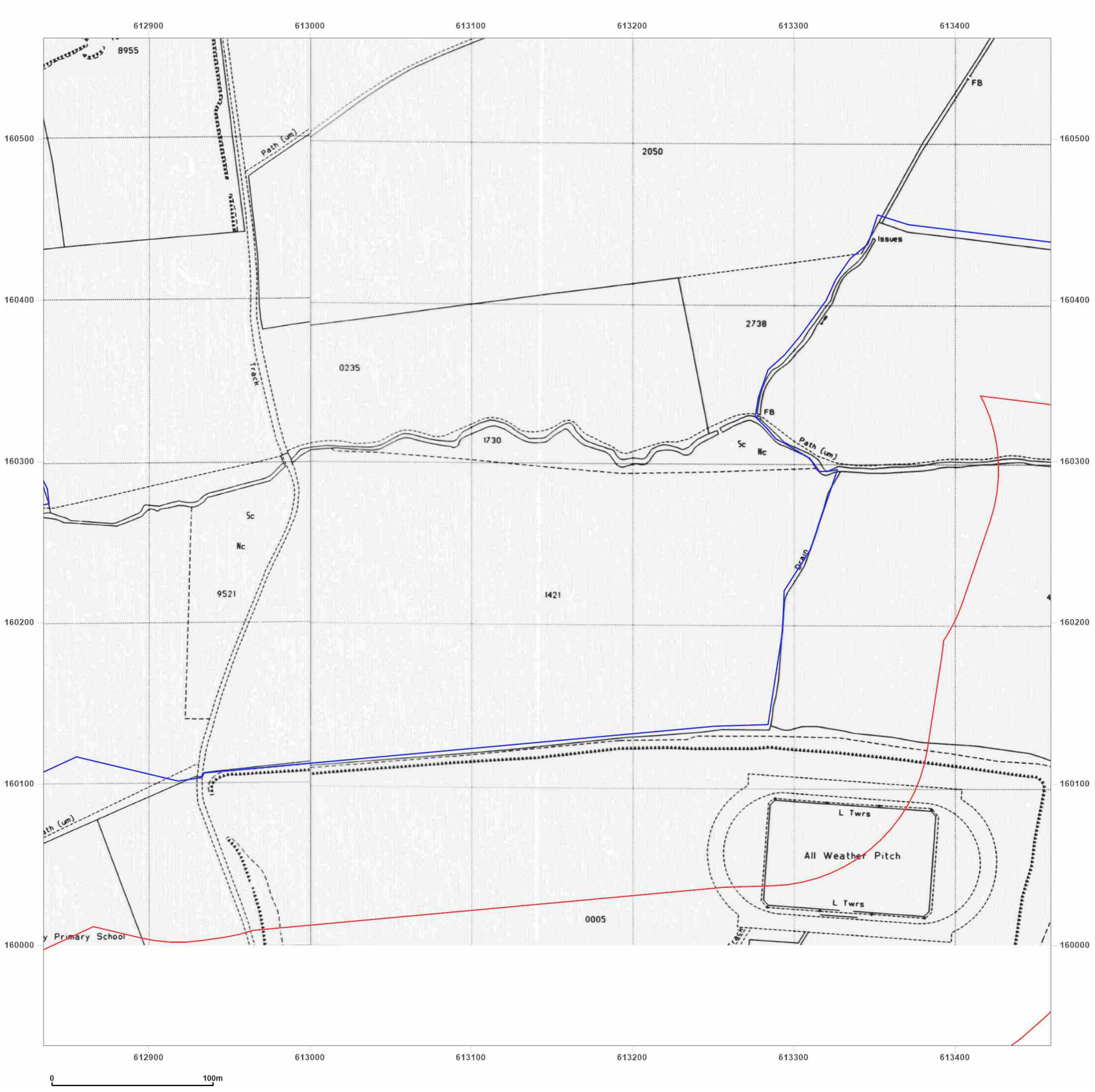
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_1
Grid Ref: 613147, 160250

Map Name: National Grid

Map date: **1993**

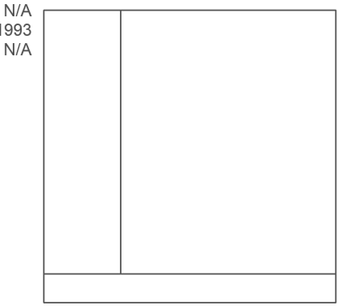
Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A



Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_2
Grid Ref: 613147, 160875

Map Name: County Series

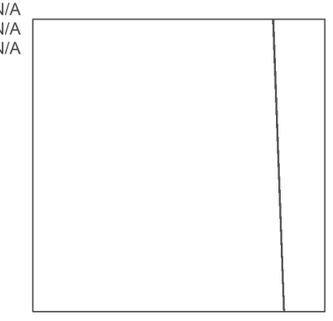
Map date: **1873**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

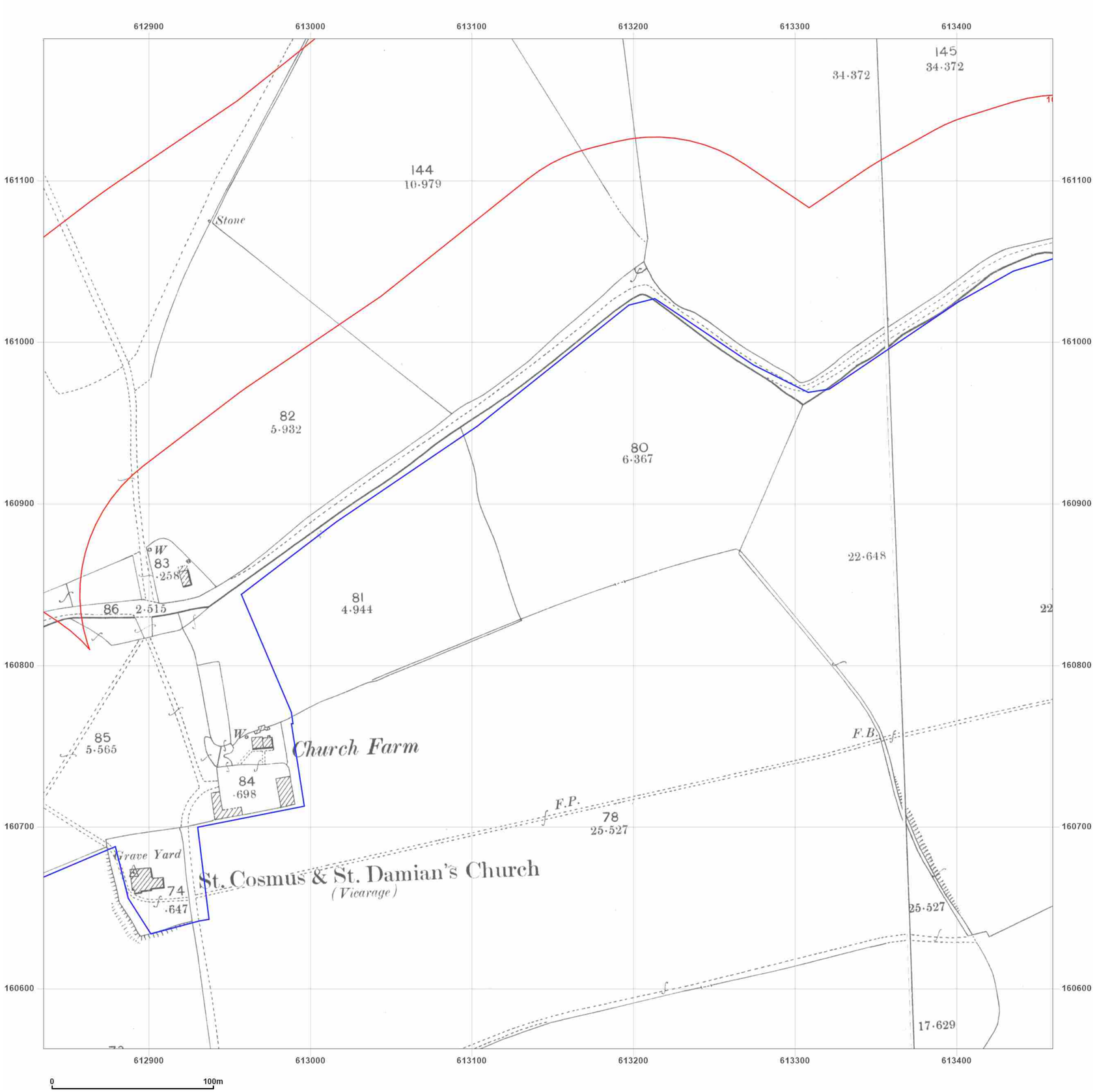
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_2
Grid Ref: 613147, 160875

Map Name: County Series

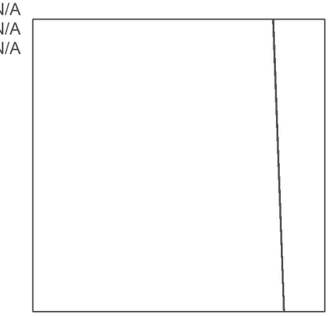
Map date: **1898**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

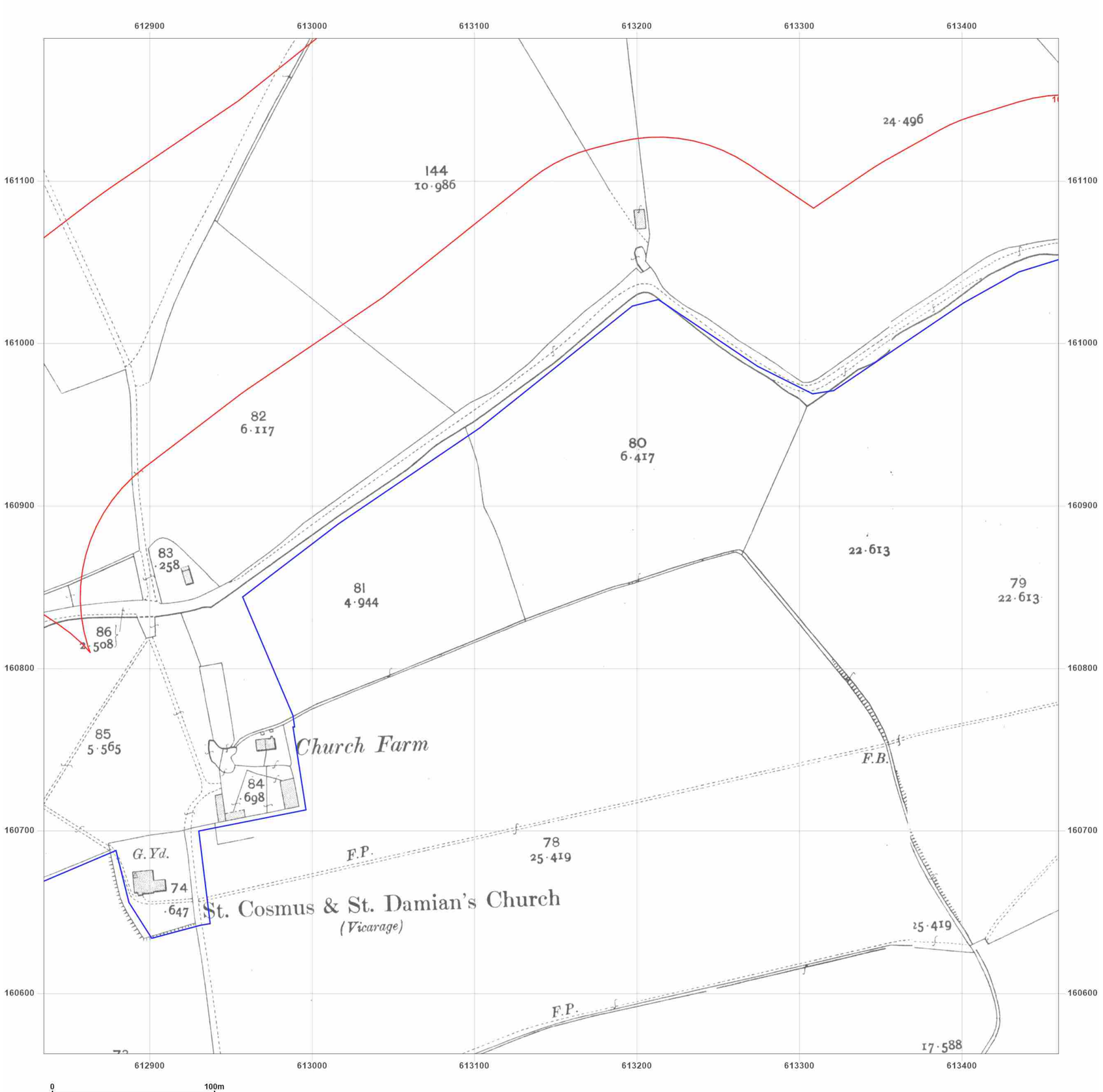
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

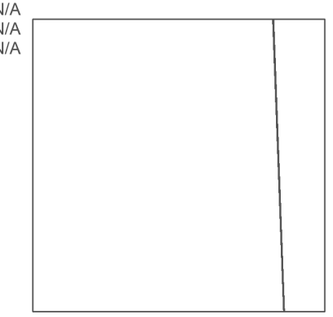
UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_2
Grid Ref: 613147, 160875

Map Name: County Series
Map date: **1907**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

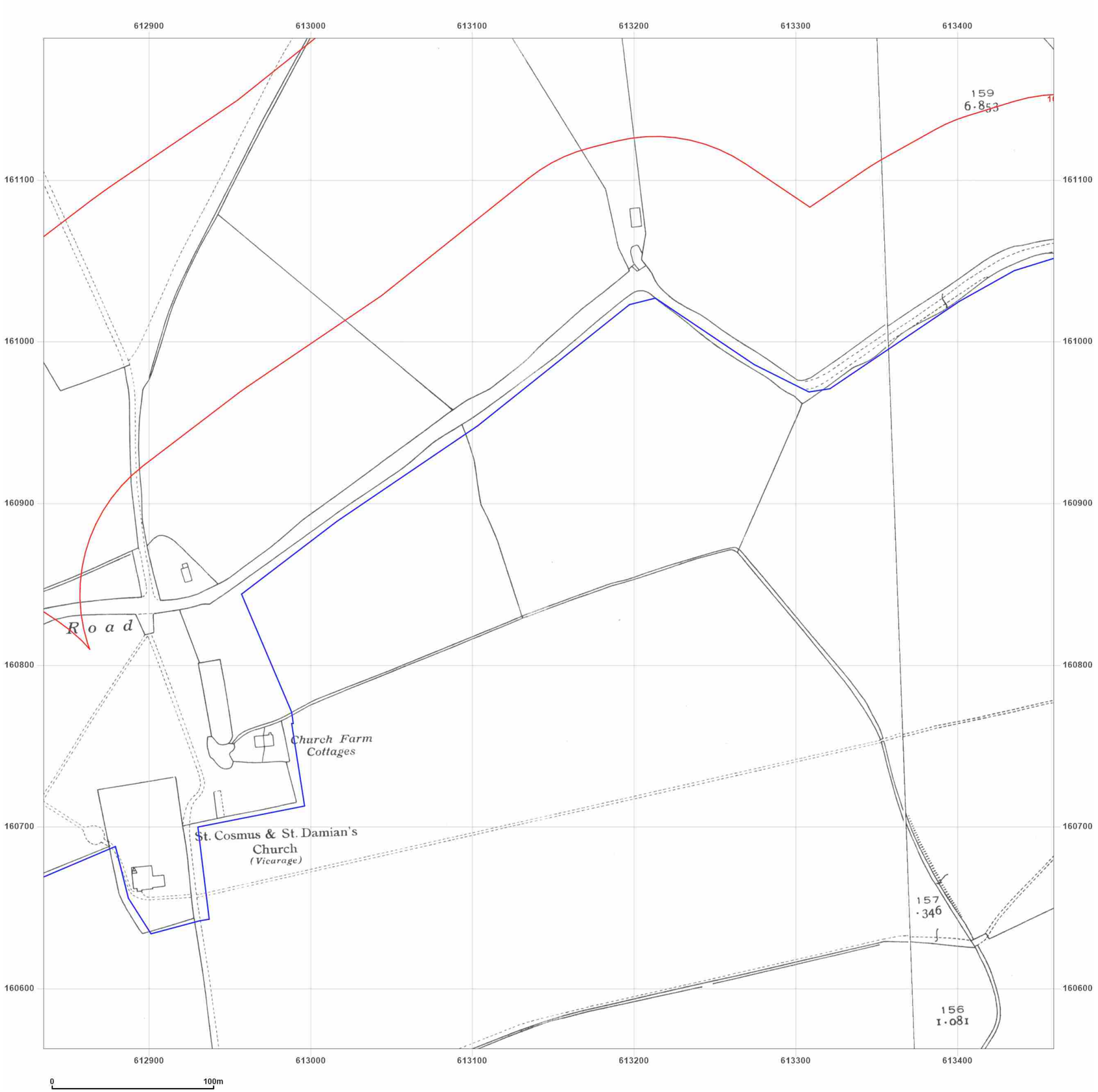
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_2
Grid Ref: 613147, 160875

Map Name: County Series

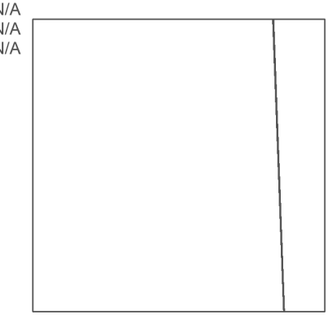
Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

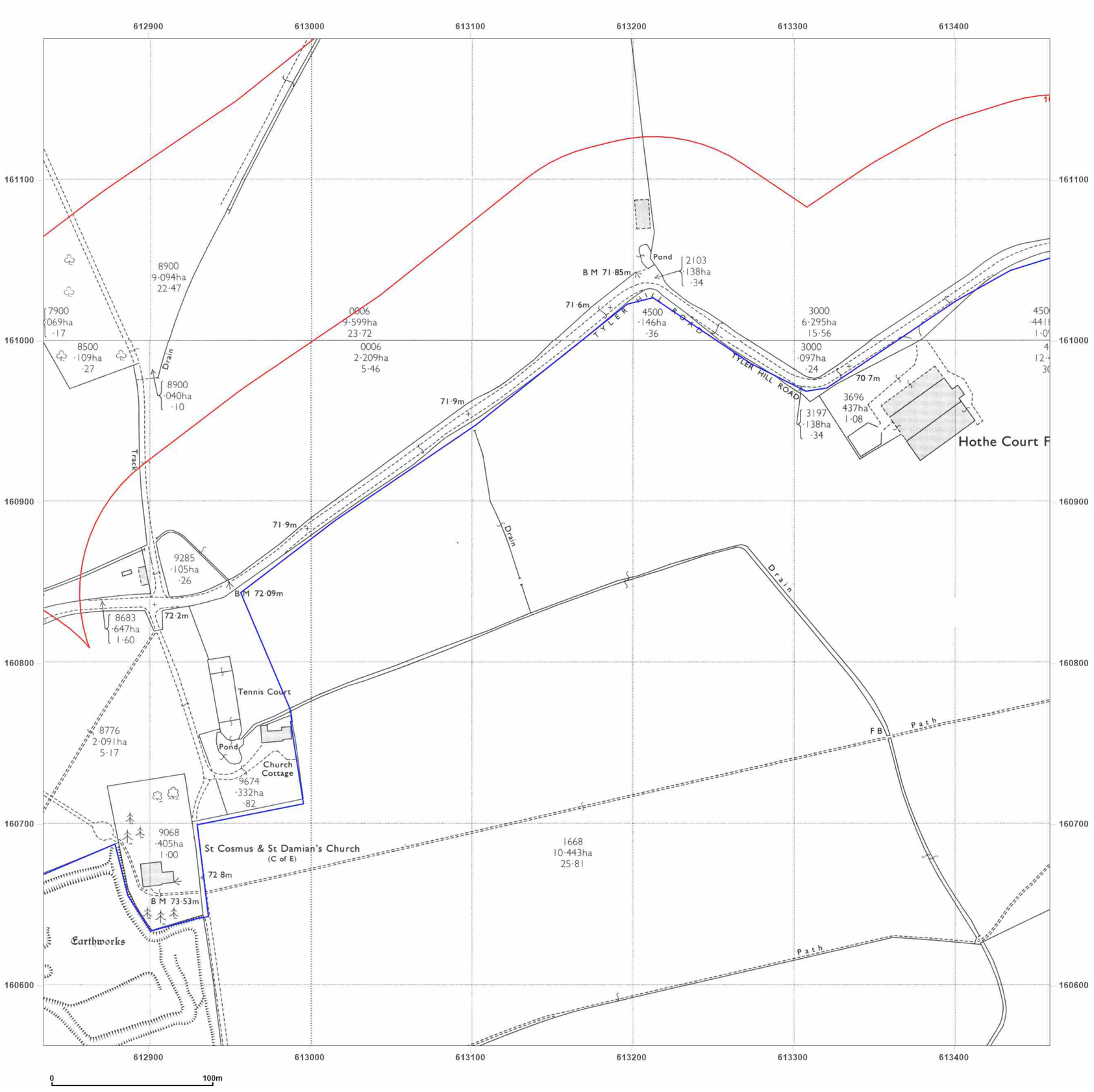
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_2
Grid Ref: 613147, 160875

Map Name: National Grid

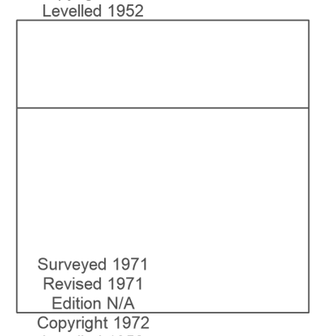
Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952



Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

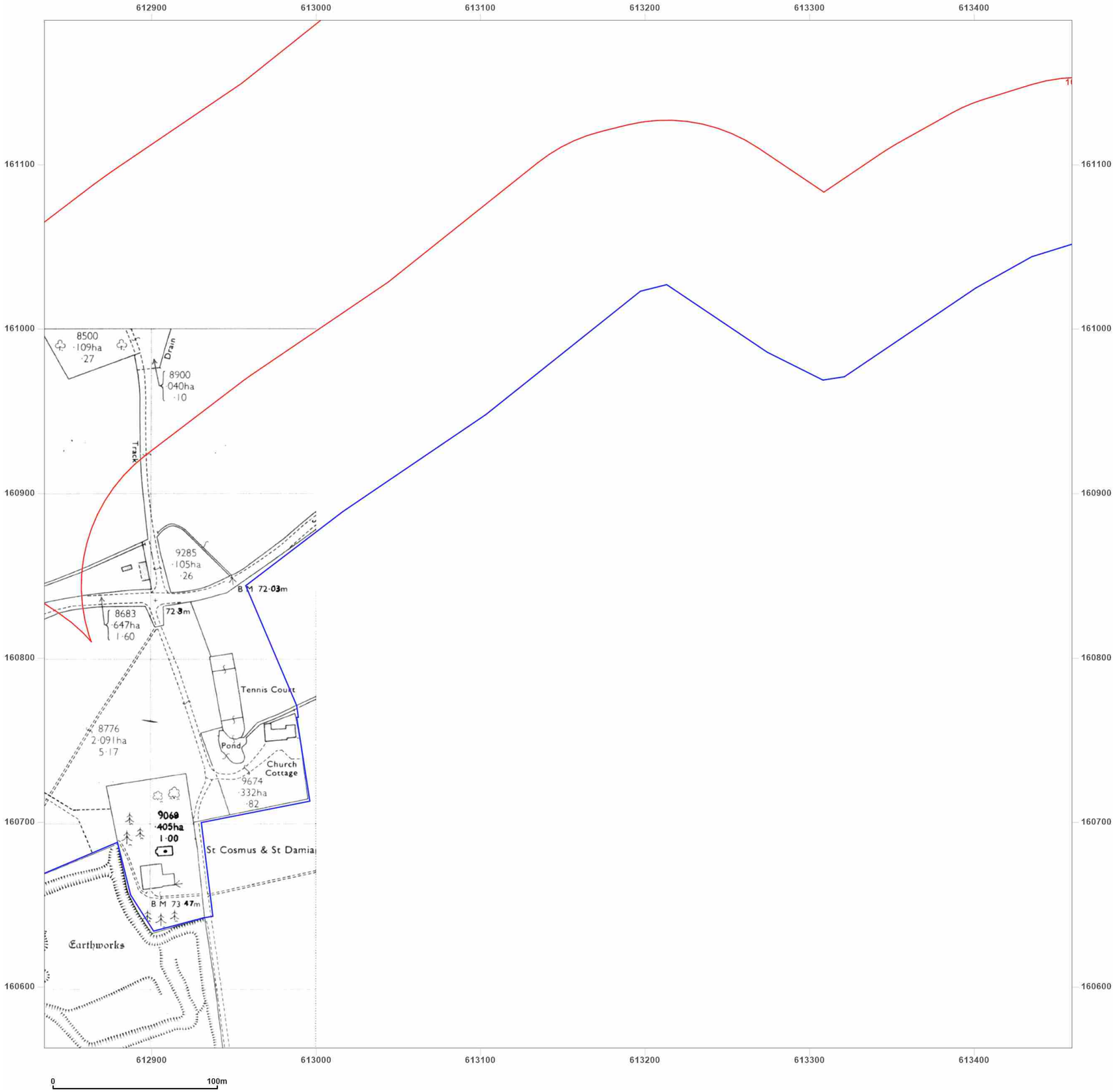
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_2
Grid Ref: 613147, 160875

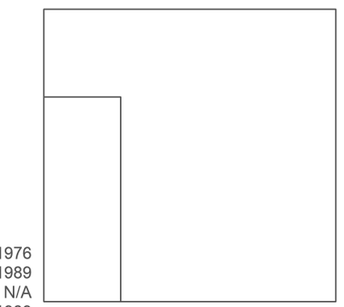
Map Name: National Grid

Map date: **1989**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Surveyed 1976
Revised 1989
Edition N/A
Copyright 1989
Levelled 1976

Groundsure INSIGHTS

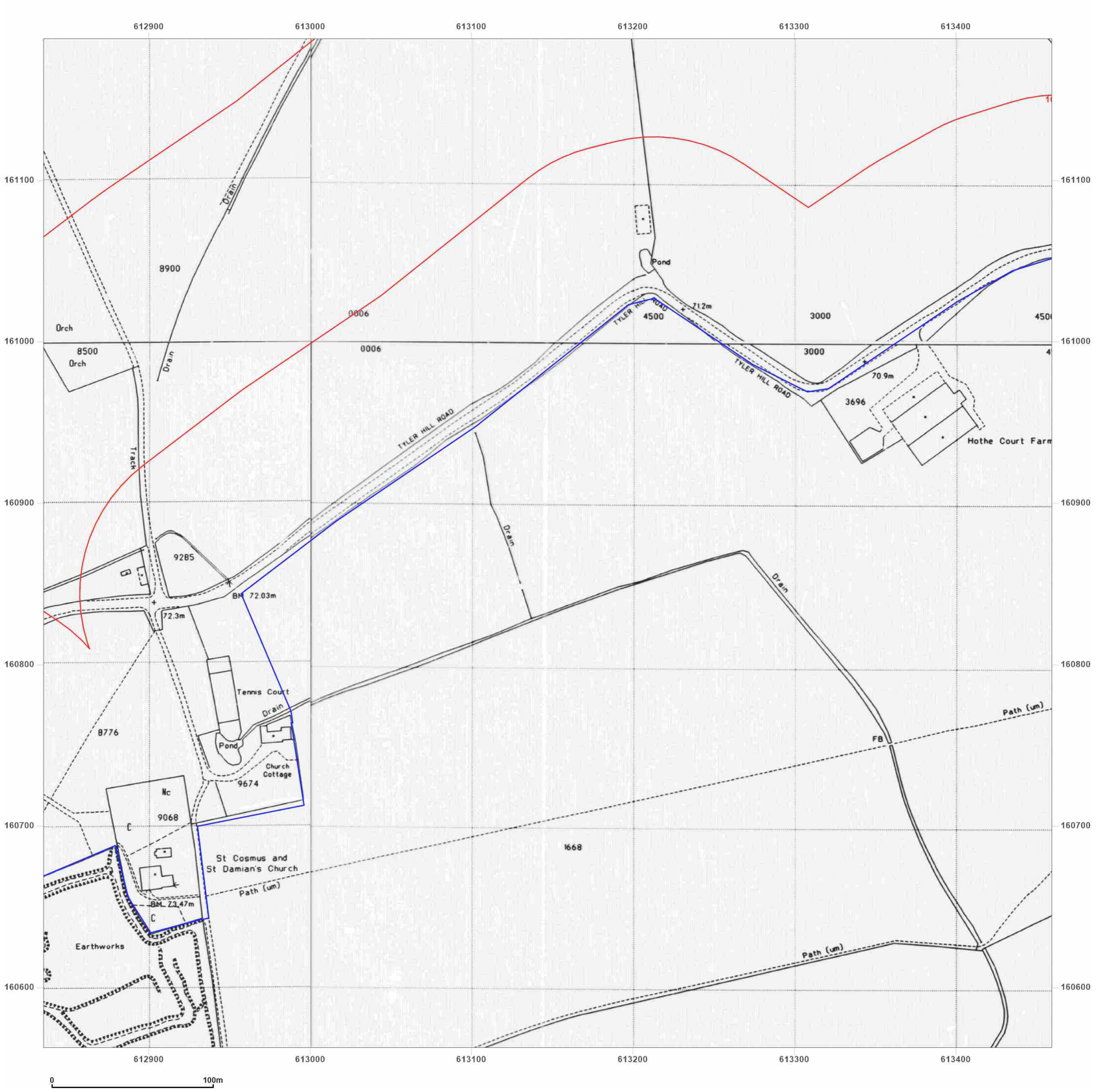
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_2_2
Grid Ref: 613147, 160875

Map Name: National Grid

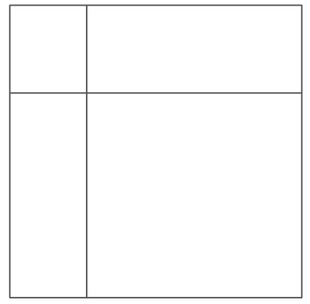
Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A



Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Groundsure INSIGHTS

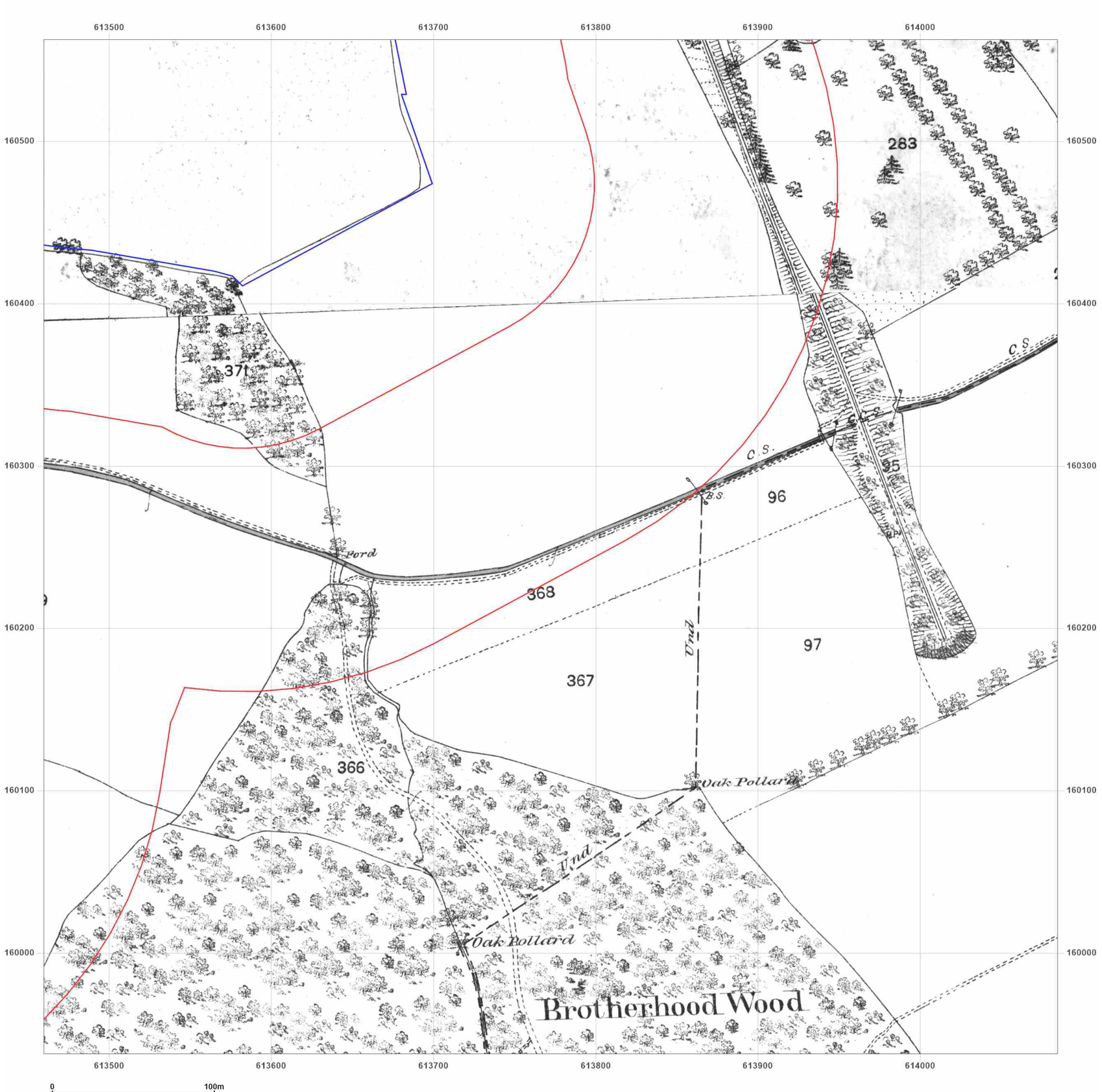
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_3_1
Grid Ref: 613772, 160250

Map Name: County Series

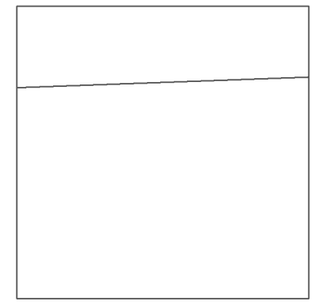
Map date: **1873-1874**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1874
Revised 1874
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

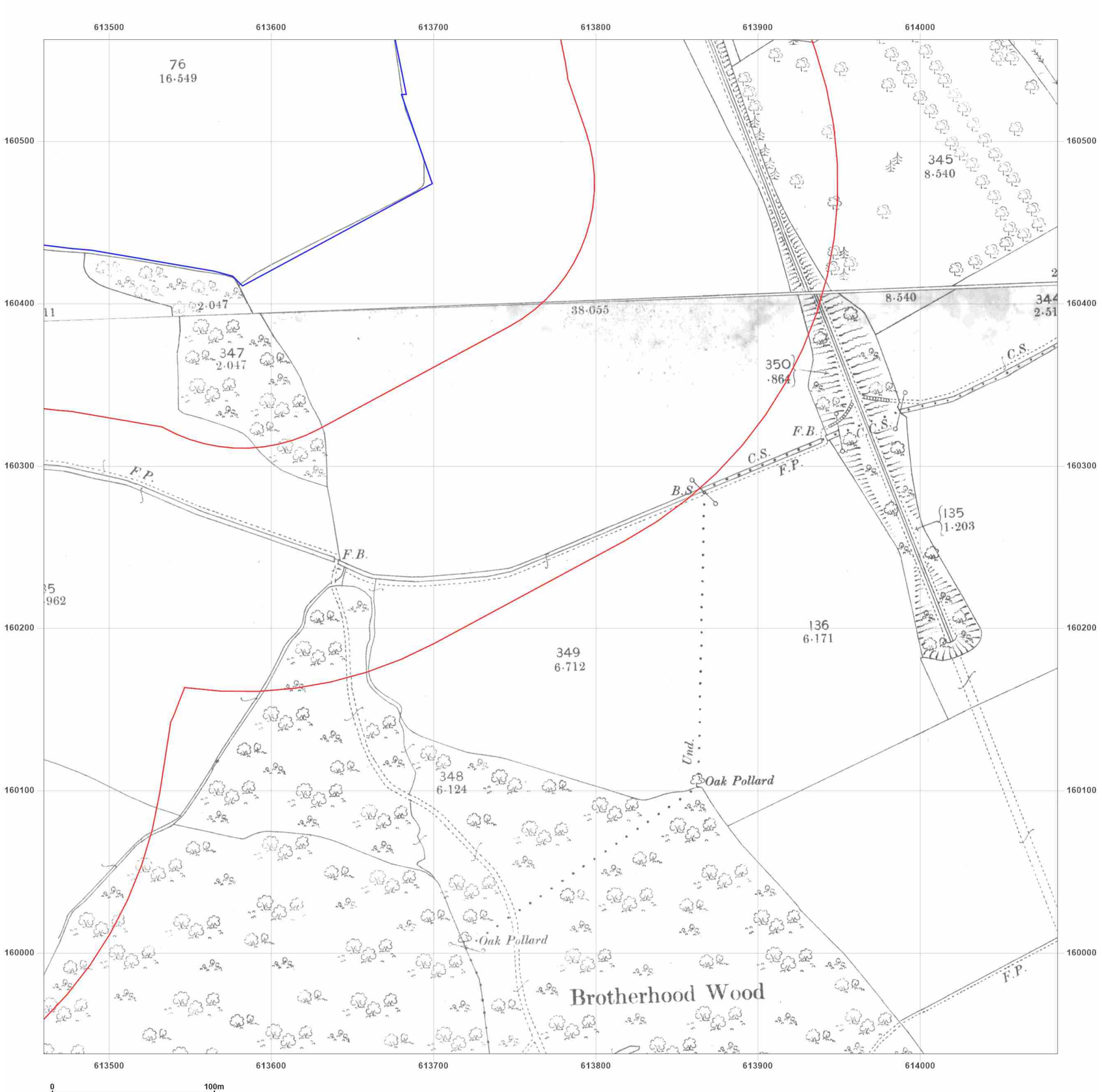
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_3_1
Grid Ref: 613772, 160250

Map Name: County Series

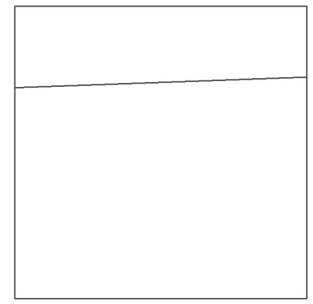
Map date: **1898**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

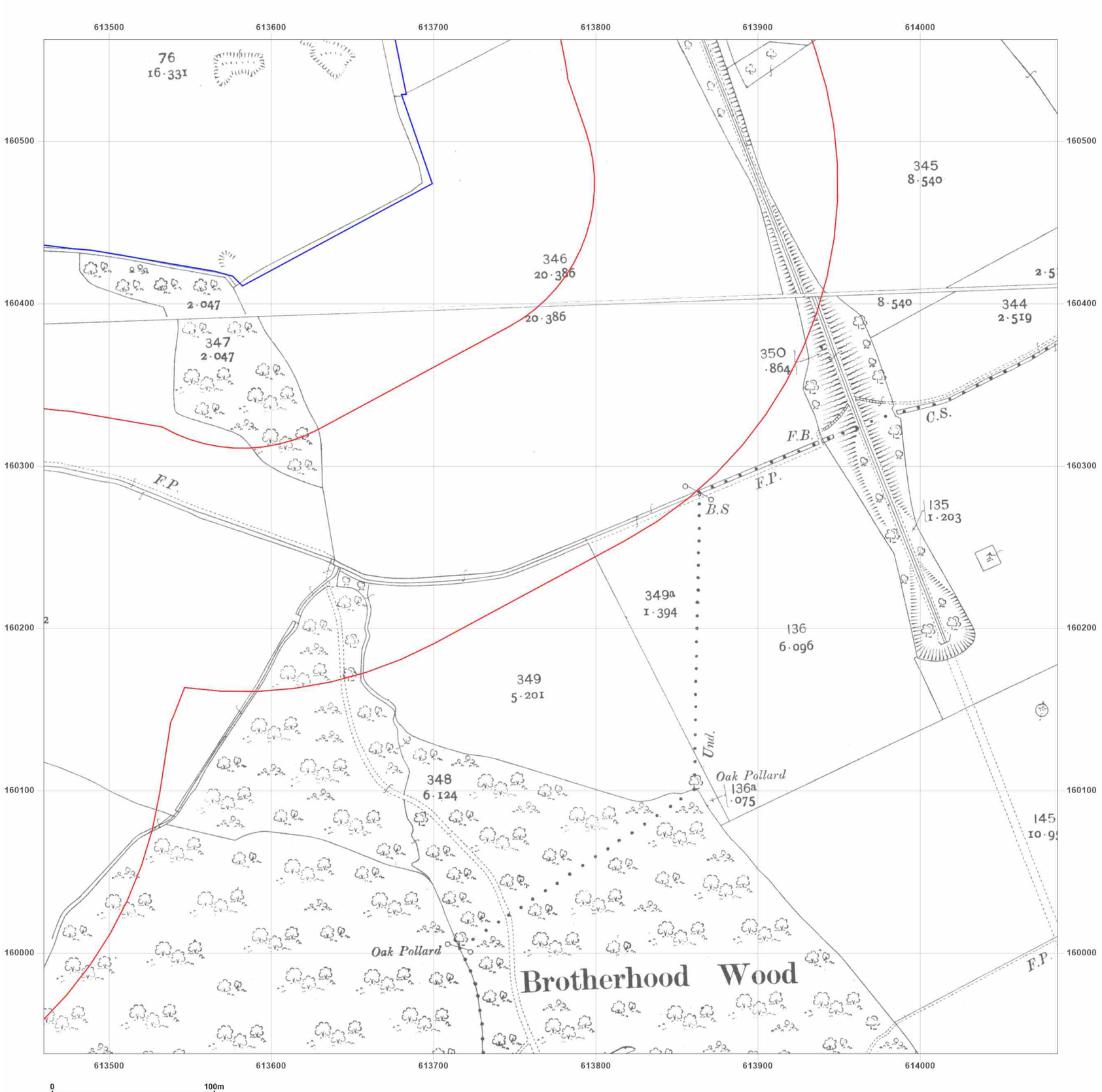
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_3_1
Grid Ref: 613772, 160250

Map Name: County Series

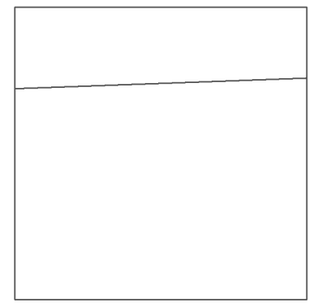
Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

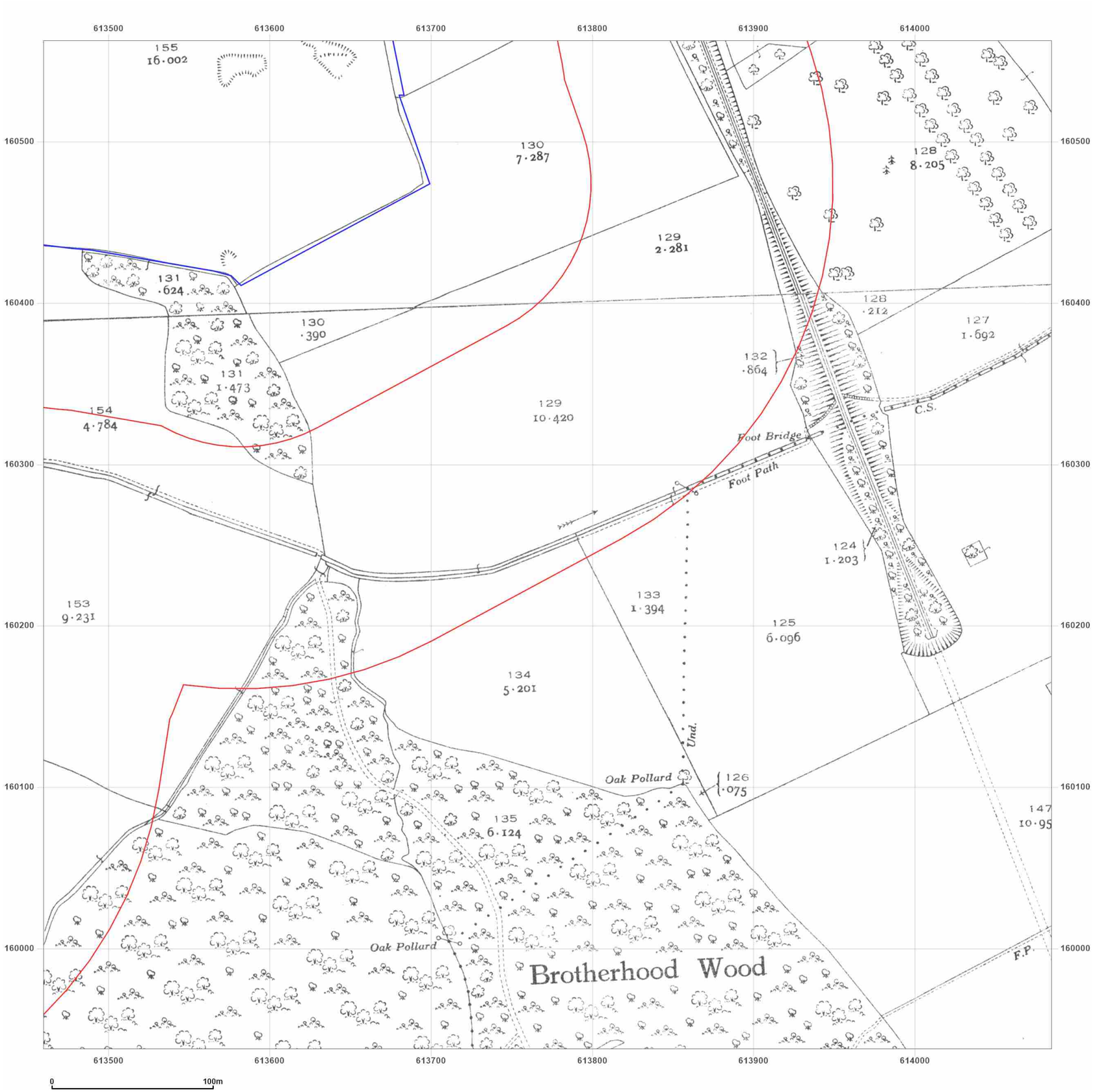
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_3_1
Grid Ref: 613772, 160250

Map Name: County Series

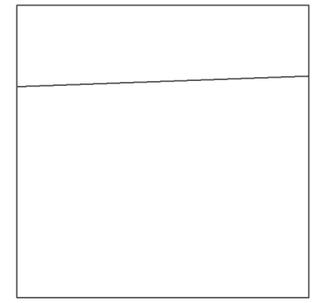
Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

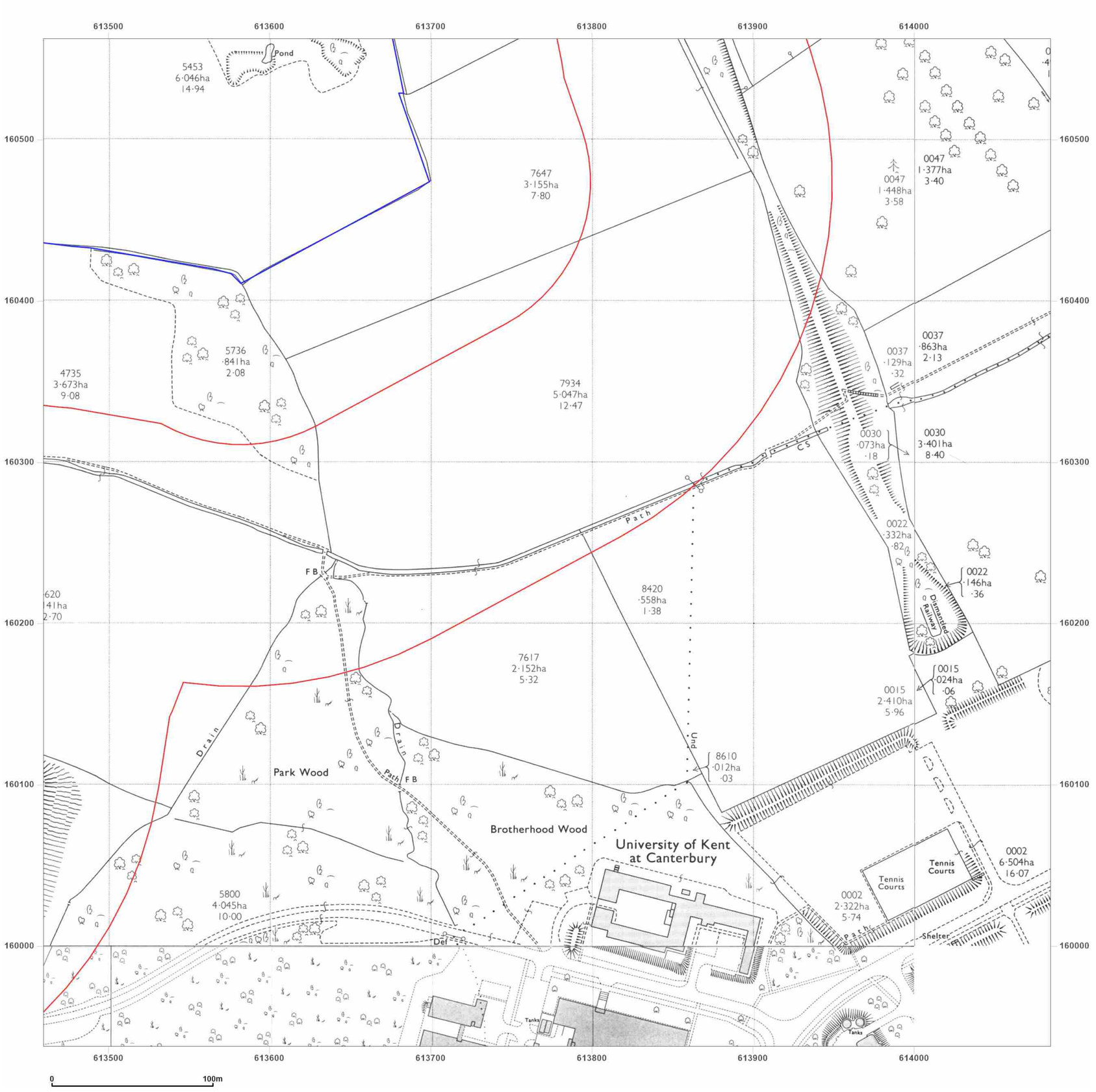
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_3_1
Grid Ref: 613772, 160250

Map Name: National Grid

Map date: **1970-1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Surveyed 1970
Revised 1970
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

WSP

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_3_1
Grid Ref: 613772, 160250

Map Name: National Grid

Map date: **1991-1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled N/A

Groundsure INSIGHTS

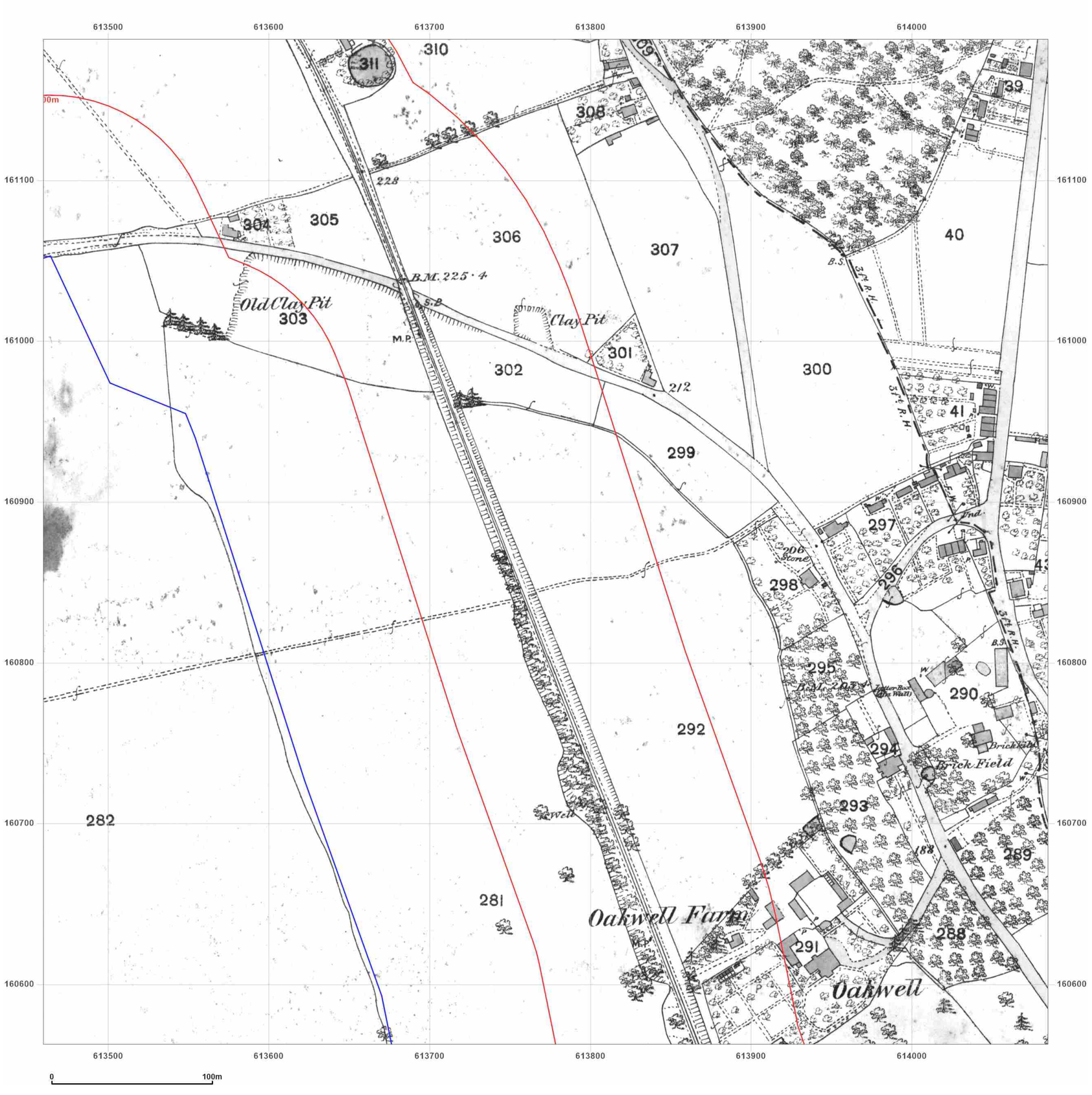
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_3_2
Grid Ref: 613772, 160875

Map Name: County Series

Map date: **1873**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

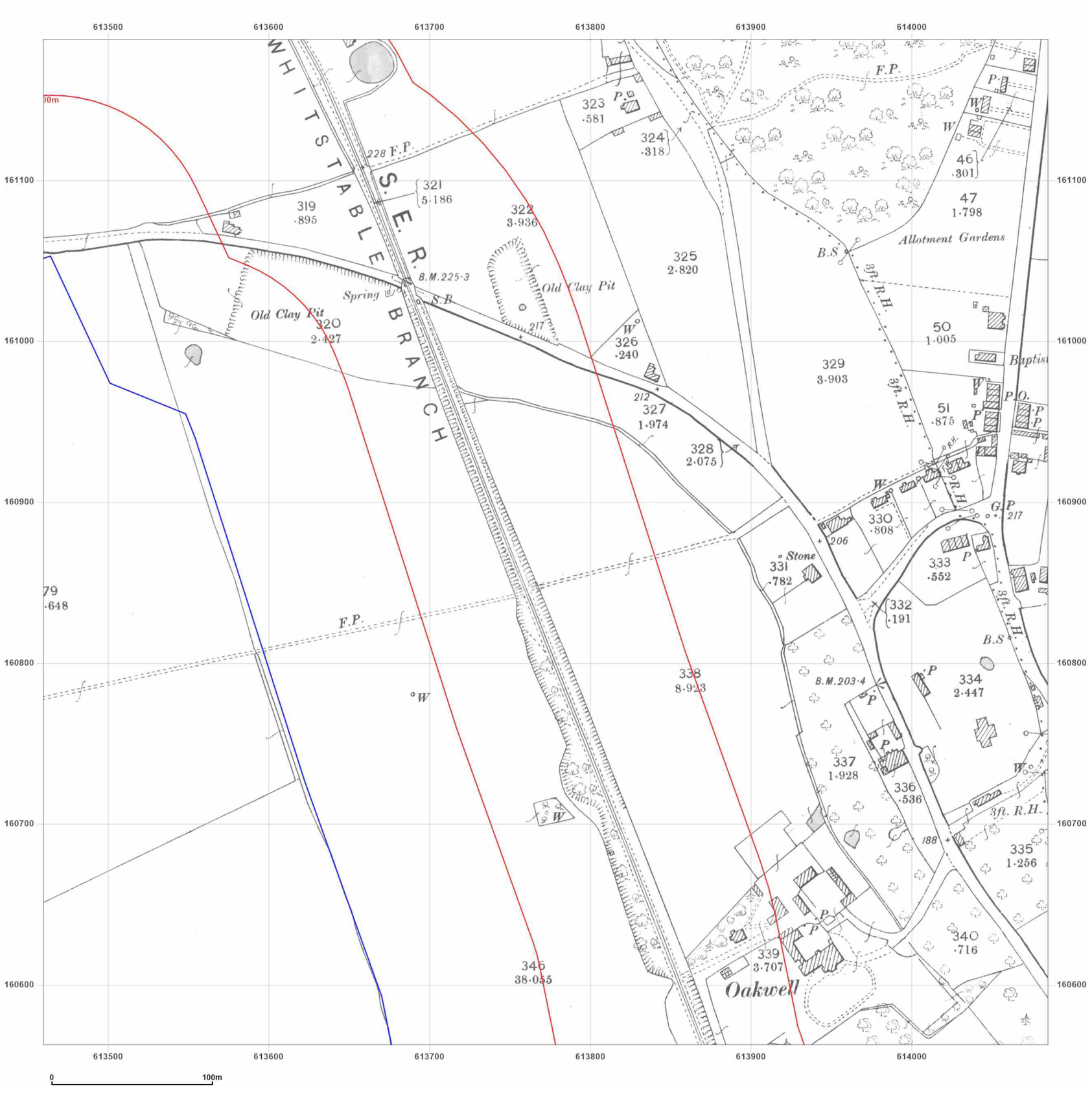
Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Powered by OS

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_3_2
Grid Ref: 613772, 160875

Map Name: County Series

Map date: **1898**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

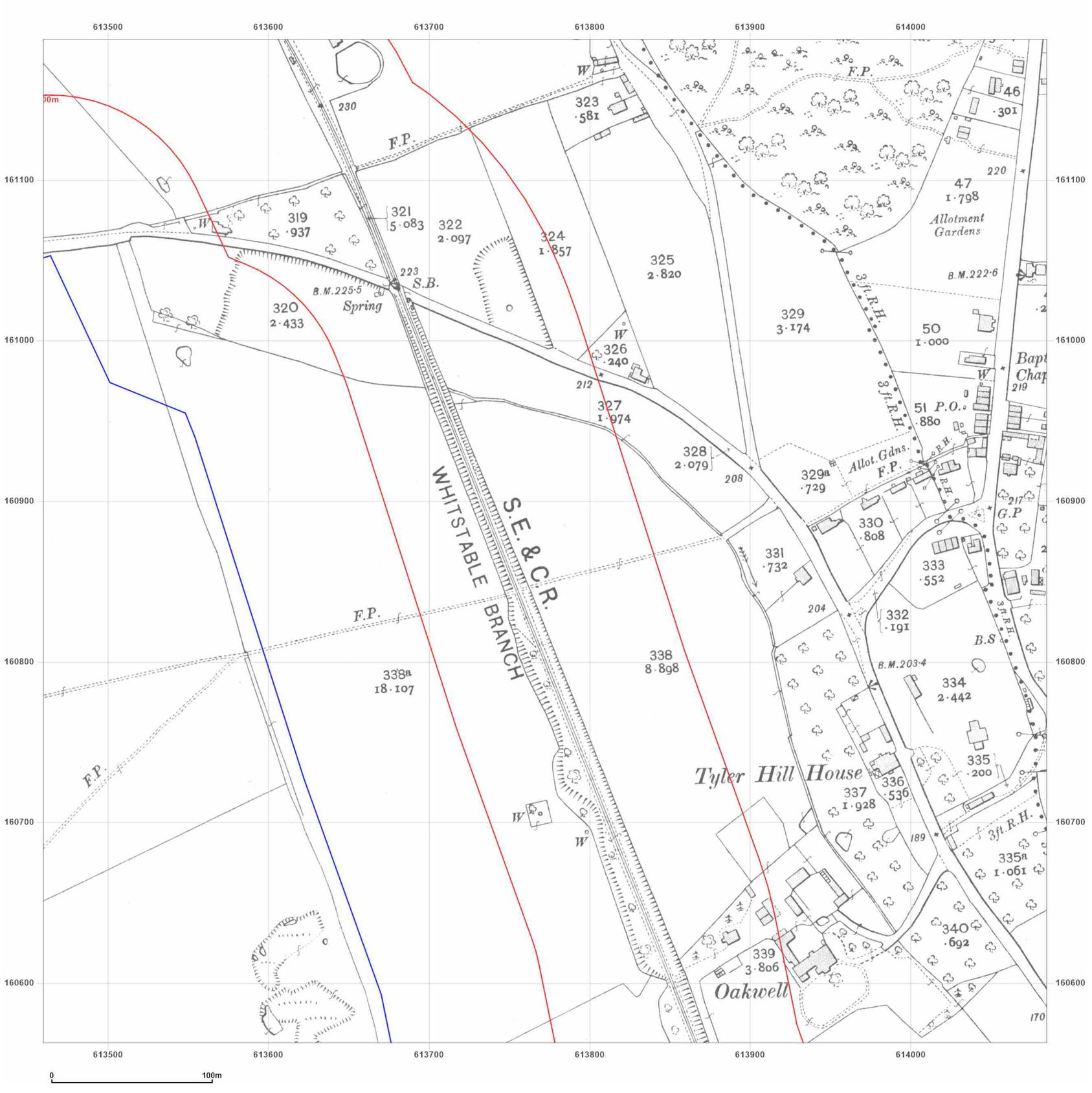
Groundsure INSIGHTS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_3_2
Grid Ref: 613772, 160875

Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

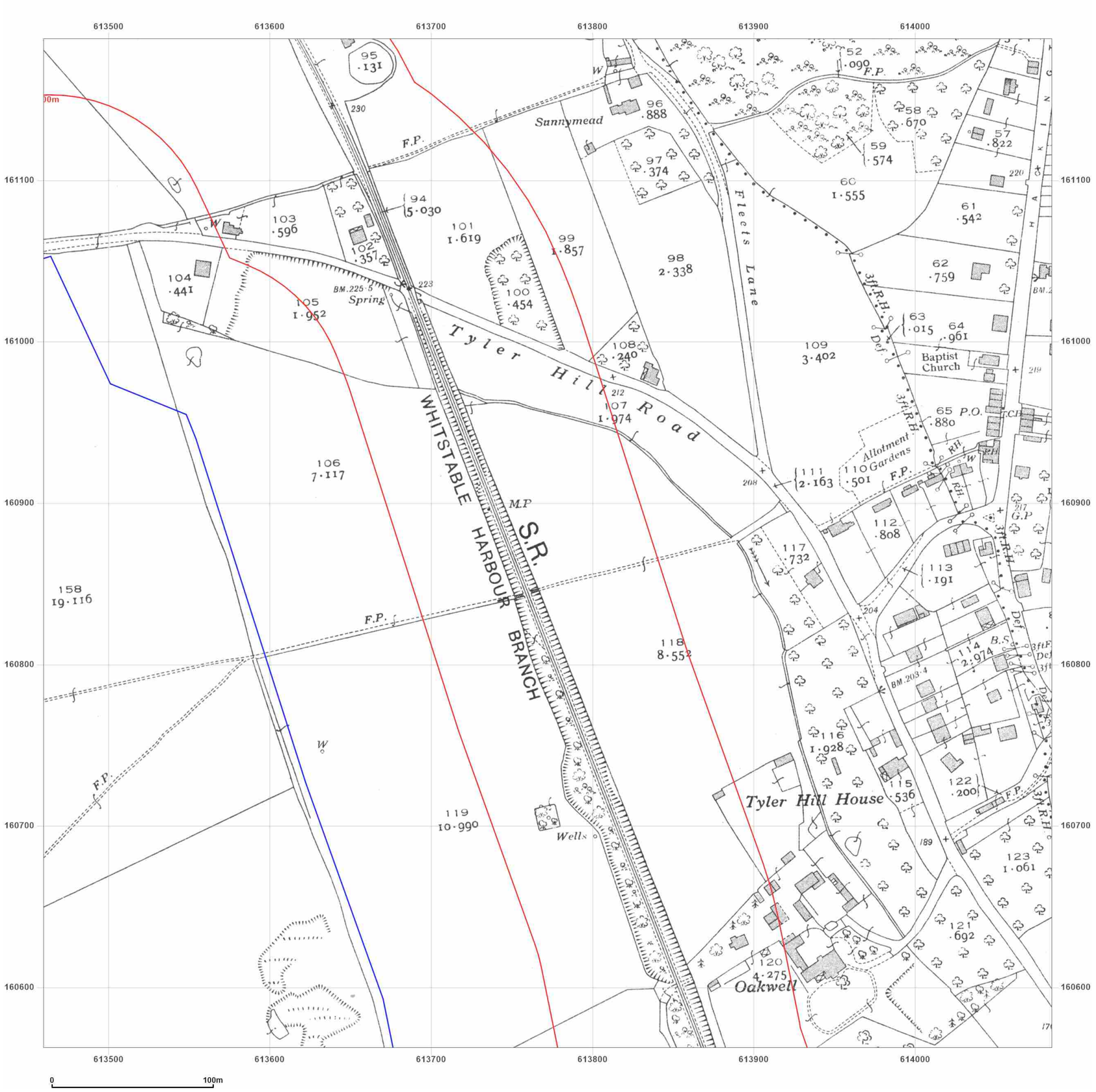
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_3_2
Grid Ref: 613772, 160875

Map Name: County Series

Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

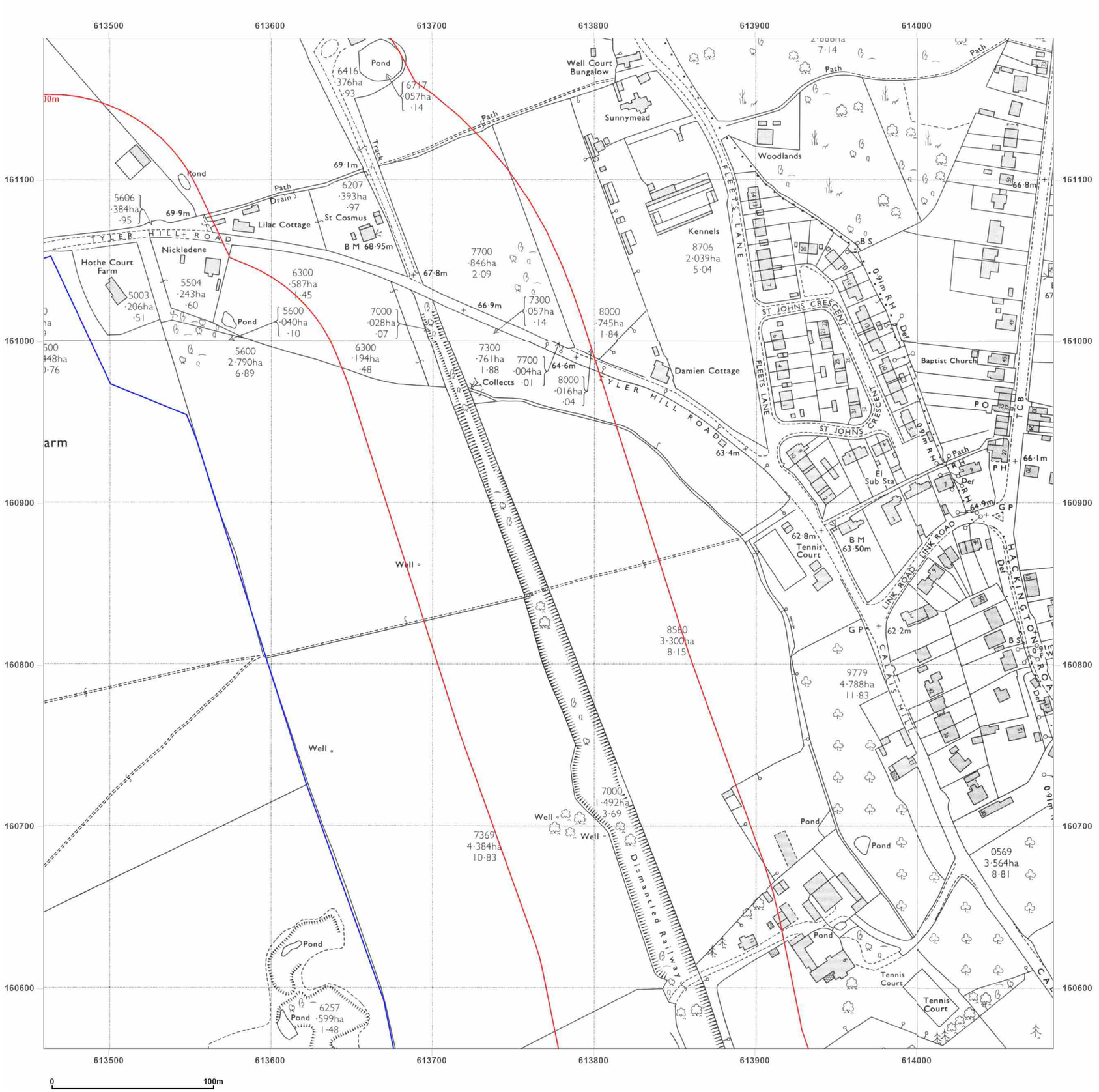
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_3_2
Grid Ref: 613772, 160875

Map Name: National Grid

Map date: **1971-1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142_LS_3_2
Grid Ref: 613772, 160875

Map Name: National Grid

Map date: **1991-1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled N/A

Groundsure INSIGHTS

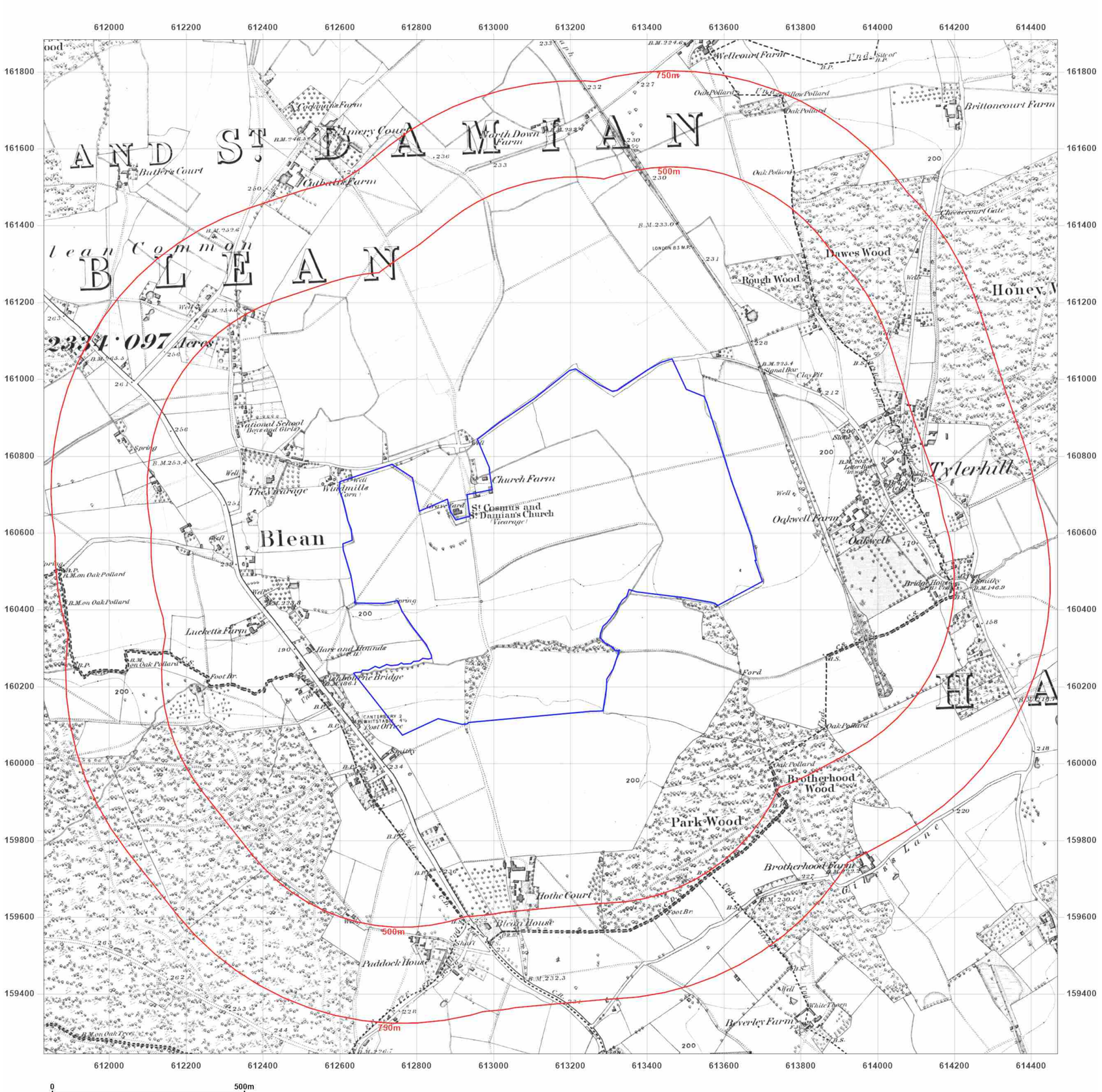
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

Map Name: County Series

Map date: **1873**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

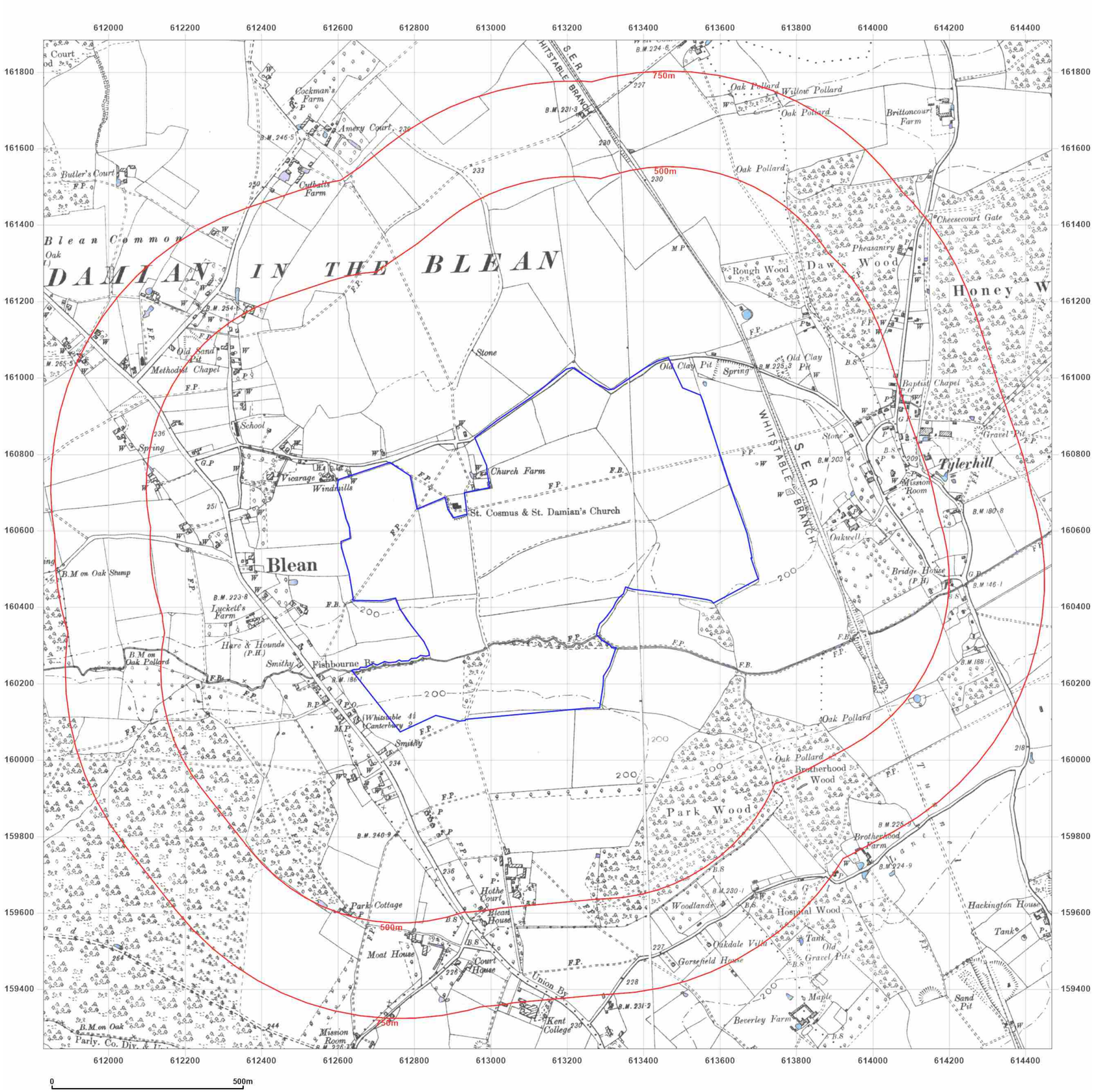
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

Map Name: County Series

Map date: **1896**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1873
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

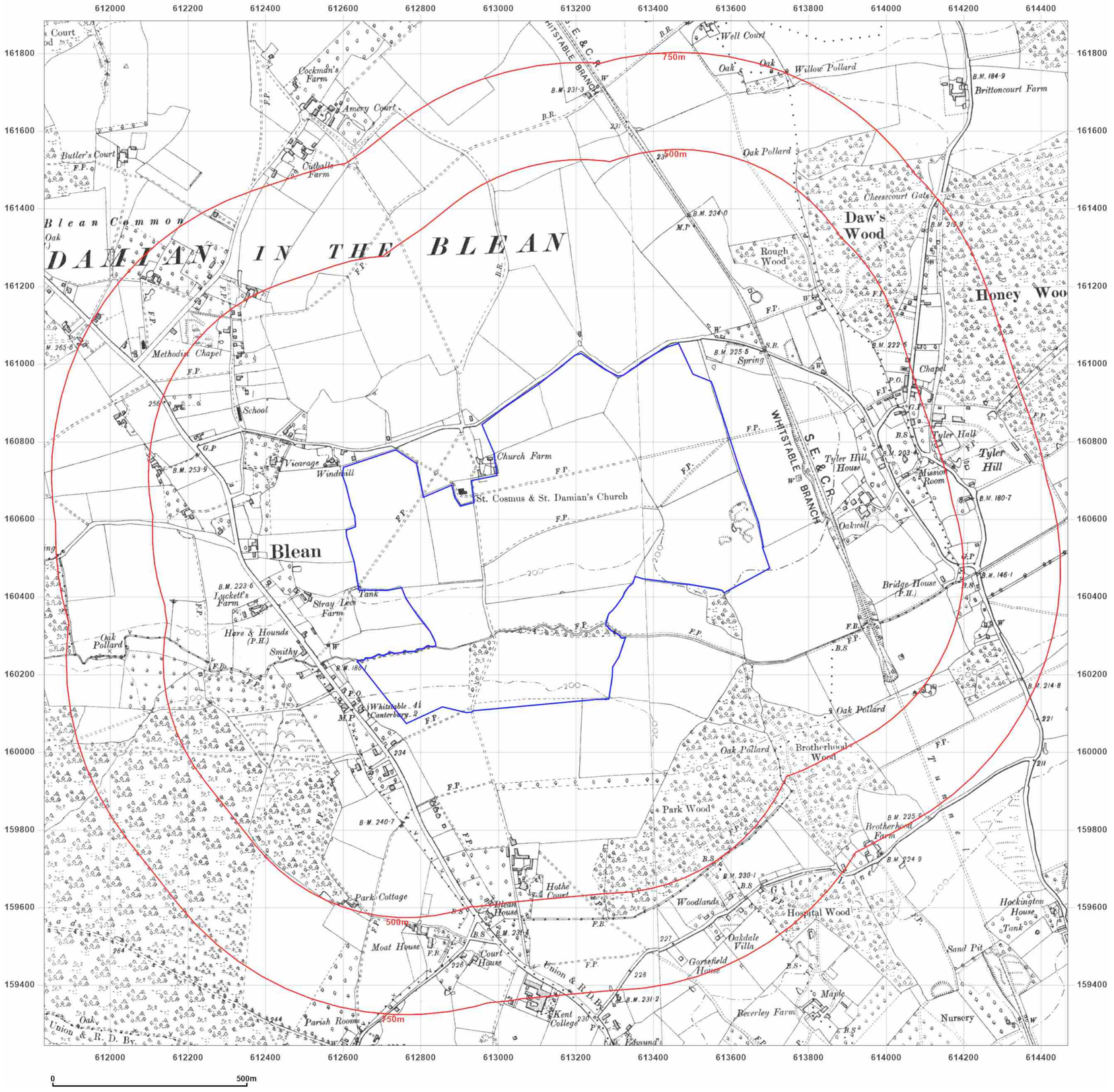
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

Map Name: County Series

Map date: **1906**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

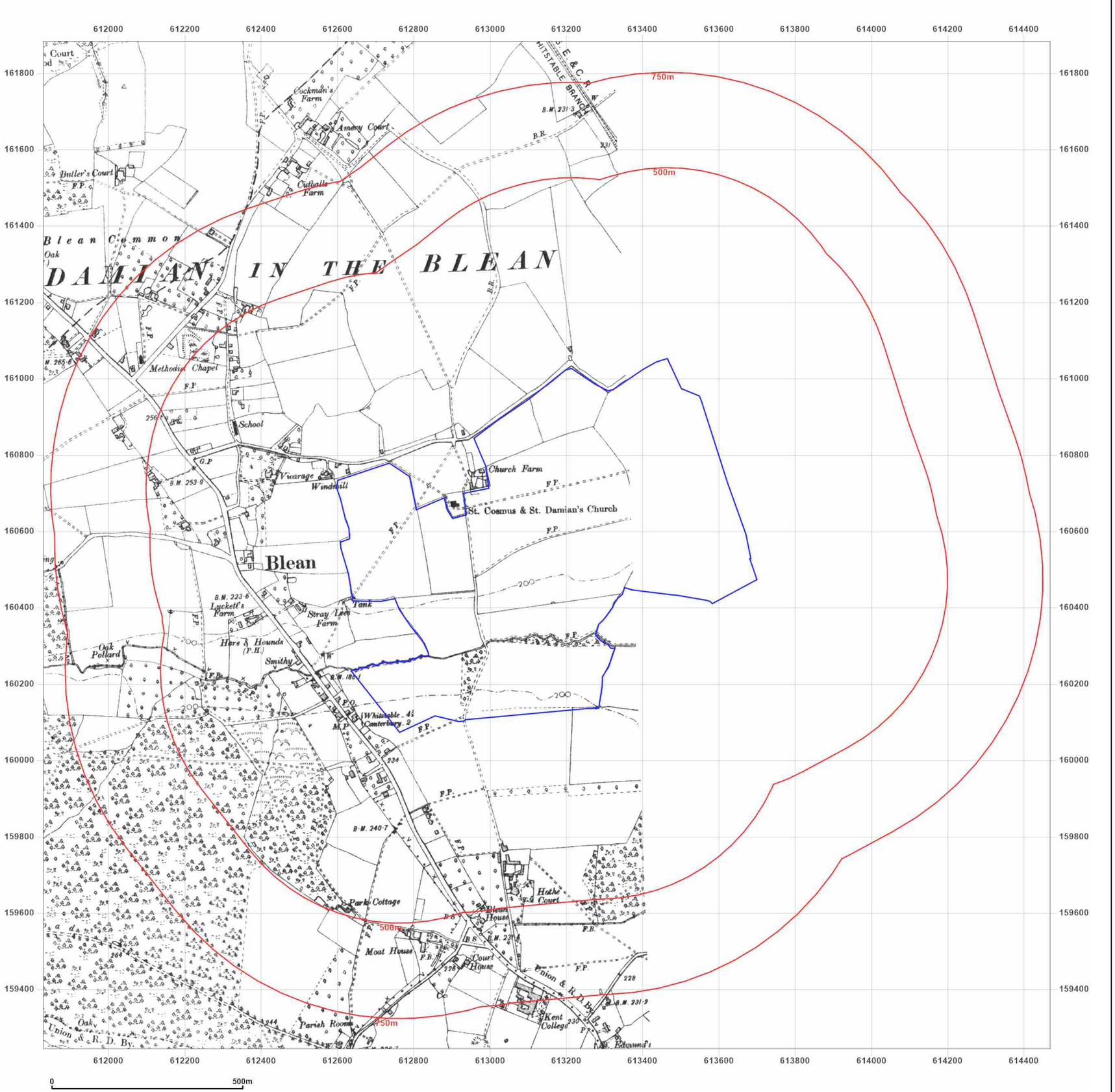
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

Map Name: County Series

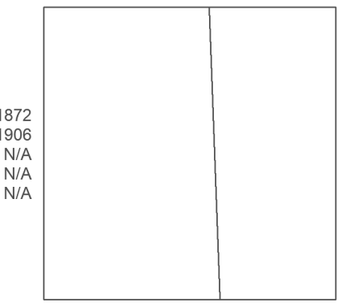
Map date: **1906**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A



Groundsure INSIGHTS

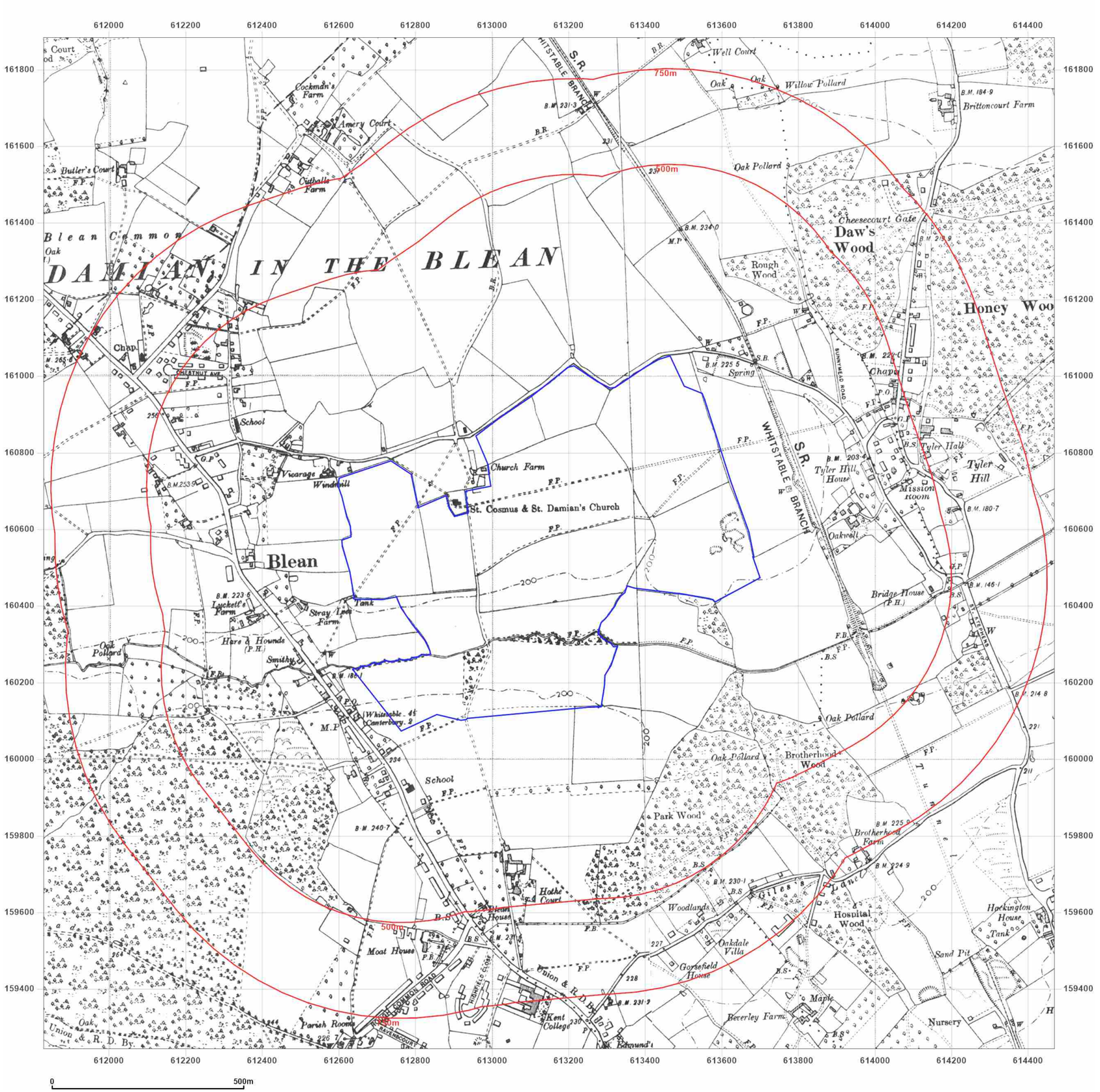
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

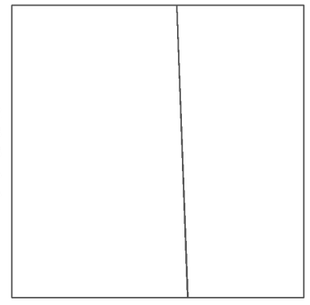
Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



Groundsure INSIGHTS

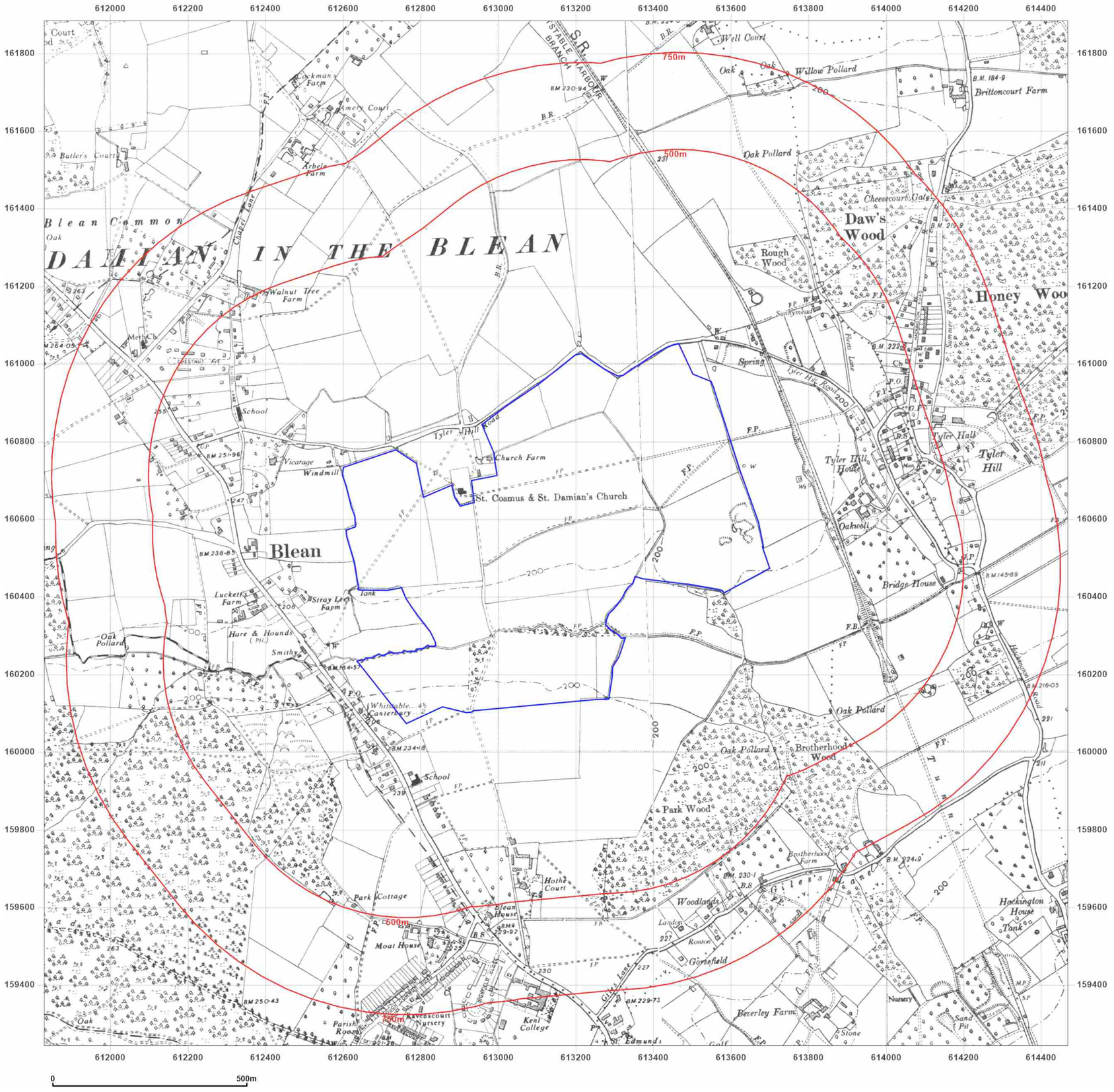
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

Map Name: County Series

Map date: **1947**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

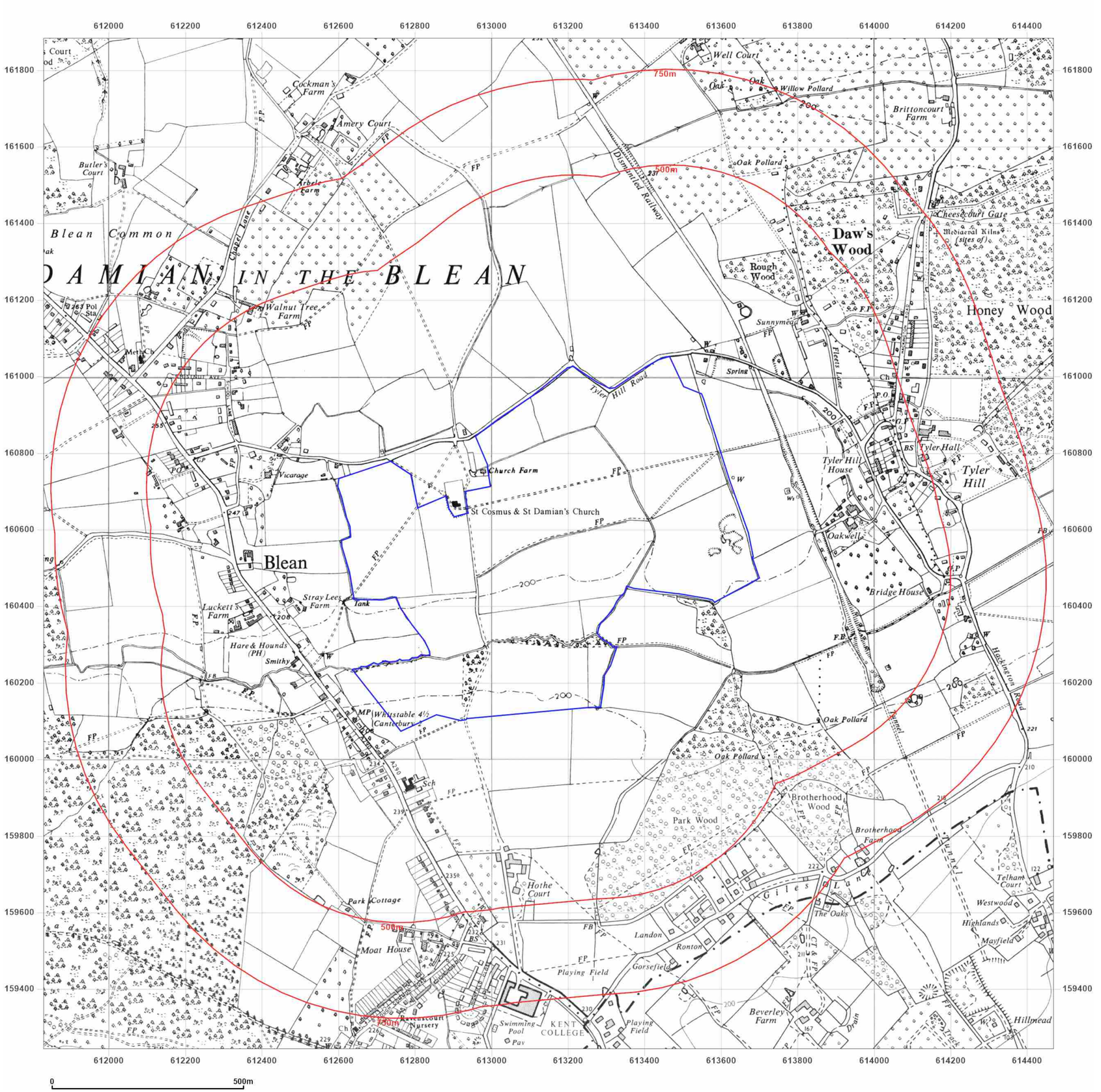
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

Map Name: Provisional

Map date: **1957**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1957
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

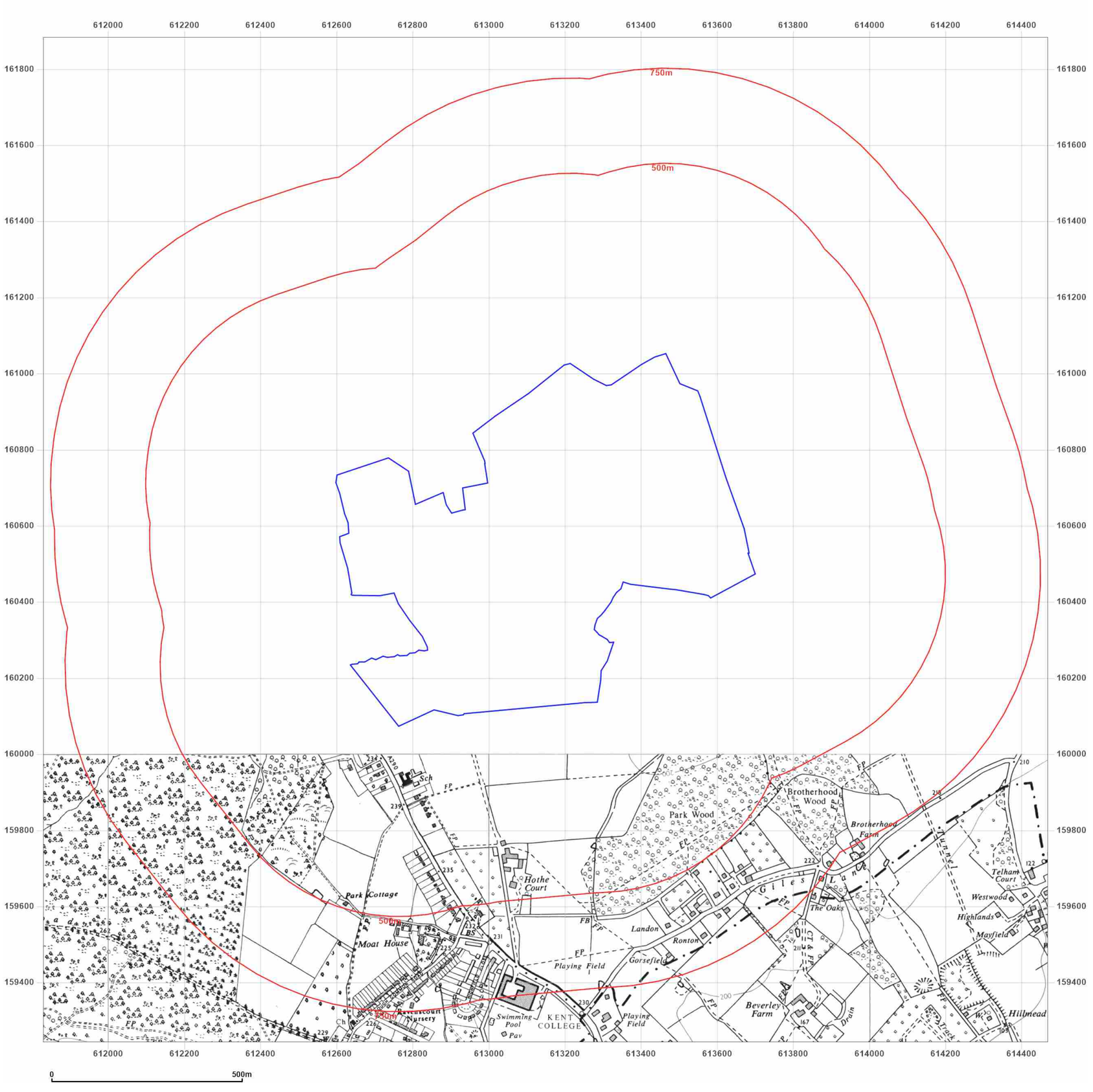
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

Map Name: Provisional

Map date: **1965**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1875
Revised 1965
Edition N/A
Copyright 1962
Levelled N/A

Groundsure INSIGHTS

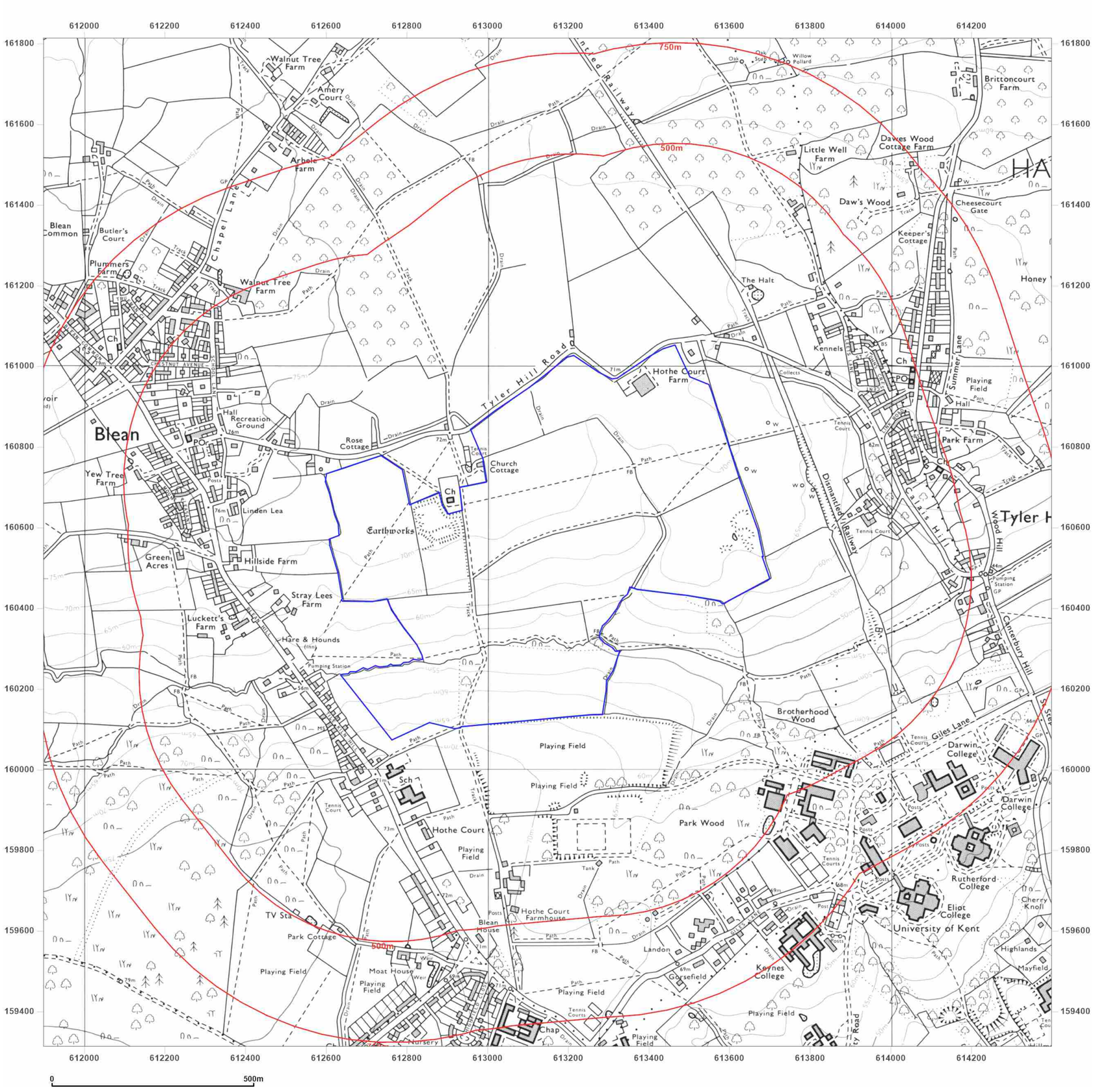
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

Map Name: National Grid

Map date: **1974-1975**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1972
Revised 1973
Edition N/A
Copyright 1974
Levelled N/A

Surveyed 1972
Revised 1974
Edition N/A
Copyright 1975
Levelled N/A

Groundsure INSIGHTS

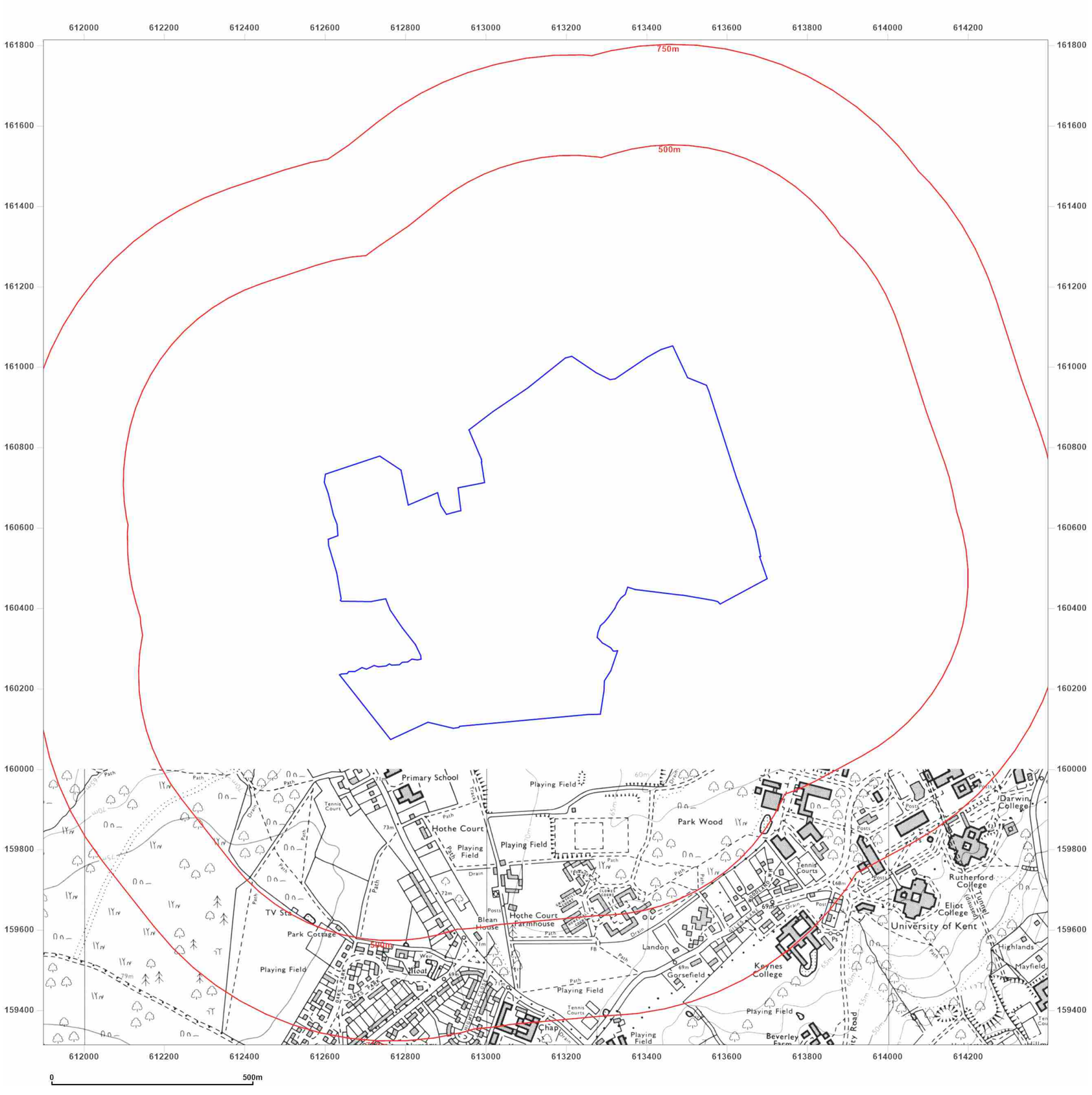
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

Map Name: National Grid
Map date: **1983**
Scale: 1:10,000
Printed at: 1:10,000

N
W E
S

Surveyed 1982
Revised 1983
Edition N/A
Copyright N/A
Levelled N/A

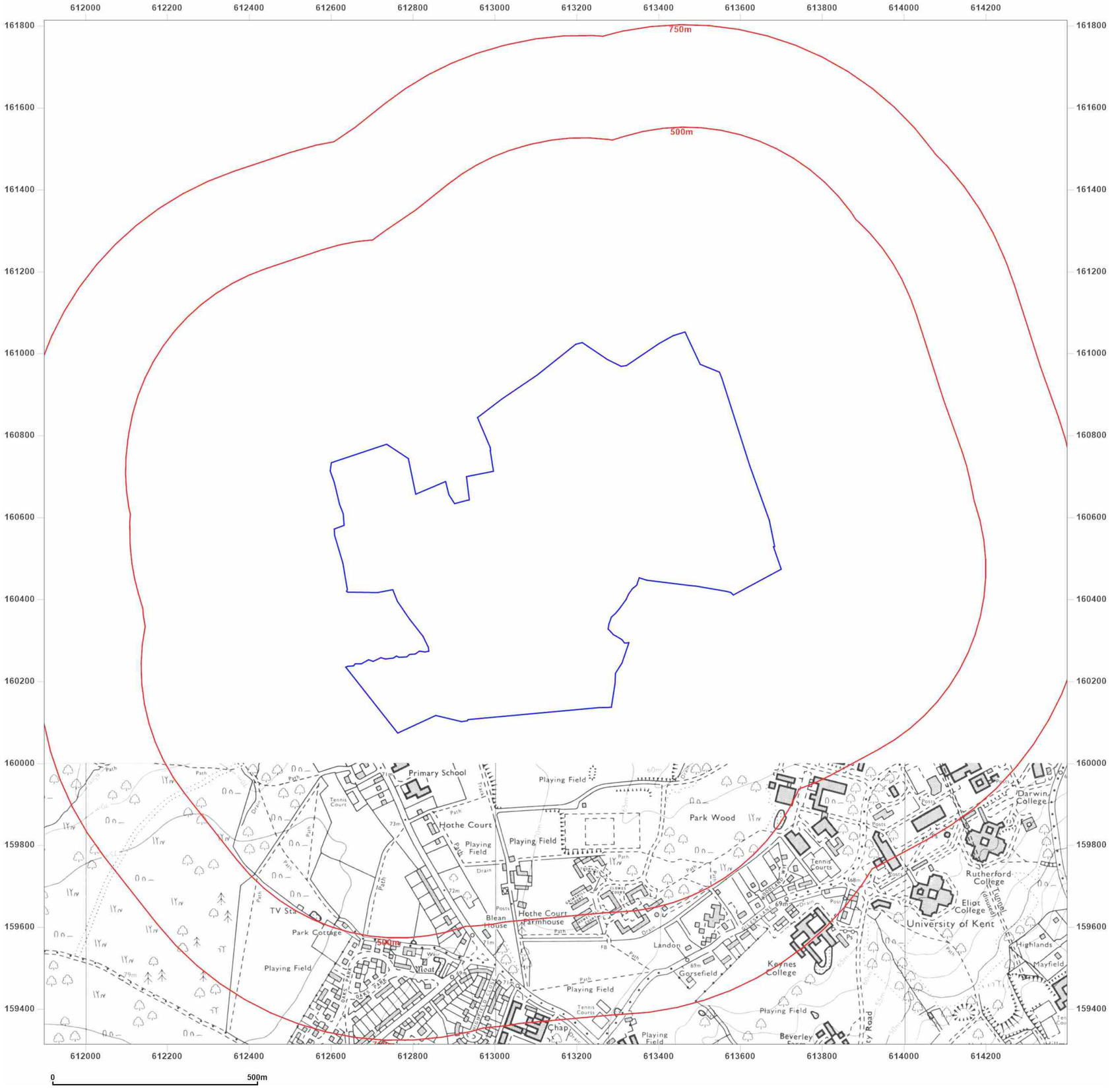
Groundsure INSIGHTS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

Map Name: National Grid

Map date: **1990**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1982
Revised 1990
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2001

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2010

Groundsure INSIGHTS

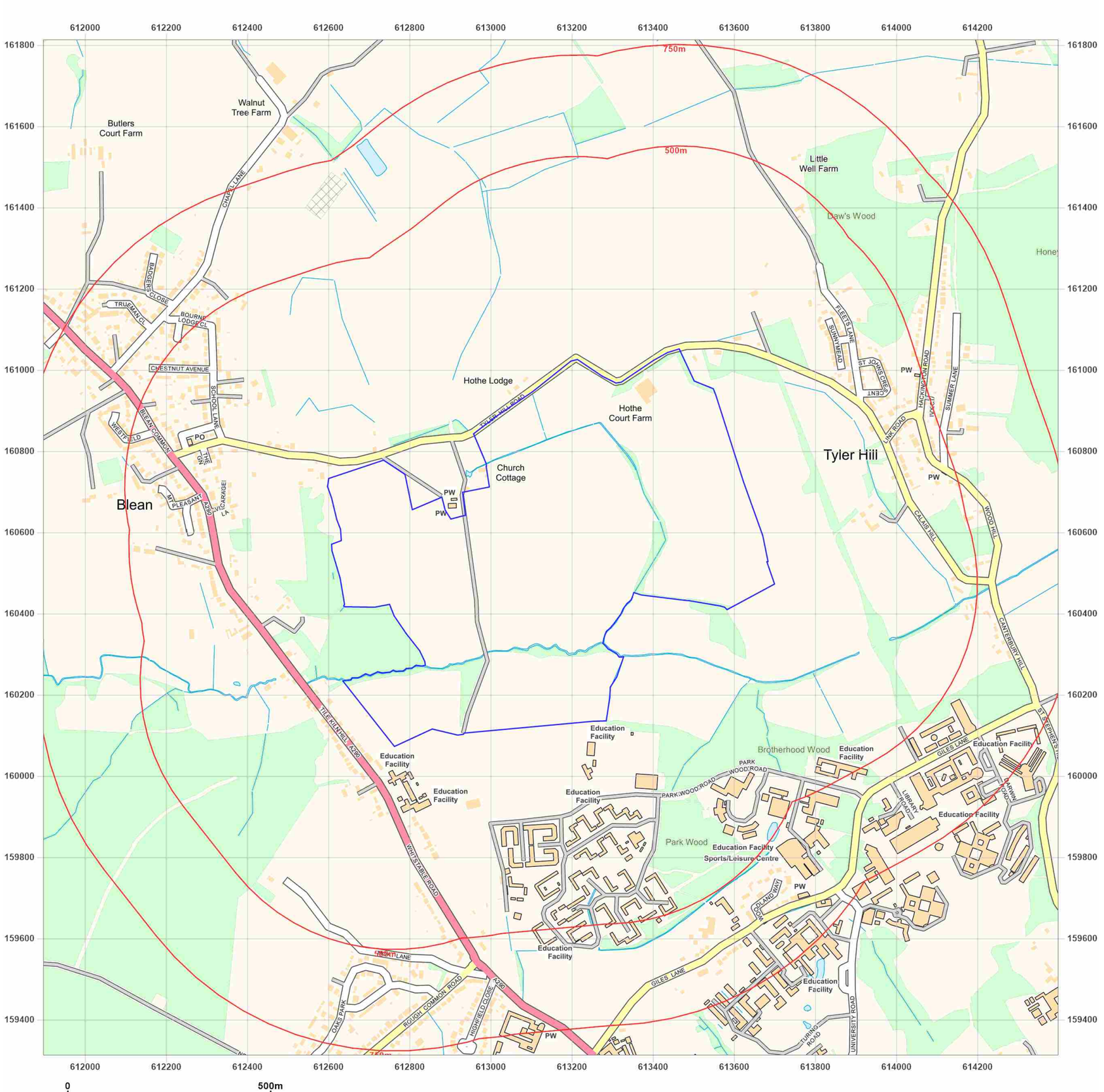
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_B
Report Ref: WSP-7710142
Grid Ref: 613148, 160563

Map Name: National Grid

Map date: **2021**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2021

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Appendix F

HISTORICAL BOREHOLE LOGS

Confidential

IGS 1354 (1148) 5000 3/75

Institute of Geological Sciences

RECORD OF SHAFT OR BOREHOLE

6-in or 1:10 000 Map Registration No.

TR 16 SW/7

National Grid Reference

TR 1414 6088

1-in or 1:50 000 New Series Map No.

273

Enter 'C' if Confidential

Name and Number of Shaft or Borehole: SUMMERS LANE, TYLER HILL

For whom made STC Developments

Town or Village Tyler Hill, near Blean, Canterbury, County Kent

Exact site (reference to a fixed point on 1-in or 1:50 000 Map)

Purpose for which made

Ground level, NB * relative to O.D. ≐65m OD m. If not ground level give O.D. of beginning of ~~shaft~~ bore ≐61.0 OD m.

Made by Southern Testing Laboratories Date of sinking 9.5.90

Information from Southern Testing Laboratories Examined by ~~ER Sigglesthorne~~ 20.6.90 -

Specimen Numbers and Additional Notes

NB * 1 Boring started at base of soakaway about 4m below groundlevel.

2 Provisional classification.

	T	D
London Clay	43.5	43.5
Oldhaven Beds	c 7.0	50.5
Woolwich Beds	c 10.5	61.0
Thanet Beds	≥ 8.0	69.0
	(base not seen)	

3 See also Southern Testing Lab log with site plan.

4 Correspondence on E. England file. 6273 6/1990 -

Geological Classification	Description of Strata	~~Thickness~~ metres	Depth metres
	Notes on bag samples from Southern Testing Laboratories.	Sample No	
London Clay	Clay - smooth mid brown - grey - plastic (oxidised)	D1	1.00
	Clay - as above with some blue grey patches.	D2	2.00
	Clay - as above traces brick	D3	3.00
	Clay - as above	D4	4.00
	Clay - grey brown	D5	5.00
	Clay - as above - slightly shaly	D6	5.50
	Clay - dark grey brown - traces carbonaceous pyritous fossil wood	D7	7.50
	Clay - dark grey brown. fissured, minute white specks ? possibly gypsum crystal	D8	9.50
	Clay - as above.	D9	11.50
	Clay - as above - sl micaceous.	D10	13.50
	Clay - silty - dk grey-brown. slightly more compact	D11	15.50
	Clay - silty dk grey brown. slightly micaceous. pyritised plant debris	D12	17.50

Institute of Geological Sciences

Name and Number of Shaft or Borehole: SUMMERS LANE

6-in or 1:10 000 Map Registration No.: TR 16 SW/7

National Grid Reference: TR 1414 6088

Page 2

Geological Classification	Description of Strata	~~Thickness~~ metres ~~Sample~~ No	Depth metres
London Clay ↓	Brought Forward		17.50
	Clay - silty grey brown. thin wisps of v fine silty sand with mica on bedding	D13	19.50
Change	Clay - silty grey brown. traces pyrite (black)	D14	21.50
	Clay - v. silty sl. greenish grey ? fine shell debris, mica, some fine sand - V stiff	D15	22.00
	Clay as above. v. stiff	D16	24.00
	Clay - silty, greenish grey, traces mica, pyrite / f shell debris v. stiff	D17	26.00
	Clay - as above v. stiff	D18	28.00
	Clay - above. fine buff sand in burrows ? mm.	D19	30.00
	Clay - silty dark greenish grey, traces fine sand, mica ? forams.	D.20	32.00
	Clay - silty as above	D.21	34.00
Change	Clay - silty brown grey - interlaminated with thin wisps of v. fine buff sand traces pyrite ? forams. mica ? clay pellets	D.22	36.00
	Clay silty brown-grey with more v fine. buff sand (friable)	D.23	37.00
Change	Sand - very fine - grey-green silty micaceous traces of glauconite. Moist friable ? clay bind	D24	39.00
		D.25	41.00
Coarse	Sand. f-m. buff with traces brownish grey clay. glauconite coated	↑	↑
? based Lynden Clay	Sand, as above, wet silty, clayey with flint pebbles	D.26	43.00
CA35 Oldhaven Beds	<55 mpa.	D27	43.50
	Sand - m-c greenish grey. moist > ? clay bind. traces glauconite.	D.28	45.00
	Sand, as above.	D.29	47.00
? base Oldhaven C50.5 ? Woolwich Beds	C50.5. Sand, silty, glauconitic f to m. silty clay. } not seen.		
	Sand, fine. greenish. moist. traces glauconite	D.32	55.00

IGS 1805

Institute of Geological Sciences

Name and Number of Shaft or Borehole:

SUMMERS HILL

6-in or 1:10 000 Map Registration No.

TR 16 SW / 7

National Grid Reference

TR 1414 6088

Geological Classification	Description of Strata	Thickness metres	Depth metres
Woolwich Beds	Brought Forward	Sample No	
	Sand, as above, broken pinkish bivalves	D.33	55.00
	Sand, as above, traces shells, moist ? clayey.	D.34	57.00
	Sand, as above	D.35	59.00
			61.00.
Thanet Beds	Sand, v. fine silty/clayey, shells - very soft & moist glauconite.	D.36	63.00
	Sand, as above, slightly more cohesive, more clay, traces glauconite & shells	D.37	65.00
	Sand, v. fine, clayey - silty, greenish grey, traces glauconite, bivalves.	D.38.	67.00
			End borehole 69.00

Provisional classification. ER87 6/90

E.R. Shephard Thorn. 20.6.90.

TR 165 SW/7

DRILLING METHOD	Shell & Auger (300mm)	BOREHOLE LOG	B.H. No. 1
CLIENT	STC DEVELOPMENTS	SITE LOCATION SUMMERS LANE, TYLER HILL	
		O.S. REFERENCE TR 142 607	DATE 9/5/90

Water Strikes: Dry to 37m. Boring started at base of soakaway about 4m b.G.L.

Standing Water Level:

Depth/Ref. Sample Depth (m)	SPT/2000 Dept (m)	Penetration Value Blows/300mm or U.C.S. kN/m²	Sample Type or Test Type	Thickness m/mm	Depth m/mm	Key	Level m	DESCRIPTION & REMARKS	GROUND LEVEL 65m O.D.approx
1.0			B					CLAY Stiff, fissured, brown plastic CLAY. London clay	
2.0			B						
3.0			B	6.0					
4.0			B						
5.0			B						
5.5			B						
					6.0			CLAY Stiff, fissured, grey plastic CLAY.	
7.5			B	3.5					
9.5			B		9.5			CLAY Very stiff, fissured, grey plastic CLAY.	
11.5			B						
13.5			B	12.5					
15.5			B						
17.5			B						
19.5			B		20.0				

KEY
- STANDARD PENETRATION TEST
- CONE PENETRATION TEST
- EXTENDED PENETRATION TEST
- VANE TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- BULK SAMPLE
- WATER SAMPLE
- U.C.S. ÷2 K COHESION kN/m²
- WATER TABLE
- PERMEABILITY TEST

Bracketed Nos. - Non-Standard Blows for U100 SAMPLE DEPTHS ARE DRAWN TO SCALE

GROUND WATER DEPTHS			
DATE	CASING	HOLE	SWL

REMARKS: 300mm dia. to 42m depth. 300mm dia. casing to 6m. 5 hrs. dayworks backfilling over manhole.

ENGINEER RCS

CHISELLING

FROM			
TO			
HOURS			

SOUTHERN TESTING LABORATORIES

JOB No. 3459J

TR 16 SW 7

DRILLING METHOD: Shell & Auger (300mm)

CLIENT: STC DEVELOPMENTS

BOREHOLE LOG

B.H. No. 1

SITE LOCATION: SUMMERS LANE, TYLER HILL

O.S. REFERENCE: TR 142 607 | DATE: 9/5/90

Water Strikes: Dry to 37m

Standing Water Level:

DESCRIPTION & REMARKS | GROUND LEVEL

Disturbed Sample Depth (m)	SPT/CPT/DPT Depth (m)	Penetration Value Blows per 300mm or U.C.S. kN/m²	Sample Type & Test Type	Thickness m/mm	Depth m/mm	Key	Level m	DESCRIPTION & REMARKS
				12.5				**CLAY** Very stiff, fissured, grey plastic CLAY. London Clay
21.5			B					
22.0			B		22.0			**CLAY** Extremely stiff, fissured, grey to bluish grey plastic CLAY. Very slightly silty with occasional silty partings.
24.0			B					
26.0			B					
28.0			B	14.0				
30.0			B					
34.0			B					becoming greenish grey silty CLAY with occasional silt partings at 36m.
36.0			B		36.0			**SAND/ CLAY** Thinly laminated, dark grey CLAY and silty fine SAND/coarse silt. London Clay Bottom Bed.
37.0			B	1.0	37.0			**SAND** Dark grey, very silty fine SAND.
39.0			B	24.0				
					40.0			

Page 2 of 4

KEY

- ▽ STANDARD PENETRATION TEST
- ▼ CONE PENETRATION TEST
- ▼ EXTENDED PENETRATION TEST
- V VANE TEST
- □ UNDISTURBED SAMPLE
- ○ DISTURBED SAMPLE
- (B) BULK SAMPLE
- (W) WATER SAMPLE
- ⊥ U.C.S. ÷2 X COHESION kN/m²
- ⊻ WATER TABLE
- ⊓ PERMEABILITY TEST

Bracketed Nos. - Non-Standard Blows for U100 SAMPLE DEPTHS ARE DRAWN TO SCALE

GROUND WATER DEPTHS

DATE	CASING	HOLE	SWL

REMARKS

ENGINEER RCS

CHISELLING

FROM		
TO		
HOURS		

SOUTHERN TESTING LABORATORIES

JOB No. 3459J

TR 16 SW 7

DRILLING METHOD: Shell & Auger (200mm to 42m 150mm to 60m)

BOREHOLE LOG

B.H. No. 1

CLIENT: STC DEVELOPMENTS

SITE LOCATION: SUMMERS LANE, TYLER HILL

O.S. REFERENCE: TR 142 607 DATE: 9/5/90

Water Strikes: On 15/5/90 water filled to 3.35m b.G.L., dropped to 21m b.G.L. on 16/5/90

Standing Water Level:

Undisturbed Sample Depth (m)	SPT/A900 Depth (m)	Penetration Value Blows per 300mm or U.C.S. kN/m²	Sample Type or Test Type	Thickness m/mm	Depth m/mm	Key	Level m	DESCRIPTION & REMARKS	GROUND LEVEL
								SAND	
41.0			C					@ 41.0m dark grey silty CLAY with partings of fine SAND.	
								bored Grey silty to clayey SAND.	
42								London Dense below 42m.	
43.0								Clay @ 43.0m interlaminated of pale grey fine	
43.5			B					SAND and grey silty CLAY.	
			B					@ 43.5m grey silty CLAY with black	
44								?Oldhaven rounded flint pebbles.	
								Beds.	
45.0			B					@ 45.0-49.0m grey greenish grey silty fine SAND, some medium sand.	
46								(Note: Driller describes as loose from 43.5 - 48.4m).	
47.0			B						
48									
49.0			A						
50					24.0				
50.5			B					@ 50.5m green glauconitic very silty clayey fine to medium SAND, possibly	
								base 50.5 grading to sandy CLAY.	
52								?Woolwich Beds.	
54									
55.0			B					@ 55.0m grey silty fine SAND.	
56									
57.0			B					Below 57.0m grey clayey, very silty fine SAND, grading to fine sandy SILT. Greenish at 59m.	
58									
59.0			B						
60						60.0			

KEY

- STANDARD PENETRATION TEST
- CONE PENETRATION TEST
- EXTENDED PENETRATION TEST
- VANE TEST
- UNDISTURBED SAMPLE
- DISTURBED RAMPLE
- Bracketed Nos. - Non-Standard Blows for U100
- SAMPLE DEPTHS ARE DRAWN TO SCALE
- BULK SAMPLE
- WATER SAMPLE
- U.C.S. =2 X COHESION kN/m²
- WATER TABLE
- PERMEABILITY TEST

GROUND WATER DEPTHS

DATE	CASING	HOLE	SWL
15/5/90	-	41.5	3.35
16/5/90	-	31.0	21.0
16/5/90	42.0	42.0	G.L.
17/5/90	46.1	48.4	9.00
18/5/90	46.1	48.4	3.50
18/5/90	46.1	48.5	G.L.

REMARKS: Added 200mm dia. casing to 41.5m and fill hole to 3.35m b.G.L. with water.

ENGINEER RCS

CHISELLING

FROM		
TO		
HOURS		

SOUTHERN TESTING LABORATORIES

JOB No. 3459J

TR 16 SW/7

DRILLING METHOD	Shell & Auger	BOREHOLE LOG	B.H. No. 1
CLIENT	STC DEVELOPMENTS	SITE LOCATION SUMMERS LANE, TYLER HILL	
		O.S. REFERENCE TR 142 607 DATE	9/5/90

Water Strikes

Standing Water Level:

Disturbed Sample Depth (m)	SPT N/10 Depth (m)	Penetrometer Value (Remoulded) or U.C.S. kN/m²	Sample Type Ref. Type	Thickness m/mm	Depth (m)	Key	Level m	DESCRIPTION & REMARKS	GROUND LEVEL
								SAND Woolwich Beds @ 61.0	
61.0			B	24.0	61.0			CLAY @ 61.0m. greenish grey glauconitic clayey very silty fine SAND, grading to very sandy, silty CLAY. Some shells.	
								? Thanet Beds	
63.0			B						
65.0			B	8.0 +					
67.0			B						
					69.0				

Clarification GR Shephard Thorn 6/90

See also notes on disturbed samples.

KEY

- ▽ STANDARD PENETRATION TEST
- ▼ CONE PENETRATION TEST
- ▼ EXTENDED PENETRATION TEST
- V VANE TEST
- □ UNDISTURBED SAMPLE
- ○ DISTURBED SAMPLE
- (B) BULK SAMPLE
- (W) WATER SAMPLE
- ⊥ U.C.S. =2 X COHESION kN/m²
- ⏚ WATER TABLE
- ⊟ PERMEABILITY TEST

Bracketed Nos. - Non-Standard Blowes for U100
SAMPLE DEPTHS ARE DRAWN TO SCALE

GROUND WATER DEPTHS

DATE	CASING	HOLE	SWL
18/5/90	46.1	48.4	6.80
22/5/90	46.1	55.0	6.30
23/5/90	46.1	69.0	18.00

REMARKS 150mm casing to 55m, open hole drilling from 55m to 69m.

ENGINEER RCS

CHISELLING

FROM			
TO			
HOURS			

SOUTHERN TESTING LABORATORIES JOB No. 3459J

Appendix G

ENVIRONMENT AGENCY RESPONSE

Confidential

Harris, Callum

From:	KSL Enquiries <KSLE@environment-agency.gov.uk>
Sent:	03 June 2021 09:28
To:	Harris, Callum
Subject:	KSL 215292 CM - University of Kent
Attachments:	215292 CM D pollution incidents.xlsx; 215292 CM E pollution incidents.xlsx; 215292 CM F pollution incidents.xlsx; 215292 CM A pollution incidents.xlsx; 215292 CM B pollution incidents.xlsx; 215292 CM C pollution incidents.xlsx

Dear Callum Harris

Thank you for your request for information that was received on 13 April 2021.

I apologise for the delay in replying and for any inconvenience caused. Thank you for your patience at this time.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

Regarding the sites A-F located at: University of Kent, Canterbury and as shown on your plan, we hold the following information;

Are there any environmental issues associated with the above named site?

Please find attached 6 summaries of pollution incidents within approximately 500m of each site A-F. With respect to incident 38382 found near site F, the Environment Agency visited the address and gave advice and guidance to the Landowner as to the cause of the pollution to their private water supply. As far as we are aware the Landowner acted upon our advice. We have received no further reports from the Landowner as to the private water supply being continually affected to date. As the water supply was private we had no statutory or regulatory concerns at the time and the incident was closed.

We are specifically interested in anything that could have led to contamination of soil or groundwater either beneath the site or within a 500m radius?

Land that may be affected by contamination is dealt with by Local Authorities, you should contact the Contaminated Land officer in the Environmental health Department in the first instance. The Environment Agency has no record of any sites being determined as Contaminated Land under **S78** of the Environmental protection act in this vicinity and is not dealing with any designated Special Sites under that Regime at this location.

Do you hold any records of water quality within 1km of the site?

Water quality data is available online, in the first instance please visit https://data.gov.uk/dataset/water-quality-archive

Are you aware of the presence of above ground storage tanks/gas meters on adjacent sites

We hold no record

and are you aware of any spills or leaks associated with these?

Please refer to the 6 summaries of pollution incidents within approximately 500m of each site A-F.

Are there any records of landfill ……. Within (approximately) **500m of the site**

A - no authorised or historic landfills
B - no authorised or historic landfills
C - no authorised or historic landfills
D - no authorised or historic landfills

E - no authorised or historic landfills
F - Authorised landfill site (PAS Active IPPC Authorisation) - Shelford Landfill Site - EPR/XP3434HX (WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE) Permission status: Effective. Current PAS no: DP3536DC.
Historic landfill sites - Shelford Quarry and Shelford Sandpit

Historic landfill site information can be obtained from the following links
https://data.gov.uk/dataset/17edf94f-6de3-4034-b66b-004ebd0dd010/historic-landfill-sites (for individuals and consultants)
https://environment.data.gov.uk/DefraDataDownload/?mapService=EA/HistoricLandfill&Mode=spatial (for consultants Arcgis users only)
Any available further information can be obtained from the local authority who hold records for historic landfill sites.

or waste transfer activities within 500m of the site?
For information on permitted waste activities and exemptions please visit https://www.gov.uk/guidance/access-the-public-register-for-environmental-information where you can conduct a distant search

Have there been any soil or groundwater remedial works carried out at the site or within 500m of the site?
Any available information about site investigations carried out at your site of interest may be held on the public register related to planning and development at the Local Authority Planning Department.

Please refer to the Open Government Licence which explains the permitted use of this information.

If you have any further queries or if you'd like us to review the information we have provided under the Freedom of Information Act 2000 and Environmental Information Regulations 2004 please contact us within two months and we will happily do this for you.

Kind Regards,

Claire McConchie
Customers & Engagement Officer
Kent, South London & East Sussex

Environment Agency | 0208 4746848 | Orchard House | Endeavour Park | London Road | West Malling | Kent | ME19 5SH

From: Harris, Callum [mailto:callum.harris@wsp.com]
Sent: 30 April 2021 09:41
To: KSL Enquiries <KSLE@environment-agency.gov.uk>
Subject: RE: KSL 215292 CM - University of Kent - Environment Agency - Request for information

Hi Claire,

Apologies for the ambiguous map, the attached should be a better guide. If we can have searches covering Sites A through to F that would be great,

Kind regards,

Callum Harris

Callum Harris Msci FGS
Assistant Geo-environmental Consultant

Mobile: +447385463185

wsp.com

Confidential
This message, including any document or file attached, is intended only for the addressee and may contain privileged and/or confidential information. Any other person is strictly prohibited from reading, using, disclosing or copying this message. If you have received this message in error, please notify the sender and delete the message. Thank you.

WSP UK Limited, a limited company registered in England & Wales with registered number 01383511. Registered office: WSP House, 70 Chancery Lane, London, WC2A 1AF.

From: KSL Enquiries <KSLE@environment-agency.gov.uk>
Sent: 30 April 2021 09:38
To: Harris, Callum <callum.harris@wsp.com>
Subject: KSL 215292 CM - University of Kent - Environment Agency - Request for information

Dear Callum Harris,

Re: KSL 215292 CM - University of Kent - Environment Agency - Request for information

Thank you for your enquiry of 13 April 2021.

We have received your site map, however please could you clarify which is the site that you require information.
(i.e. Which is the relevant boundary for us to use in our search?)

Until we receive this your request will be placed on hold.

Kind regards,

Claire McConchie
Customers & Engagement Officer
Kent, South London & East Sussex

Environment Agency | Orchard House | Endeavour Park | London Road | West Malling | Kent | ME19 5SH

From: Enquiries, Unit
Sent: 21 April 2021 11:52
To: 'callum.harris@wsp.com' <callum.harris@wsp.com>
Subject: FW: 210421/SSR27 - University of Kent - Environment Agency - Request for information

Dear Callum,

I have passed your e-mail to the local customer team who will deal with your request.

The Freedom of Information Act and Environmental Information Regulations state that a public authority must respond to requests for information within 20 working days.

However due to the ongoing COVID-19 pandemic affecting staff and resources we may take longer than the 20 working days to reply. We will aim to provide an answer as soon as we can.

You can find more information about our service commitment by clicking on the link below:

https://www.gov.uk/government/publications/environment-agency-customer-service-commitment

You can contact our customer team directly on the contact details below, or call the National Customer Contact Centre on 03708 506506 who will transfer you to the area team.

Please quote your enquiry reference 210421/SSR27 in any correspondence with us regarding this matter.

Customers & engagement team
Environment Agency - Kent,South London & East Sussex Area - KSLE@environment-agency.gov.uk

Kind Regards

Simone Roberts
National Customer Contact Centre
Environment Agency

☎ Tel: 03708 506 506
💻 Web Site: www.gov.uk/environment-agency

Click an icon to keep in touch with us:-

From: Harris, Callum [mailto:callum.harris@wsp.com]
Sent: 13 April 2021 13:52
To: Enquiries, Unit <enquiries@environment-agency.gov.uk>
Subject: 210421/SSR27 - University of Kent - Environment Agency - Request for information

Dear Enquiries Team,

I am currently undertaking environmental consultancy work on a site located at the below address and would like to ask if you have any information relevant to this site in your database.

The site is located at: University of Kent, Canterbury, CT2 7NZ. A map showing the location of the site is attached.

I would like to ask if you hold any pertinent records on your database regarding the site including:

- Are there any environmental issues associated with the above named site? We are specifically interested in anything that could have led to contamination of soil or groundwater either beneath the site or within a 500m radius?
- Do you hold any records of water quality within 1km of the site?
- Are you aware of the presence of above ground storage tanks/gas meters on adjacent sites and are you aware of any spills or leaks associated with these?
- Are there any records of landfill or waste transfer activities within 500m of the site?
- Have there been any soil or groundwater remedial works carried out at the site or within 500m of the site?

I understand that there may be a charge for an information search, if this is the case please advise me and I will arrange for a purchase order to be issued.

Any advice or information you can provide on this site will be most gratefully received. If you need any further information or have any queries regarding this request please do not hesitate to contact me.

Kind regards

Mr. Callum Harris Msci FGS
Assistant Geo-environmental Consultant

Mobile: +447385463185

wsp.com

Confidential
This message, including any document or file attached, is intended only for the addressee and may contain privileged and/or confidential information. Any other person is strictly prohibited from reading, using, disclosing or copying this message. If you have received this message in error, please notify the sender and delete the message. Thank you.

WSP UK Limited, a limited company registered in England & Wales with registered number 01383511. Registered office: WSP House, 70 Chancery Lane, London, WC2A 1AF.

NOTICE: This communication and any attachments ("this message") may contain information which is privileged, confidential, proprietary or otherwise subject to restricted disclosure under applicable law. This message is for the sole use of the intended recipient(s). Any unauthorized use, disclosure, viewing, copying, alteration, dissemination or distribution of, or reliance on, this message is strictly prohibited. If you have received this message in error, or you are not an authorized or intended recipient, please notify the sender immediately by replying to this message, delete this message and all copies from your e-mail system and destroy any printed copies.

-LAEmHhHzdJzBlTWfa4Hgs7pbKl

Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.
Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.

2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

wsp.com

CONFIDENTIAL

University of Kent

CANTERBURY CAMPUS - SITE C

Phase 1 Preliminary Risk Assessment

70080896-008
JUNE 2021

CONFIDENTIAL

University of Kent

CANTERBURY CAMPUS - SITE C

Phase 1 Preliminary Risk Assessment

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70080896

OUR REF. NO. 70080896-008

DATE: JUNE 2021

WSP

2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

Phone: +44 148 352 8400

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1
Remarks		
Date	24 June 2021	
Prepared by	Callum Harris	
Signature		
Prepared by		
Signature		
Checked by	Lydia Evans	
Signature		
Authorised by	Rob Hares	
Signature		
Project number	70080896	
Report number	70080896-008	
File reference	\\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\GW Ground & Water\(6) Reporting\02 Preliminary Risk Assessment\Site C	

CONTENTS

1 INTRODUCTION AND OBJECTIVES 1

1.1 TERMS OF REFERENCE 1
1.2 PROPOSED DEVELOPMENT 1
1.3 AIMS AND OBJECTIVES 1
1.4 SCOPE OF WORKS 1
1.5 LEGISITLATIVE CONTEXT AND GUIDANCE 1
1.6 SOURCES OF INFORMATION 2
1.7 LIMITATIONS 2
1.8 UNDERSTANDING THE RISK 2

2 SUMMARY OF THE SITE AND SURROUNDING AREA 4

2.1 SITE LOCATION AND DESCRIPTION 4

3 SITE AND REGIONAL HISTORY 5

3.1 HISTORICAL MAPS AND PHOTOS 5
3.2 HISTORICAL SITE OCCUPANTS AND OWNERSHIP 6
3.3 PREVIOUS REPORTS 6

4 ENVIRONMENTAL SETTING 7

4.1 GEOLOGY 7
4.2 GROUND STABILITY HAZARDS 7
4.3 HYDROLOGY 8
4.4 HYDROGEOLOGY 8
4.4.1 NITRATE VULNERABILITY ZONE 9
4.4.2 SOURCE PROTECTION ZONES (SPZ) 9

4.5 DESIGNATED SITES AND SENSITIVE LAND USES 9
4.6 RADON 9
4.7 PRELIMINARY HYDROGEOLOGICAL MODEL 9
5 REGULATORY INFORMATION AND CONSULTATION 10
5.1 LOCAL AUTHORITY 10
5.2 ENVIRONMENT AGENCY 11
5.3 PLANNING HISTORY 11
5.4 UNEXPLODED ORDNANCE 11
6 RISK ASSESSMENT 12
6.1 PRELIMINARY CONCEPTUAL SITE MODEL 12
6.2 POTENTIAL SOURCES OF CONTAMINATION 13
6.3 POTENTIAL RECEPTORS 13
6.4 PRELIMINARY CONCEPTUAL SITE MODEL (CSM) 14
7 CONCLUSIONS AND RECOMMENDATIONS 16
7.1 CONCLUSIONS 16
7.2 RECOMMENDATIONS 17

TABLES

Table 2-1 – Summary of Site Details 4
Table 3-1 – Site History 5
Table 5-1 – Summary of Database Information 10
Table 6-1 – Potential Sources of Contamination 13
Table 6-2 – Plausible Contaminant Linkages 14

APPENDICES

APPENDIX A

FIGURES & DRAWINGS

APPENDIX B

LIMITATIONS

APPENDIX C

CIRIA RISK DEFINITIONS

APPENDIX D

SITE PHOTOGRAPHS

APPENDIX E

GROUNDSURE REPORT / HISTORICAL MAPS

APPENDIX F

ENVIRONMENT AGENCY RESPONSE

1 INTRODUCTION AND OBJECTIVES

1.1 TERMS OF REFERENCE

WSP UK Ltd has been instructed by The University of Kent (UoK) (“The Client”) to undertake a Phase 1 Preliminary Risk Assessment to support the delivery of a planning and disposal strategy associated with surplus land within UoK’s ownership. There are six subject Sites associated with the strategy and this report is focussed on Site C (”The Site”).

1.2 PROPOSED DEVELOPMENT

The exact redevelopment proposal of the Site is currently unknown. However, at this stage it is considered likely that the development will be for residential use that incorporates soft landscaping.

1.3 AIMS AND OBJECTIVES

The key objectives of this assessment are as follows:

- Develop a preliminary Conceptual Site Model in order to identify potential ground contamination associated with the Site; and,
- Evaluate the likely exposure and its potential significance on identified receptors and provide recommendations to support the proposed development.

1.4 SCOPE OF WORKS

In order to meet the above aims and objectives the following tasks are to be carried out:

- Completion of a Site walkover;
- A review of publicly available historical maps and plans (where available) to identify former land uses and potential contaminative activities on and surrounding the Site;
- A review of relevant databases (e.g. Groundsure, BGS Data, PBA non-coal mining and natural cavities database);
- Contact with relevant regulators (Environment Agency and Canterbury City Council);
- A review of relevant publicly available information relating to hydrological features, hydrogeology, neighbouring land use, ecologically sensitive uses and geology in order to establish the environmental setting of the Site and ground conditions in the area;
- Development of a preliminary Conceptual Site Model via the source-pathway-receptor contaminant linkage approach;
- An outline of the environmental risks and / or opportunities, with respect to ground, groundwater and ground gas conditions, which may potentially arise as liabilities or constraints associated with future use of the Site; and,
- Preparation of a Phase 1 Preliminary Risk Assessment Report.

1.5 LEGISITLATIVE CONTEXT AND GUIDANCE

The assessment was undertaken in the legislative context of:

- Part 2A of The Environmental Protection Act (1990); and,
- The National Planning Policy Framework (2019).

The following good practice and statutory guidance was considered, and the assessment was undertaken in general accordance with:

- Environment Agency 'Land contamination: risk management guidance (October 2020)
- BS 10175:2011+A2:2017 Investigation of potentially contaminated Sites. Code of practice; and,
- CIRA C552 'Contaminated Land Risk Assessment. A guide to good practice' (2001).

1.6 SOURCES OF INFORMATION

The following relevant sources of information were used in the production of this report:

- Groundsure report, dated April 2021, Order Ref: WSP-7710145;
- British Geological Survey (BGS) Online Viewer (http://mapapps.bgs.ac.uk/geologyofbritain/home.html) accessed on 19 April 2021;
- BGS map – South London, England and Wales Sheet 273, Solid and Drift Geology, 1:50,000 Series (1982), accessed 19 April 2021;
- British Geological Survey (BGS) Online Viewer (http://mapapps2.bgs.ac.uk/geoindex/home.html?layer=BGSHydroMap&_ga=2.134221169.1060074440.1618391808-586268598.1617716937) – Hydrogeological Map of the UK, 1: 625,000, accessed 19 April 2021;
- Coal Authority, (https://mapapps2.bgs.ac.uk/coalauthority/home.html), accessed 19 April 2021;
- Flood Maps for Planning Service (incorporated into the Groundsure report) accessed 19 April 2021;
- Multi Agency Geographic Information for the Countryside (MAGIC) (https://magic.defra.gov.uk/) accessed 19 April 2021;
- Public Health England, UK Maps of Radon (https://www.ukradon.org/information/ukmaps) accessed 19 April 2021;
- Canterbury City Council Planning Applications (https://pa.canterbury.gov.uk/online-applications/search.do?action=simple accessed 19 April 2021; and,
- Zetica UXO Risk Maps (https://zeticauxo.com/downloads-and-resources/risk-maps/) accessed 19 April 2021.

The report contains British Geological Survey materials ©NERC 2019 and Environment Agency information ©Environment Agency and database right.

1.7 LIMITATIONS

This report is addressed to and may be relied upon by The University of Kent and may not be relied upon or transferred to any other parties without the express written agreement of WSP.

This report should be read and used in full. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party. WSP cannot be held liable for third party information. Full details of the limitations are provided as **Appendix B**.

1.8 UNDERSTANDING THE RISK

It is important to recognise that any risks identified during a preliminary assessment such as that presented below are perceived risks based on the recorded information reviewed. A more detailed

assessment of the actual risks can only be assessed following intrusive investigations. The preliminary assessments presented herein are qualitative based on professional judgements following review of the available data and within the context of the existing/proposed use. Those risk categories presented (Very Low, Low, Low to Moderate, Moderate, High, Very High) follow guidance presented in CIRIA Publication C552, Contaminated Land Risk Assessment – A Guide to Good Practice. CIRIA states that risk levels should be based both on an understanding of both the probability (likelihood) of a risk occurring and the magnitude of the potential consequence (severity) of a risk.

CIRIA defines four levels of probability and four levels of severity with relation to contaminated land, as presented in **Appendix C**.

2 SUMMARY OF THE SITE AND SURROUNDING AREA

2.1 SITE LOCATION AND DESCRIPTION

Table 2-1 provides a detailed summary of the Site and information obtained from a Site walkover which was completed by a WSP representative on 20 April 2021. All external areas of the Site were accessed. Selected photographs from the walkover are presented in **Appendix D**.

A review of Ordnance Survey (OS) mapping, online aerial photography and relevant regulatory information obtained from the Ground report is also summarised below, where applicable. The Groundsure report is included in **Appendix E**. The Site Location and Site Layout plans are enclosed in **Appendix A**.

Table 2-1 – Summary of Site Details

Detail	Comment
Name and Address of Site	Land North of Tyler Hill Road, Canterbury, CT2 9HU
Current Site Use	The Site is currently farmland with a small wooded area along the southern boundary. The boundaries of the Site are as follows: ▪ The north and east of the Site is adjacent to arable land and is bounded by hedgerows; ▪ The south of the Site is adjacent to woodland and is bounded by Tyler Hill Road; and, ▪ The west of Site is adjacent to open grassland and is bounded by hedgerows. There are no physical structures or buildings on the Site. The Site has a footpath running across the northern area and around its borders. The surface is predominantly occupied by arable farmland. The walkover survey identified no significant infrastructure or fly tipped waste on the Site. There was a small amount of waste contained in the adjacent field to the south of the Site, however this is not deemed large enough to cause a contamination issue to the Site. No invasive species were identified during the walkover. The Site is currently in use as agricultural arable land.
National Grid Reference	612767 160924
Area	7.15 Ha (approx.)
Topography	A topographical map is contained within the “University of Kent Framework Masterplan: Supporting Documents” and indicates that the north of the Site is situated 75 – 80 m above sea level and gradually slopes downwards towards the south at 70 – 80 m above sea level.

3 SITE AND REGIONAL HISTORY

3.1 HISTORICAL MAPS AND PHOTOS

Historical maps were obtained via a Groundsure Report (enclosed in **Appendix D**) and were assessed to identify potentially significant contaminative activities at the Site, and within 500 m of the Site boundary that may pose a risk to current or future Site users and the wider environment. **Table 3-1** below presents a summary of the historical maps.

Table 3-1 – Site History

Map date	On Site	Off Site
1873 – 1877 (1:10,560 scale)	The site is open land. It matches its current layout. A hedgerow forms a partition between the north and south of the Site.	An old clay pit is situated 800 m east. A church and graveyard are located approximately 200 m south-east of the Site. An electric telegraph line runs north-west to south-east 750 m east of the Site. A smithy is located 750 m south.
1896 – 1898 (1:10,560 scale)	The Site remains unchanged.	A second old clay pit has been excavated 650 m east. An old sand pit is located approximately 400 m west. The electric telegraph line is now labelled as South Eastern Railway Whitstable Branch.
1906 – 1908 (1:10,560 scale)	The Site remains unchanged.	The old clay pits are no longer marked. A tank is situated 450 m south. The smithy 750 m south is no longer marked. A smithy is located 600 m south-west-south. The sand pit to the west is no longer identified and appears to be left as a pond / marsh.
1938 - 1965 (1:10,560, 1:1,250 scale)	The Site remains unchanged.	No significant changes noted within the surrounding area.
1971 – 1983 (1:10,000, 1:1,250 scale)	The Site remains unchanged.	The South Eastern Railway Whitstable Branch is now a Dismantled Railway. Earthworks are situated 170 m south. A pumping station is located 550 m south. The tank and smithy to the south-west are no longer marked. Residential development has taken place in the village Blean to the west.
1992 - 2021 (1:10,000 and 1:1,250 scale)	The Site remains unchanged.	No significant changes noted within the surrounding area.

The historical map review indicates that little development has occurred on the Site.

The Sites use as agricultural land since before 1873, and until present day, may have led to shallow soils being impacted with herbicides and pesticides and residues of these contaminants may still be present on Site today.

The historical map review indicates typical residential development in the village of Blean to the west, with few infrastructural changes to the areas surrounding the Site.

An area of potentially infilled land may be present following the decommissioning of the earthworks (1974 – 1975) 170 m south of the Site. Infilled Made Ground can be a source of hazardous ground gas contamination and asbestos containing materials. Data from the Groundsure report indicates that the earthworks may be an archaeological dig associated with an area of dispersed medieval settlement remains and a roman building.

Historical data (http://www.kentpast.co.uk/canterbury_and_whistable_railway.html) indicates the 'South Eastern Railway Whitstable Branch' line was closed on 1 December 1952.

3.2 HISTORICAL SITE OCCUPANTS AND OWNERSHIP

Data provided by the Client (Masterplan Supporting Documents Volume 2, page 156) indicates that the land was owned in the 19th Century by Eastbridge Hospital prior to being purchased by the UoK.

Further Client data indicates development first began on the University between 1963 and 1965.

3.3 PREVIOUS REPORTS

Several Masterplan supporting documents have been provided to WSP in regard to the wider Canterbury Development. These documents include information pertaining to Site C, and that data has been used to supplement this report.

4 ENVIRONMENTAL SETTING

4.1 GEOLOGY

Published BGS mapping indicates that the Site and surrounding area are underlain by the geological sequence summarised in **Table 4-1**.

Table 4-1 – Summary of Anticipated Geological Strata

Group	Unit	Description
Superficial Deposits	Head	Head Deposits comprise poorly sorted and poorly stratified, angular rock debris and / or clayey hillwash and soil creep. Can occur locally with lenses of silt, clay or peat and organic material.
Bedrock	London Clay Formation	The London Clay Formation comprises bioturbated bluish grey slightly sandy clays.

The BGS website was referred to for any relevant historical borehole log record located within 500 m of the Site. No relevant record was available for review.

4.2 GROUND STABILITY HAZARDS

Information on potential ground hazards assessed by the BGS is summarised in **Table 4-3.**

Table 4-3 - Ground Stability Hazards on Site (Groundsure, 2021)

Feature	Hazard
Collapsible ground stability	Moderate risk where the site is underlain by the Head Deposits. This indicates there are deposits with a potential to collapse when loaded and saturated. Very low risk where the Site is not underlain by the London Clay Formation and where no superficial deposits are present. A very low risk indicates it is unlikely for deposits with potential to collapse when loaded and saturated to be present. Following this, risk consideration should be given to collapsible deposits in areas where the Head Deposits are present.
Compressible ground stability	Negligible risk of compressible deposits for the Site.
Ground Dissolution stability	Negligible risk for ground dissolution stability hazards to occur.
Landslide ground stability	Very low risk for landslide ground stability hazards. This indicates slope instability problems are not likely to occur.
Running sands ground stability	Negligible risk across the whole Site.

Feature	Hazard
Shrinking or swelling clay	Moderate risk across the whole Site. A moderate risk indicates ground conditions that are predominantly of high plasticity. Following this, risk consideration should be given for shrink / swell clays, in woodland areas that are underlain by the London Clay Bedrock to affect receptors.

The Coal Authority data indicates that the Site is not located within a Coal Authority designated mining area.

Data from the Groundsure report indicates that there are no natural cavities in or around the Site and the Site is not in an area with small scale non-coal related mining.

The Groundsure data identifies Blean Sand Pit 294 m west of the Site. Sand extraction at the pit is reported to have ceased. No other non-coal mining area has been reported within 500 m of the Site.

4.3 HYDROLOGY

Surface water features within 250 m of the Site are identified by the Groundsure report as:

- An inland river that borders the north-west, north, east and south-west of the Site;
- An inland river along the southern border;
- An inland river extending south-east from the Site connected to the southern boundary river;
- An inland river extending south-west from the Site connected to the south-western boundary river;
- An inland river 12 m east of the Site; and,
- There is a network of inland rivers 100 – 234 m south-east of the Site.

No major surface water bodies have been identified within 250 m of the Site.

No licensed surface water abstraction record has been reported within 1000 m of the Site.

The Groundsure report indicates that the Site is not at risk of flooding from rivers and sea.

An on-site localised surface water flood risk has been identified associated with the inland river adjacent to the south-western boundary. The risk from flooding is based on a 1 in 30 years chance, at 0.3 m to 1.0 m. There are no historical flood events associated with the Site.

4.4 HYDROGEOLOGY

No licensed groundwater abstraction has been reported within 500 m of the Site.

Groundsure data indicates that the Site is entirely located within Flood Zone 1 and thus at a low probability of flooding.

Both the Head Deposits and the underlying London Clay Formation are classified by the Environment Agency as unproductive strata, described as rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

4.4.1 NITRATE VULNERABILITY ZONE

The Site is not located within a surface water nitrate vulnerability zone.

4.4.2 SOURCE PROTECTION ZONES (SPZ)

The Site does not lie in or within 500 m of an SPZ.

4.5 DESIGNATED SITES AND SENSITIVE LAND USES

Data from the MAGIC website indicates that there are no designated sensitive habitats or protected species on the Site.

The Groundsure report notes that the Site is part of the following Conservation Areas:

- Blean – date of designation 13 September 1994; and,
- Amery Court, Blean – date of designation 28 February 1995.

One Scheduled Ancient Monument has been reported within 500 m of the Site. The dispersed medieval settlement remains and a Roman building immediately south-west of St Cosmus and St Damian's Church, is located 152 m south of the Site.

Three Listed buildings are identified within 500 m of the Site. The closest is Church Cottage located 113 m south-east of the Site.

The majority of the Site has an agricultural designation of Grade 2: very good quality. Small areas of land located at the southern and south-western boundaries are listed as Grade 3: good to moderate.

4.6 RADON

According to Public Health England, the Site is not at risk from Radon (less than 1 % of homes are at risk).

4.7 PRELIMINARY HYDROGEOLOGICAL MODEL

The site is underlain by Head Deposits and the London Clay Formation. These are both identified as unproductive strata and no significant groundwater body is expected to be present beneath the Site.

Perched water pockets are possible in areas of topsoil or Made Ground and a shallow water table could be present in and around inland rivers on the Site.

5 REGULATORY INFORMATION AND CONSULTATION

The Groundsure report includes information and data collected from several organisations including the Environment Agency (EA), the Local Authority, the British Geological Survey (BGS, Department of Environment, Food and Rural Affairs (DEFRA) and Health & Safety Executive (HSE).

It is considered that the information listed in **Table 5-1** represents those of potential concern in relation of contamination of the Site. The full Groundsure report is provided in **Appendix E.**

Table 5-1 – Summary of Database Information

Data Type	OnSite	Within 500 m	Comments
Recent industrial land uses	0	2	A furniture designer's is located 39 m west of the Site. The other listed use is 'agricultural machinery and goods' located 137 m west of the Site.
Current or recent petrol stations	0	1	No active fuel station is reported within 500 m of the Site. An obsolete station is located 374 m south-west of the Site.
Historical industrial land uses	0	19	The closest listed is a windmill located 12 m south of the Site. Other land uses reported include unspecified ground workings and pits, windmills, graveyard and unspecified tanks.
Historical tanks	0	3	Three unspecified tanks were located between 150 m and 412 m south of the Site.
Historical energy features	0	4	The closest listed feature was an electricity substation located 256 m south-west of the Site between 1971 and 1993.

Following a review of the Groundsure data, Blean Sand Pit (294 m west) has been identified. This Pit was for excavating sand and is now ceased.

No records of the following have been identified within 500 m of the Site:

- Pollution incidents to controlled water;
- Historical landfill sites;
- Licensed waste management facilities; and,
- Radioactive substance authorisations.

5.1 LOCAL AUTHORITY

Canterbury City Council was contacted by WSP via email on 8 April 2021 to provide a land use enquiry. A response was received on 20 April 2021 which stated that Canterbury City Council holds no information on contamination, or possible contamination, pertaining to the Site or land within 250 m of the Site.

5.2 ENVIRONMENT AGENCY

WSP requested information from the Environment Agency on the 13 April 2021 to obtain any record that they may hold considered pertinent to the Site. Their response was received on the 3 June 2021. The Environment Agency has no record of any sites being determined as Contaminated Land under S78 of the Environmental protection act in the Site's vicinity and is not dealing with any designated Special Sites under that Regime at this location. No pertinent data was provided for the Site. A copy of the Agency's response is presented in **Appendix F**.

5.3 PLANNING HISTORY

Canterbury City Council's public planning portal was accessed on 9 April 2021. There is one planning retroactive application (reference: CAB/99/00003) for the removal of a hedgerow across the centre of site running east to west. The application was submitted and decided (application withdrawn) August 1999. The hedgerow is no longer in place.

The removal of the hedgerow is not considered likely to have caused contamination to the Site and is not considered pertinent to this report.

5.4 UNEXPLODED ORDNANCE

The Zetica Bomb Risk Maps (available from the Zetica Limited website) have been reviewed to provide a preliminary assessment of potential Unexploded Ordnance (UXO) risks. The maps indicated that the Site is within a '**Moderate'** risk area from UXO.

It is recommended that a detailed UXO Threat Assessment Report is undertaken prior to any ground disturbance work being undertaken for sites in a moderate UXB risk area.

6 RISK ASSESSMENT

6.1 PRELIMINARY CONCEPTUAL SITE MODEL

The Preliminary Conceptual Site Model (CSM) is based upon the environmental conditions of the Site as described in previous sections. As the proposed development for the Site is unknown but understood to likely be residential the CSM has been developed following the most conservative criteria available, for residential development with private gardens.

The assessment follows a risk-based approach; with the potential environmental risk assessed qualitatively using the 'source-pathway-receptor' contaminant linkage concept introduced in the guidance documents (principally the LCRM 2020) on the practical implementation of the Environmental Protection Act 1990.

Environmental risk can be defined as the combination of the consequence of a harmful effect and the probability of its occurrence. The existence of a contaminant linkage is primarily dependant on site usage and environmental conditions. Any risks identified during a preliminary assessment, such as the ones presented in this document, are perceived risks based on the information reviewed. The risk categories presented follow guidance presented in CIRIA Publication C552, Contaminated Land Risk Assessment – A Guide to Good Practice. CIRIA defines four levels of probability and four levels of severity with relation to contaminated land, as presented in **Appendix C.**

The environmental risk assessment has been carried out by identifying and evaluating the significance of the following:

- **Potential sources of contamination:** these include any actual or potentially contaminating materials and activities, located either on or in the vicinity of the Site;
- **Potential receptors of contamination:** these can include Site users, adjacent users, controlled waters; and,
- **Potential pathways for contamination migration**: these are the routes or mechanisms by which contaminants may migrate from the source to the receptor.

6.2 POTENTIAL SOURCES OF CONTAMINATION

Table 6-1 provides a summary of the potential sources of contamination that may be present at the Site, as well as the likely nature of such sources.

Table 6-1 – Potential Sources of Contamination

Potential Source	Potential Contaminants of Concern	Likely/Anticipated Distribution
ON-SITE		
Agricultural Use – Arable land	▪ Agrochemicals containing heavy metals; ▪ Fertilisers, herbicides and pesticides; and, ▪ Made Ground containing Asbestos Containing Materials (ACMs), Total Petroleum Hydrocarbons (TPH) and Polycyclic Aromatic Hydrocarbons (PAH).	Agrochemicals – site wide ACM, TPH, PAH - localised to any Made Ground.
OFF-SITE		
Nearby Infilled land	▪ Ground gases (carbon dioxide and methane); ▪ Ammoniacal nitrogen ▪ Heavy metals; ▪ Total Petroleum Hydrocarbons; ▪ Polycyclic Aromatic Hydrocarbon; and, ▪ ACMs.	Nearest area of infilled land 170 m south of the Site.

6.3 POTENTIAL RECEPTORS

In the context of the potential residential development of the Site, the following are considered to be potential receptors:

Human Health

- Current and future Site users;
- Construction and maintenance workers; and,
- Third party neighbours.

Controlled Waters

- The inland river identified on Site.

Services and Building Fabric

- Future below ground services (e.g. potable water supply pipes); and,
- Future building structures.

Flora

- Plant life in future landscaped areas.

6.4 PRELIMINARY CONCEPTUAL SITE MODEL (CSM)

Table 6-2 provides an evaluation of the potential contaminant linkages that are considered to be plausible on the basis of the information currently available for the Site and the proposed end use.

Table 6-2 – Plausible Contaminant Linkages

Potential Contaminant Sources	Pathways	Receptor	Comments / Risk
ON-SITE			
▪ Made Ground associated with historical development in localised areas ▪ Agricultural Practices	▪ Dermal contact; ▪ Ingestion of impacted soil particles on Site, and windblown to adjacent land-uses; ▪ Inhalation of dust and asbestos fibres, and windblown to adjacent land-uses; and, ▪ Migration of volatile vapours into buildings or below ground structures.	**Human Health** ▪ Future Site users and visitors; ▪ Construction workers and future maintenance workers; and, ▪ Third party neighbours	The Site has had very limited historical development, therefore there will be limited Made Ground deposits and assumed less impacted soils. Exposure to potential contaminants will be restricted in areas where hardstanding is present in the future development. The greatest risk of exposure to future site users is where private gardens and soft landscaping will be located assuming a residential end use. Site wide contamination would be associated with historical use of agrochemicals. Therefore, the risk to future site users and visitors is thought to be **Low.** Construction workers and future maintenance workers are at a greater risk of direct exposure to contaminated soils/groundwater during ground works (e.g. dermal exposure or inhalation of particles, vapours or ground gases). However, no significant source of contamination has been identified onsite and therefore the risk to construction and future maintenance workers is considered to be **Low**. However, these risks should be managed with the adherence to Health and Safety protocols during the works. There is a risk that windblown impacted soil and dust could migrate off-Site causing a risk to third party neighbours. The risk to these areas is considered to be **Low**. A Construction Environmental Management Plan (CEMP) would mitigate against the creation of potential pollution pathways during

			the project's construction such as mud being transported on to local roads from construction plant / vehicles. No significant ground gas source has been identified on-site. Therefore, the risk from on-site sources is thought to be **Low**.
▪ Made Ground associated with historical development in localised areas ▪ Agricultural Practices	▪ Vertical and lateral leaching from impacted soil; and ▪ Lateral migration within groundwater	**Controlled waters** ▪ Inland river (on-site)	Site-wide agrochemical use is likely to have occurred while used for growing crops. The Site is situated over Head Deposits and the London Clay Formation, both of which are classified as non-productive strata. The risk to local ground water bodies is considered to be **Low**. The risk to surface waters is also considered **Low** based on that mitigation measures against surface runoff will be implemented during construction work. A Construction Environmental Management Plan (CEMP) would mitigate against the creation of potential pollution pathways during the project's construction such as surface water run-off.
OFF-SITE			
▪ Areas of infilled land	▪ Migration of ground gas. ▪ Lateral migration of contaminated groundwater.	**Human Health** ▪ Future Site users and visitors; and, ▪ Construction workers and future maintenance workers.	Ground gas generated by Made Ground in areas surrounding the Site may migrate laterally within the subsurface and accumulate in enclosed areas; therefore, posing a risk of explosion or asphyxiation. However, the cohesive and low permeability soils of the Head Deposits and the London Clay Formation will inhibit the lateral migration of ground gas. The closest reported area of infilled land is 170 m north of the Site. Following this, the risk from migration of ground gases is considered to be **Low.**
	▪ Lateral migration of contaminants within groundwater.	**Controlled Waters** ▪ Surrounding inland rivers	No significant groundwater body is expected on the Site. The Site is underlain by Head Deposits over the London Clay Formation. Both of these soil types are unproductive strata. In addition, no significant off-site contaminant source has been identified. Following this, the risk is considered to be **Low.**

7 CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the Site walkover and the desk-based assessment, WSP makes the following conclusions and recommendations in the context of a proposed residential development including private gardens to provide the most conservative assessment.

7.1 CONCLUSIONS

The Site is currently arable farmland that is bordered by hedgerows and inland rivers.

The historical map review indicates that the Site has remained as fields since the end of the 19th Century to present day with little to no development occurring on the Site. A hedgerow was removed from the centre of the Site (August 1999); however no other change to the Site's layout was noted on the historical maps or through planning applications.

The surrounding land has also undergone only sporadic development, with residential development in the village of Blean and an area of earthworks 170 m south of the Site.

The superficial geology consists of Head Deposits underlain by the London Clay Formation. Both the on-site Head Deposits and the London Clay Formation are unproductive strata thus, a significant groundwater body is not expected on Site. However, local inland rivers will require protection from construction activity during the project's development.

The risk form ground gas is considered to be **Low**. The desk-based search has not identified any significant source of ground gas that is considered likely to impact on the site pre or post site redevelopment i.e. no landfill has been identified in influencing distance and the underlying soils are not considered to be likely to contain significant levels of organic matter.

The risk from asbestos is considered to be **Low** however unknown contamination could be present in near surface soils from past unknown historical activities.

The near surface soils could have been impacted by agrochemicals. Based on a proposed residential land use with private gardens some ground investigation is deemed appropriate to confirm contaminant concentrations in underlying soils that could pose a risk to human health.

Future residents of the site are considered to be at the greatest risk of coming into direct contact with potential ground contamination. The greatest risk of exposure is likely to occur within private gardens, due to gardening activities and especially where fruit and/or vegetables are to be grown for personal consumption. The most sensitive receptor is a young child who is at a greater risk of ingesting contaminated soil and/or contaminated soil getting on to their skin through playing in the garden. Contaminated soil can be tracked into the house via muddy footwear from the garden, thus creating a potential inhalation risk of contaminated soil/dust. The risk is considered to be **Low.**

Construction workers and future maintenance workers may encounter contaminated soils/groundwater during ground works (e.g. dermal exposure or inhalation of particles, vapours or ground gases), therefore the risk to construction and future maintenance workers is considered to be **Low.** However, these risks should be managed with the adherence to Health and Safety protocols during the works.

Contaminants within the soil that remain as areas of soft landscaping post redevelopment could theoretically present a long-term water pollution risk to surface waters from surface run-off. New service corridors and drainage systems could create preferential migration pathways for contaminants.

Depending upon if the underlying soils have been affected by contamination, sub-surface construction materials could potentially be at risk from aggressive chemical attack. The London Clay Formation can be naturally high in sulphur / sulphites leading to aggressive chemical attack of concrete structures. Sampling and analysis of soils for an aggressive ground suite will indicate if the underlying soils are likely to pose aggressive ground conditions for concrete based structures. Contamination can permeate plastic and consequently taint a drinking water supply. Any new services to be laid within parts of the site where contamination of the soils is observed will need to be considered further to protect future site users and maintenance workers.

There is a risk that windblown impacted soil, dust and asbestos fibres could migrate off-Site causing a risk to third party neighbours. However, with the adherence to a Construction Environmental Management Plan (CEMP), the risk to these areas is considered to be **Low**.

The Site is situated within an area at **Moderate** risk from UXO. This risk should be further assessed through commissioning a specialist Detailed UXO Threat Assessment report.

7.2 RECOMMENDATIONS

Should the Site be re-developed then it is recommended an intrusive ground investigation is undertaken to assess the underlying ground conditions. The ground investigation should be compliant with current UK guidance e.g. BS10175 and include a Generic Quantitative Risk Assessment (GQRA) to allow the assessment of identified plausible contaminant linkages and if remedial measures may be required. Geotechnical testing could also be undertaken to inform foundation design for potential future redevelopment. It is recommended that the ground investigation is designed based on the following technical objectives:

- Characterisation of the ground and groundwater conditions underlying the Site;
- Soil and groundwater sampling for contamination and geotechnical testing;
- Groundwater and ground gas monitoring;
- Provision of a GQRA to assess risks to human health and controlled waters;
- An assessment of potential foundation design and geotechnical constraints.

A Detailed UXO Threat Assessment report will be required prior to any intrusive ground works being undertaken to confirm if any UXO mitigation is required during the ground investigation.

Appendix A

FIGURES & DRAWINGS

Confidential

DO NOT SCALE

Information Classification:

INTERNAL

Information that is only intended for internal distribution among WSP employees, independent consultants, contractors, sub-contractors, clients and authorised third parties.

Legend :

Title : 70080896-008 D

Author : Callum Harris

Scale : 1:9,028

Layout : WSP A3 Landscape

Current Time : 19/04/2021 15:27

© WSP UK Ltd

Appendix B

LIMITATIONS

Confidential

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

GENERAL

1. WSP UK Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

2. Unless explicitly agreed otherwise, in writing, this report has been prepared under WSP UK Limited standard Terms and Conditions as included within our proposal to the Client.

3. Project specific appointment documents may be agreed at our discretion and a charge may be levied for both the time to review and finalise appointments documents and also for associated changes to the appointment terms. WSP UK Limited reserves the right to amend the fee should any changes to the appointment terms create an increase risk to WSP UK Limited.

4. The report needs to be considered in the light of the WSP UK Limited proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEO ENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: *This section covers reports with the following titles or combination of titles: phase 1; desk top study; geo environmental assessment; development appraisal; preliminary environmental risk assessment; constraints report; due diligence report; geotechnical development review; environmental statement; environmental chapter; project scope summary report (PSSR), program environmental impact report (PEIR), geotechnical development risk register; and, baseline environmental assessment.*

5. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. WSP UK Limited cannot be held responsible for any disclosures that are provided post production of our report and will not automatically update our report.

6. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP UK Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.

7. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.

8. WSP UK Limited does not warrant work / data undertaken / provided by others.

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

INTRUSIVE INVESTIGATION REPORTS

Coverage: *The following report titles (or combination) may cover this category of work: geo environmental site investigation; geotechnical assessment; GIR (Ground Investigation reports); preliminary environmental and geotechnical risk assessment; and, geotechnical risk register.*

9. The investigation has been undertaken to provide information concerning either:

- **i.** The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
- **ii.** Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.

10. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.

11. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.

12. For geotechnical investigations the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.

13. The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.

14. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

15. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, WSP UK Limited has used reasonable skill and care to extrapolate conditions between these points based upon assumptions to develop our interpretation and conclusions. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation. Conditions can change between investigation points and these interpretations should be considered indicative.

16. The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective

effects of any future changes or amendments to these values. Specific assumptions associated with the WSP UK Limited risk assessment process have been outlined within the body or associated appendix of the report.

17. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.

18. Where soil contamination concentrations recorded as part of this investigation are used for commentary on potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed.

19. The results of the asbestos testing are factually reported and interpretation given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and / or trace loose asbestos fibres within the soil matrix at the site.

20. If costs have been included in relation to additional site works, and / or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

21. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.

22. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIAL STRATEGY REPORTS

23. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected on the basis of the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

24. The outputs of the Detailed Quantitative Risk Assessments are based upon WSP UK Limited manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.

25. Prior to adoption on site they will need discussing and agreeing with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of WSP UK Limited. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

GEOTECHNICAL DESIGN REPORT (GDR)

26. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS)

27. These reports are factual in nature and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of an earthworks or remedial works.

28. The data is presented and will be compared with assessment criteria.

Appendix C

CIRIA RISK DEFINITIONS

Confidential

CIRIA RISK DEFINITIONS

Table A1 - Classifications of Probability

Classification	Definition
High Likelihood	There is a pollution linkage / identified geotechnical hazard and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term

Table A2 - Classifications of Consequence

Classification	Definition
Severe	Short-term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resource. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem.
Medium	Chronic damage to Human Health ("significant harm" as defined in DETR, 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem, or organism forming part of such ecosystem.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services (significant harm as defined m the Draft Circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings/structures/services or the environment.
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve, Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc.). Easily repairable effects of damage to buildings, structures and services

The risk categories presented in this report, taking into account both probability and severity, are based on the matrix presented in **Table A3** below, following CIRIA C552.

Table A3 - Adopted Risk Categories / Comparison of Consequence Against Probability

Probability	Consequence			
	Severe	**Medium**	**Mild**	**Minor**
High Likelihood	Very High Risk	High Risk	Moderate Risk	Low to Moderate Risk
Likely	High Risk	Moderate Risk	Low to Moderate Risk	Low Risk
Low Likelihood	Moderate Risk	Low to Moderate Risk	Low Risk	Very Low Risk
Unlikely	Low to Moderate Risk	Low Risk	Very Low Risk	Very Low Risk

Appendix D

SITE PHOTOGRAPHS

Confidential

Photographic Report

Photo 1: View from the north boundary of Site

Photo 2: View from western boundary of Site

Appendix E

GROUNDSURE REPORT / HISTORICAL MAPS

Confidential

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Order Details

Date: 01/04/2021

Your ref: Uni_of_Kent_D

Our Ref: WSP-7710188

Client: WSP

Site Details

Location: 613235 161227

Area: 22.86 ha

Authority: Canterbury City Council

Summary of findings p. 2

OS MasterMap site plan N/A: >10ha

Aerial image p. 8

groundsure.com/insightuserguide

Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	Historical industrial land uses	0	6	4	11	-
14	1.2	Historical tanks	0	0	0	2	-
15	1.3	Historical energy features	0	0	0	2	-
15	1.4	Historical petrol stations	0	0	0	0	-
15	1.5	Historical garages	0	0	0	0	-
16	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
17	2.1	Historical industrial land uses	0	6	6	15	-
19	2.2	Historical tanks	0	0	0	2	-
19	2.3	Historical energy features	0	0	0	2	-
19	2.4	Historical petrol stations	0	0	0	0	-
20	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
21	3.1	Active or recent landfill	0	0	0	0	-
21	3.2	Historical landfill (BGS records)	0	0	0	0	-
22	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
22	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
22	3.5	Historical waste sites	0	0	0	0	-
22	3.6	Licensed waste sites	0	0	0	0	-
22	3.7	Waste exemptions	0	1	0	34	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
26	4.1	Recent industrial land uses	0	0	1	-	-
27	4.2	Current or recent petrol stations	0	0	0	0	-
27	4.3	Electricity cables	0	0	0	0	-
27	4.4	Gas pipelines	0	0	0	0	-
27	4.5	Sites determined as Contaminated Land	0	0	0	0	-

27	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
28	4.7	Regulated explosive sites	0	0	0	0	-
28	4.8	Hazardous substance storage/usage	0	0	0	0	-
28	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
28	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
28	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
29	4.12	Radioactive Substance Authorisations	0	0	0	0	-
29	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
29	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
29	4.15	Pollutant release to public sewer	0	0	0	0	-
29	4.16	List 1 Dangerous Substances	0	0	0	0	-
30	4.17	List 2 Dangerous Substances	0	0	0	0	-
30	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
30	4.19	Pollution inventory substances	0	0	0	0	-
30	4.20	Pollution inventory waste transfers	0	0	0	0	-
30	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
31	**5.1**	**Superficial aquifer**	Identified (within 500m)				
33	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
34	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
36	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
36	5.5	Groundwater vulnerability- local information	None (within 0m)				
37	**5.6**	**Groundwater abstractions**	0	0	0	0	2
38	5.7	Surface water abstractions	0	0	0	0	0
38	5.8	Potable abstractions	0	0	0	0	0
39	5.9	Source Protection Zones	0	0	0	0	-
39	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
40	**6.1**	**Water Network (OS MasterMap)**	3	10	14	-	-

43	6.2	Surface water features	1	9	11	-	-
43	6.3	WFD Surface water body catchments	1	-	-	-	-
43	6.4	WFD Surface water bodies	0	0	0	-	-
44	6.5	WFD Groundwater bodies	0	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
45	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
45	7.2	Historical Flood Events	0	0	0	-	-
45	7.3	Flood Defences	0	0	0	-	-
45	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
46	7.5	Flood Storage Areas	0	0	0	-	-
47	7.6	Flood Zone 2	None (within 50m)				
47	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
48	8.1	Surface water flooding	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
50	9.1	Groundwater flooding	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
51	10.1	Sites of Special Scientific Interest (SSSI)	0	0	1	1	8
52	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
52	10.3	Special Areas of Conservation (SAC)	0	0	0	0	1
53	10.4	Special Protection Areas (SPA)	0	0	0	0	0
53	10.5	National Nature Reserves (NNR)	0	0	0	0	1
53	10.6	Local Nature Reserves (LNR)	0	1	0	0	0
54	10.7	Designated Ancient Woodland	0	0	2	9	54
56	10.8	Biosphere Reserves	0	0	0	0	0
56	10.9	Forest Parks	0	0	0	0	0
57	10.10	Marine Conservation Zones	0	0	0	0	0
57	10.11	Green Belt	0	0	0	0	0
57	10.12	Proposed Ramsar sites	0	0	0	0	0

57	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
57	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
58	10.15	Nitrate Sensitive Areas	0	0	0	0	0
58	**10.16**	**Nitrate Vulnerable Zones**	0	0	0	0	2
59	**10.17**	**SSSI Impact Risk Zones**	3	-	-	-	-
61	**10.18**	**SSSI Units**	0	0	2	1	26
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
74	11.1	World Heritage Sites	0	0	0	-	-
75	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
75	11.3	National Parks	0	0	0	-	-
75	11.4	Listed Buildings	0	0	0	-	-
75	**11.5**	**Conservation Areas**	2	1	0	-	-
76	11.6	Scheduled Ancient Monuments	0	0	0	-	-
76	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
77	**12.1**	**Agricultural Land Classification**	Non Agricultural (within 250m)				
78	12.2	Open Access Land	0	0	0	-	-
78	12.3	Tree Felling Licences	0	0	0	-	-
78	12.4	Environmental Stewardship Schemes	0	0	0	-	-
79	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
80	**13.1**	**Priority Habitat Inventory**	0	4	8	-	-
81	13.2	Habitat Networks	0	0	0	-	-
81	13.3	Open Mosaic Habitat	0	0	0	-	-
81	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
83	**14.1**	**10k Availability**	Identified (within 500m)				
84	14.2	Artificial and made ground (10k)	0	0	0	0	-
85	14.3	Superficial geology (10k)	0	0	0	0	-

85	14.4	Landslip (10k)	0	0	0	0	-
86	14.5	Bedrock geology (10k)	0	0	0	0	-
86	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
87	**15.1**	**50k Availability**	Identified (within 500m)				
88	15.2	Artificial and made ground (50k)	0	0	0	0	-
88	15.3	Artificial ground permeability (50k)	0	0	-	-	-
89	**15.4**	**Superficial geology (50k)**	1	1	0	1	-
90	**15.5**	**Superficial permeability (50k)**	Identified (within 50m)				
90	15.6	Landslip (50k)	0	0	0	0	-
90	15.7	Landslip permeability (50k)	None (within 50m)				
91	**15.8**	**Bedrock geology (50k)**	1	0	0	0	-
92	**15.9**	**Bedrock permeability (50k)**	Identified (within 50m)				
92	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
93	**16.1**	**BGS Boreholes**	0	0	1	-	-
Page	Section	Natural ground subsidence					
94	**17.1**	**Shrink swell clays**	Moderate (within 50m)				
95	**17.2**	**Running sands**	Very low (within 50m)				
97	**17.3**	**Compressible deposits**	Negligible (within 50m)				
98	**17.4**	**Collapsible deposits**	Moderate (within 50m)				
99	**17.5**	**Landslides**	Very low (within 50m)				
100	**17.6**	**Ground dissolution of soluble rocks**	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
102	18.1	Natural cavities	0	0	0	0	-
103	**18.2**	**BritPits**	0	0	2	0	-
103	**18.3**	**Surface ground workings**	0	6	6	-	-
104	**18.4**	**Underground workings**	0	0	0	0	2
104	18.5	Historical Mineral Planning Areas	0	0	0	0	-

105	18.6	Non-coal mining	0	0	0	0	0
105	18.7	Mining cavities	0	0	0	0	0
105	18.8	JPB mining areas	None (within 0m)				
105	18.9	Coal mining	None (within 0m)				
105	18.10	Brine areas	None (within 0m)				
106	18.11	Gypsum areas	None (within 0m)				
106	18.12	Tin mining	None (within 0m)				
106	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
107	**19.1**	**Radon**	Less than 1% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
108	**20.1**	**BGS Estimated Background Soil Chemistry**	12	6	-	-	-
109	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
109	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
110	21.1	Underground railways (London)	0	0	0	-	-
110	21.2	Underground railways (Non-London)	0	0	0	-	-
111	21.3	Railway tunnels	0	0	0	-	-
111	**21.4**	**Historical railway and tunnel features**	0	1	0	-	-
111	21.5	Royal Mail tunnels	0	0	0	-	-
111	**21.6**	**Historical railways**	0	1	0	-	-
112	21.7	Railways	0	0	0	-	-
112	21.8	Crossrail 1	0	0	0	0	-
112	21.9	Crossrail 2	0	0	0	0	-
112	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 21/10/2018

Site Area: 22.86ha

Recent site history - 2015 aerial photograph

Capture Date: 14/04/2015

Site Area: 22.86ha

Recent site history - 2012 aerial photograph

Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2021. All Rights Reserved.

Capture Date: 25/05/2012

Site Area: 22.86ha

Recent site history - 2008 aerial photograph

Capture Date: 20/09/2008

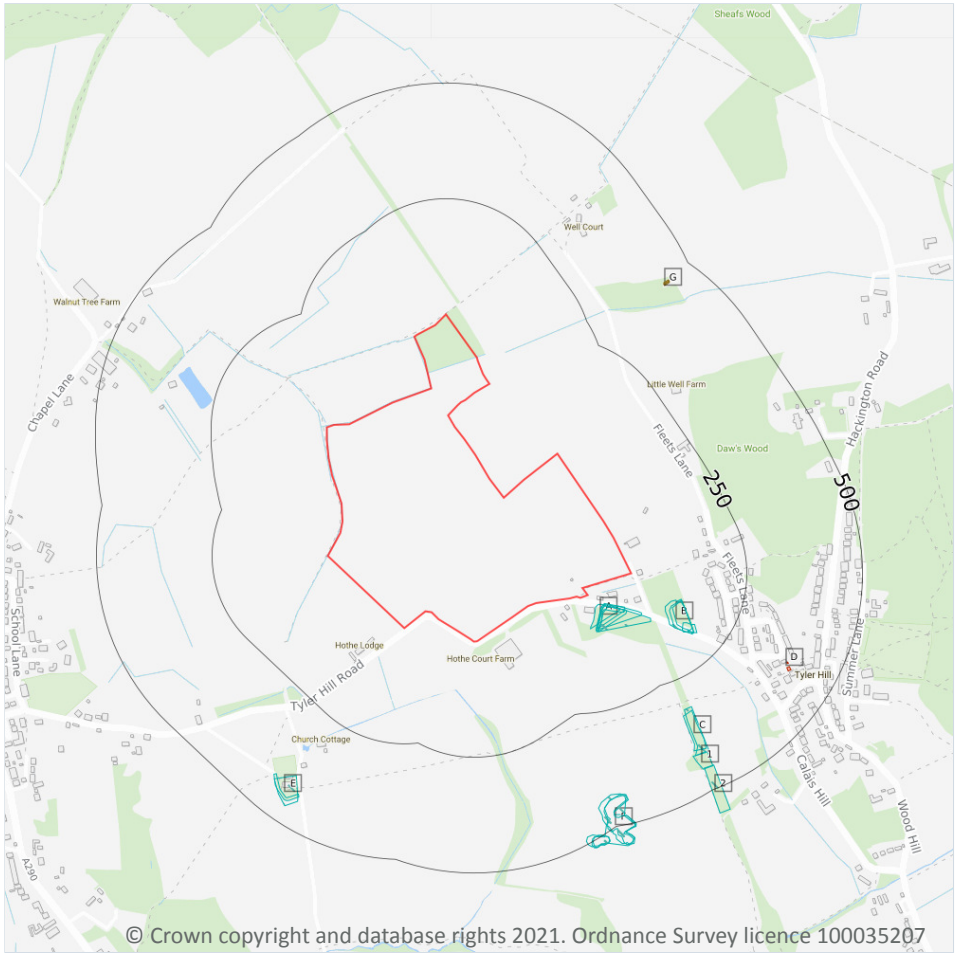
Site Area: 22.86ha

Recent site history - 1999 aerial photograph

Capture Date: 28/08/1999

Site Area: 22.86ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

1.1 Historical industrial land uses

Records within 500m	21

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
A	31m SE	Unspecified Pit	1938	2360176

ID	Location	Land use	Dates present	Group ID
A	39m SE	Unspecified Ground Workings	1957	2346997
A	40m SE	Unspecified Pit	1906	2360519
A	41m SE	Old Clay Pit	1896	2348727
A	43m SE	Unspecified Pit	1947	2365450
A	50m SE	Unspecified Pit	1873	2362664
B	103m SE	Unspecified Pit	1906 - 1938	2362069
B	112m SE	Unspecified Pit	1947 - 1957	2360081
B	116m SE	Old Clay Pit	1896	2348729
B	155m SE	Clay Pit	1873	2348703
C	316m SE	Cuttings	1974	2359269
C	324m SE	Cuttings	1896	2361746
E	395m SW	Grave Yard	1873	2346604
1	416m SE	Cuttings	1896	2361270
E	419m SW	Unspecified Ground Workings	1906	2357475
F	431m S	Unspecified Pit	1906 - 1938	2358900
F	434m S	Unspecified Pit	1947	2354199
F	437m S	Unspecified Pits	1957 - 1974	2358730
2	450m S	Cuttings	1974	2360148
F	486m SE	Unspecified Pit	1906 - 1938	2355681
F	493m SE	Unspecified Pit	1947	2362676

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**2**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
G	431m NE	Unspecified Tank	1993	424990
G	433m NE	Unspecified Tank	1971	425350

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	2

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
D	388m SE	Electricity Substation	1993	300359
D	393m SE	Electricity Substation	1971	300358

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-

grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

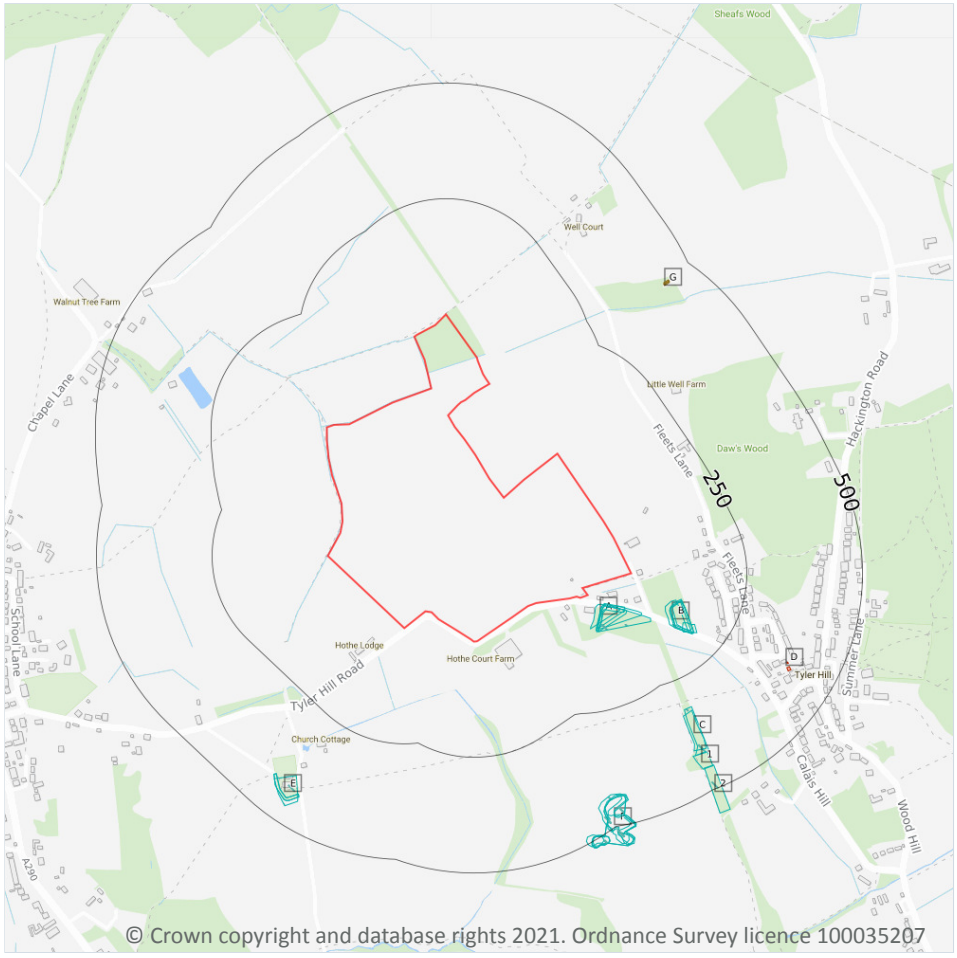
1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

2.1 Historical industrial land uses

Records within 500m	27

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
A	31m SE	Unspecified Pit	1938	2360176
A	39m SE	Unspecified Ground Workings	1957	2346997
A	40m SE	Unspecified Pit	1906	2360519

ID	Location	Land Use	Date	Group ID
A	41m SE	Old Clay Pit	1896	2348727
A	43m SE	Unspecified Pit	1947	2365450
A	50m SE	Unspecified Pit	1873	2362664
B	103m SE	Unspecified Pit	1938	2362069
B	112m SE	Unspecified Pit	1957	2360081
B	112m SE	Unspecified Pit	1906	2362069
B	114m SE	Unspecified Pit	1947	2360081
B	116m SE	Old Clay Pit	1896	2348729
B	155m SE	Clay Pit	1873	2348703
C	316m SE	Cuttings	1974	2359269
C	324m SE	Cuttings	1896	2361746
E	395m SW	Grave Yard	1873	2346604
1	416m SE	Cuttings	1896	2361270
E	419m SW	Unspecified Ground Workings	1906	2357475
E	419m SW	Unspecified Ground Workings	1906	2357475
F	431m S	Unspecified Pit	1938	2358900
F	433m S	Unspecified Pit	1906	2358900
F	434m S	Unspecified Pit	1947	2354199
F	437m S	Unspecified Pits	1974	2358730
F	437m S	Unspecified Pits	1957	2358730
2	450m S	Cuttings	1974	2360148
F	486m SE	Unspecified Pit	1938	2355681
F	493m SE	Unspecified Pit	1906	2355681
F	493m SE	Unspecified Pit	1947	2362676

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	2

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
G	431m NE	Unspecified Tank	1993	424990
G	433m NE	Unspecified Tank	1971	425350

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	2

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
D	388m SE	Electricity Substation	1993	300359
D	393m SE	Electricity Substation	1971	300358

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

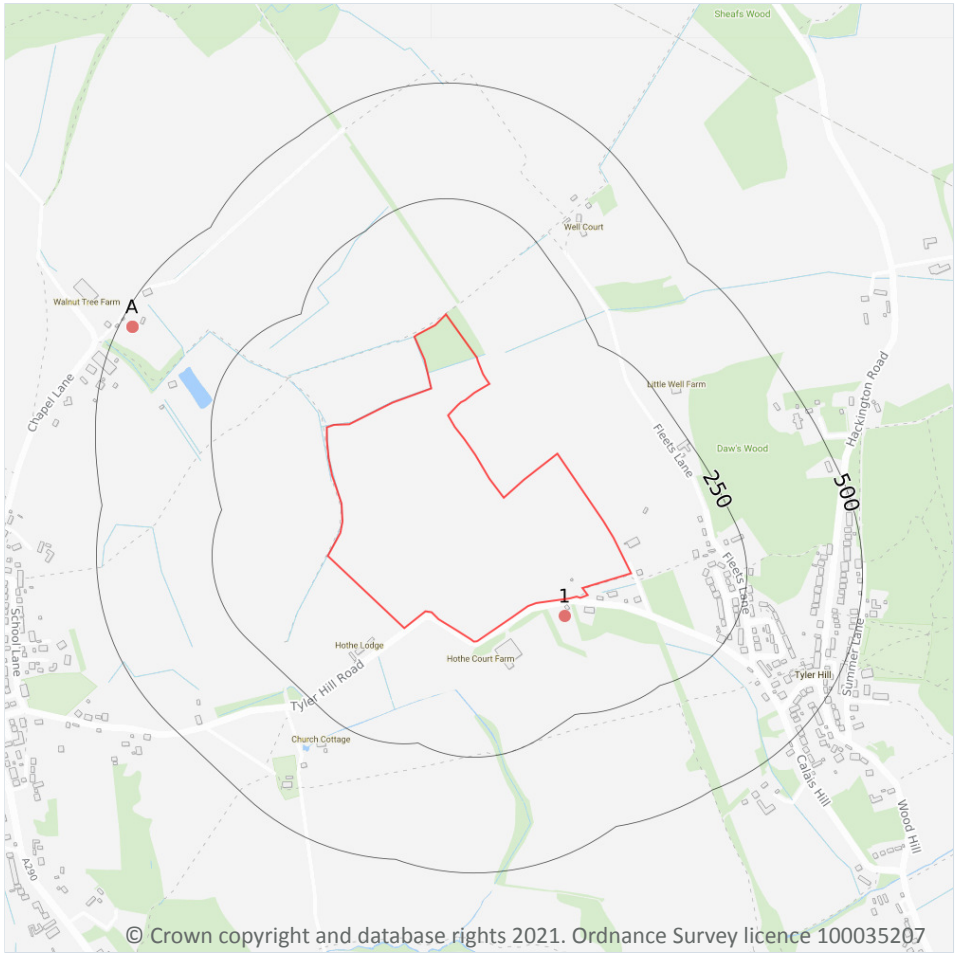
2.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline

Search buffers in metres (m)

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	0

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	0

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m	35

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 21**

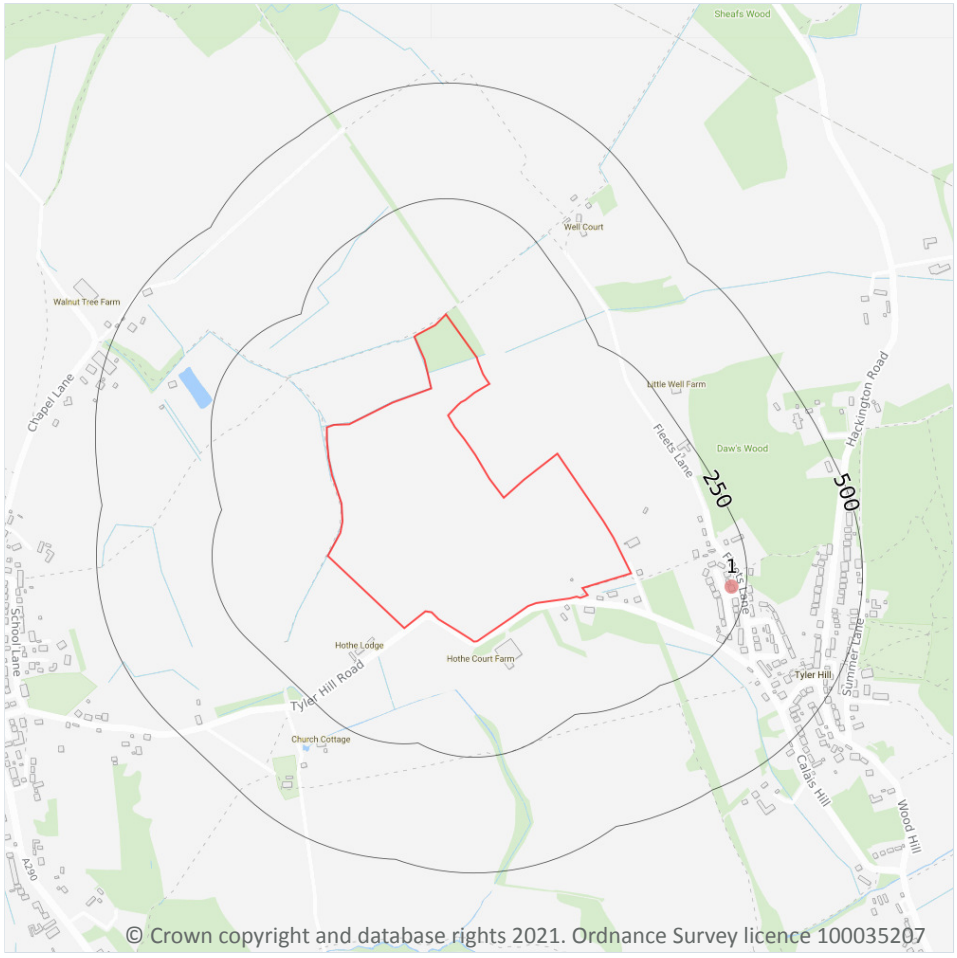
ID	Location	Site	Reference	Category	Sub-Category	Description
1	38m S	Hothe Court Farm Tyler Hill Road CANTERBURY Kent CT2 9LU	EPR/FE5581BF/A001	Storing waste exemption	Agricultural Waste Only	Storage of waste in a secure place
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Using waste exemption	On a farm	Use of waste in construction
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Disposing of waste exemption	On a farm	Disposal by incineration
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Disposing of waste exemption	On a farm	Burning waste in the open
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Storing waste exemption	On a farm	Storage of waste in secure containers
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Storing waste exemption	On a farm	Storage of waste in a secure place
A	474m NW	EWELL FARM, GRAVENEY ROAD, GOODNESTONE, FAVERSHAM, ME13 8UP	WEX092157	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
A	474m NW	EWELL FARM, GRAVENEY ROAD, GOODNESTONE, FAVERSHAM, ME13 8UP	WEX092157	Disposing of waste exemption	On a farm	Burning waste in the open
A	474m NW	EWELL FARM, GRAVENEY ROAD, GOODNESTONE, FAVERSHAM, ME13 8UP	WEX092157	Storing waste exemption	On a farm	Storage of waste in a secure place
A	474m NW	EWELL FARM, GRAVENEY ROAD, GOODNESTONE, FAVERSHAM, ME13 8UP	WEX092157	Disposing of waste exemption	On a farm	Disposal by incineration
A	474m NW	EWELL FARM, GRAVENEY ROAD, GOODNESTONE, FAVERSHAM, ME13 8UP	WEX092157	Storing waste exemption	On a farm	Storage of waste in secure containers

ID	Location	Site	Reference	Category	Sub-Category	Description
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Disposing of waste exemption	On a farm	Burning waste in the open
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Storing waste exemption	On a farm	Storage of waste in secure containers
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Storing waste exemption	On a farm	Storage of waste in a secure place
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Sorting mixed waste
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Manual treatment of waste
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Recovery of textiles
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Treatment of non-hazardous pesticide washings by carbon filtration for disposal
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Treatment of waste in a biobed or biofilter
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Preparatory treatments (baling, sorting, shredding etc)
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Recovery of scrap metal

ID	Location	Site	Reference	Category	Sub-Category	Description
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Use of waste in construction
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Use of mulch
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Incorporation of ash into soil
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Use of depolluted end-of-life vehicles for vehicle parts
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Use of baled end-of-life tyres in construction
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Use of waste for a specified purpose

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



Site Outline

Search buffers in metres (m)

Recent industrial land uses

4.1 Recent industrial land uses

Records within 250m	1

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 26**

ID	Location	Company	Address	Activity	Category
1	220m E	Millen Corporation	21, Sunnymead, Tyler Hill, Canterbury, Kent, CT2 9NW	Electronic Equipment	Industrial Products

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m	0

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	0

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	0

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	0

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	0

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

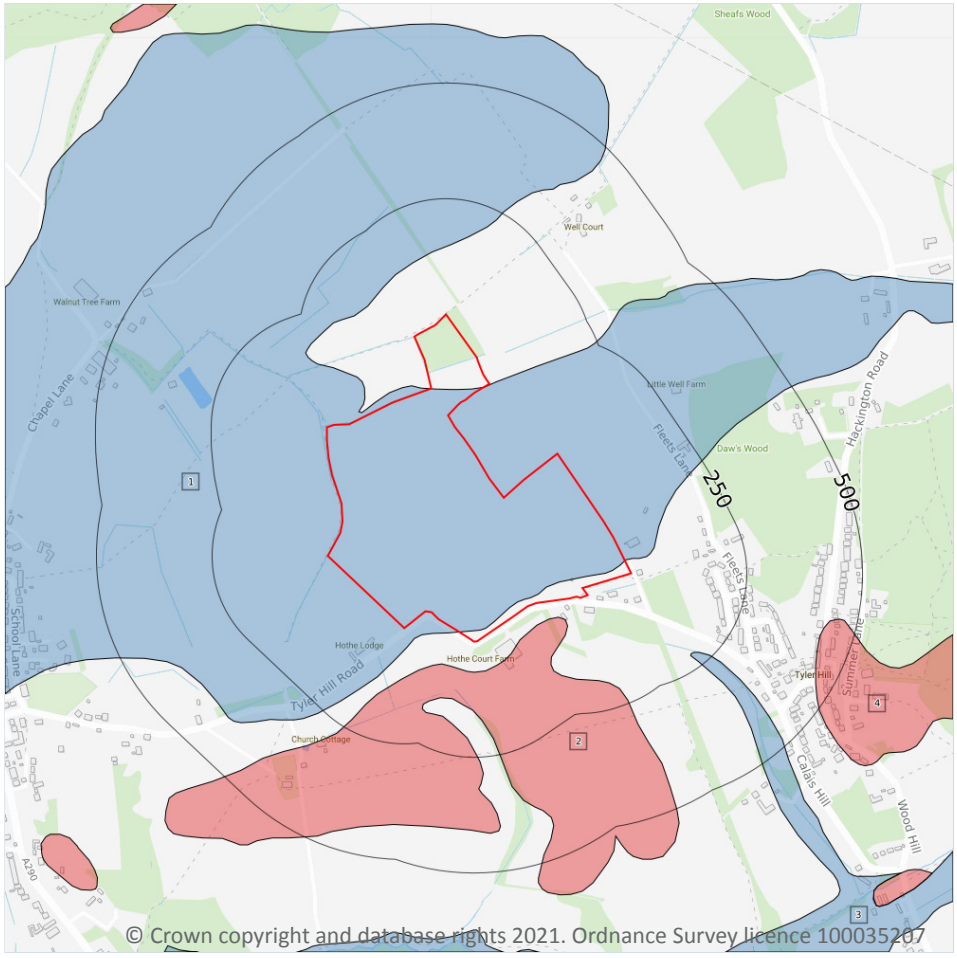
4.21 Pollution inventory radioactive waste

Records within 500m	0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	4

Aquifer status of groundwater held within superficial geology.

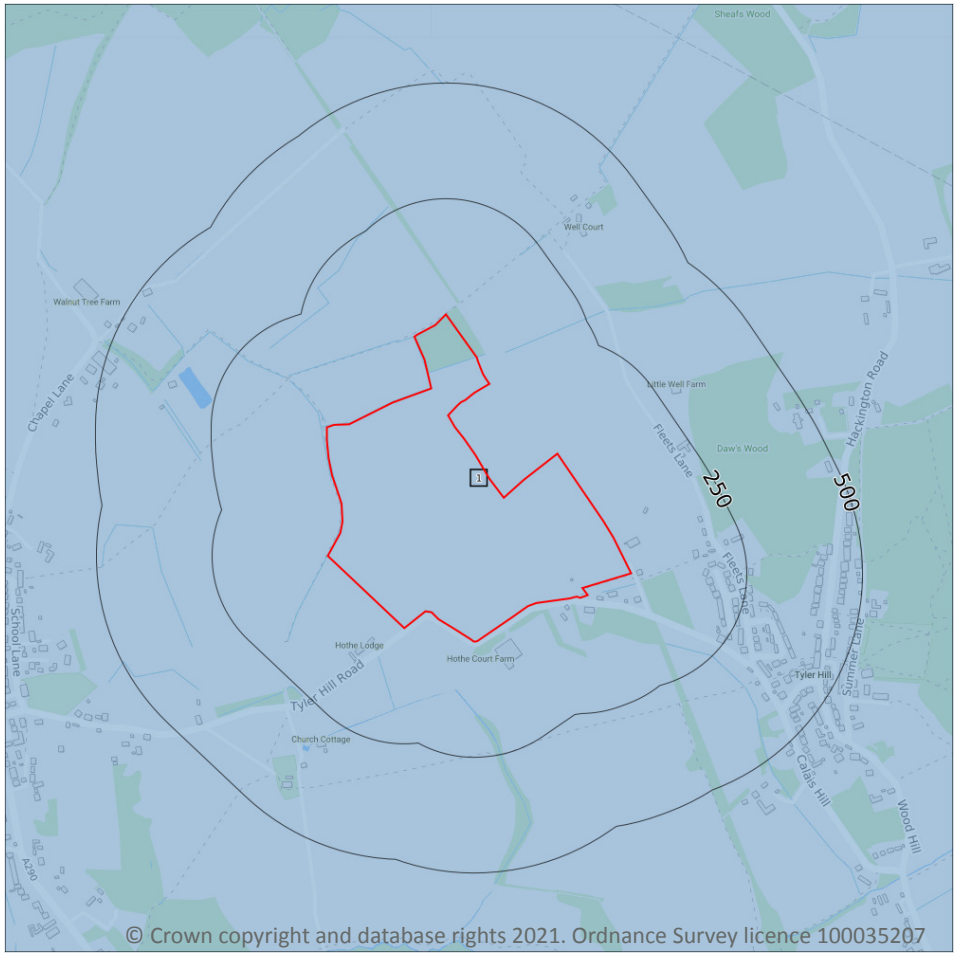
Features are displayed on the Hydrogeology map on **page 31**

ID	Location	Designation	Description
1	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**
2	37m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	217m SE	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
4	430m E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	1

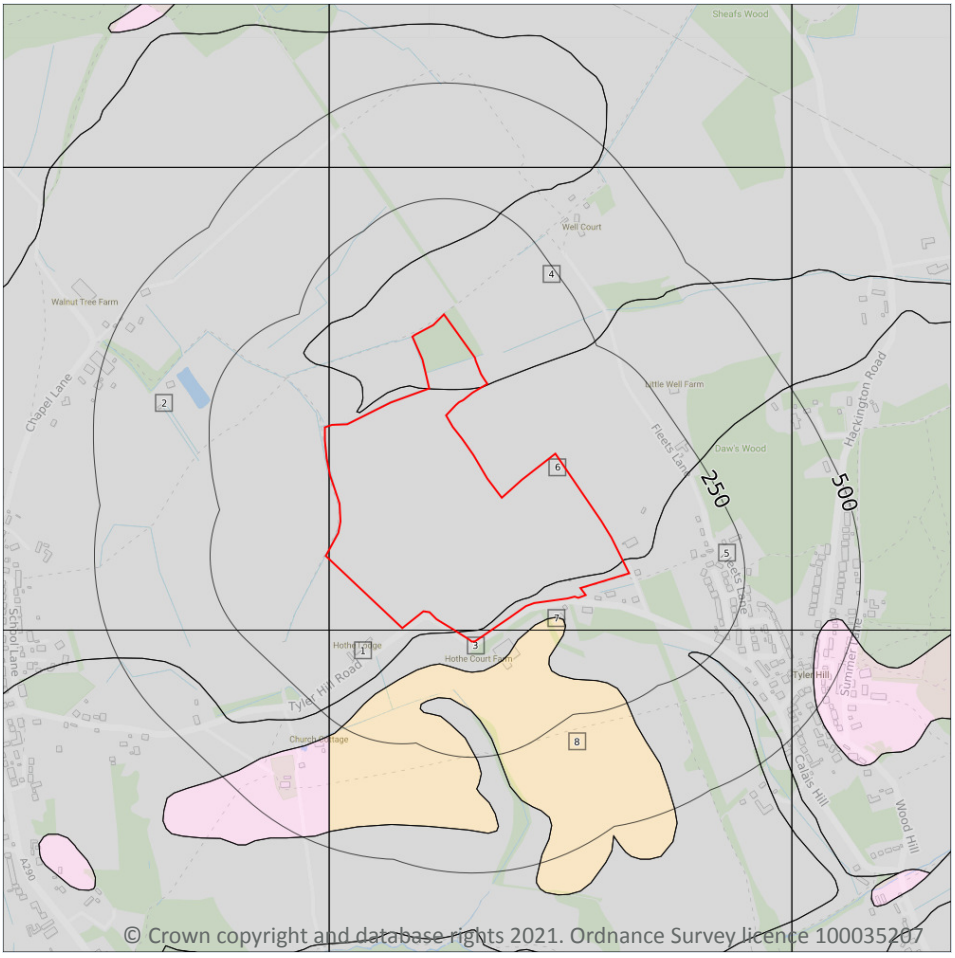
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 33**

ID	Location	Designation	Description
1	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	8

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 34**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
2	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
3	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
4	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
5	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
6	**On site**	**Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer**	**Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year**	**Vulnerability: Unproductive Aquifer type: Unproductive Thickness: <3m Patchiness value: <90% Recharge potential: High**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed**
7	36m S	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
8	46m SE	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	**0**

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

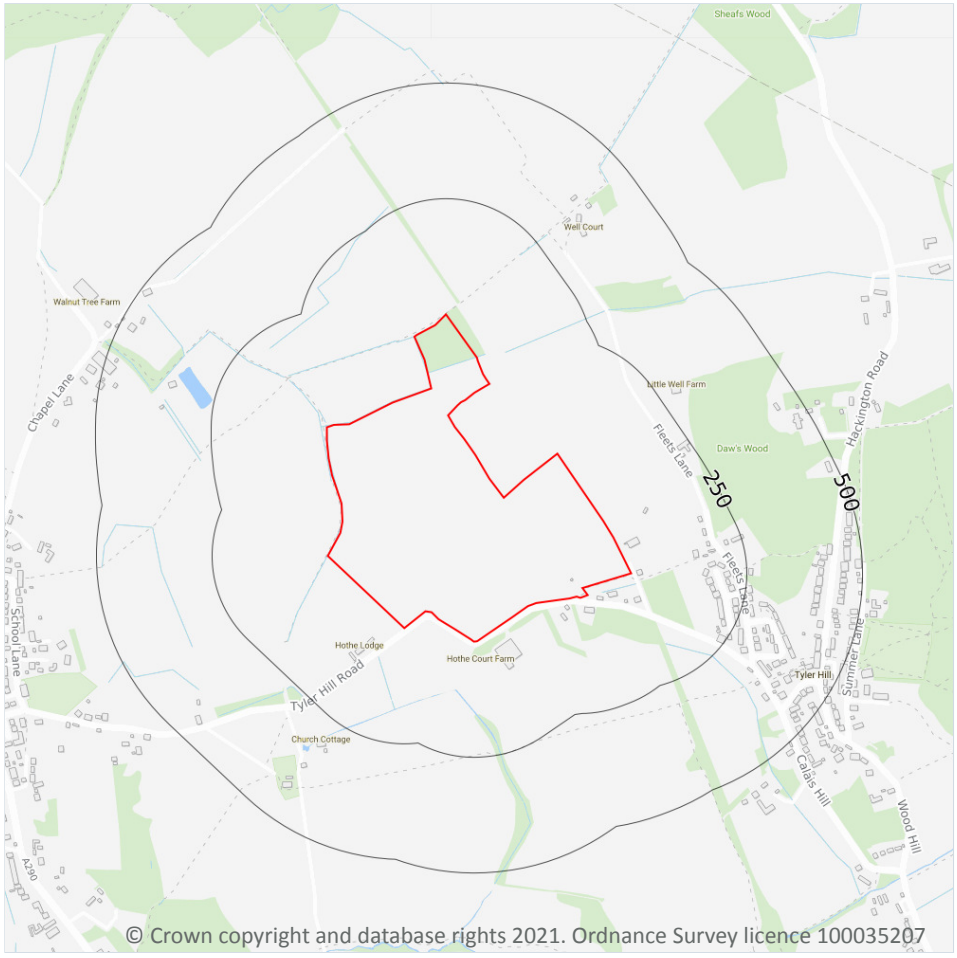
5.5 Groundwater vulnerability- local information

Records on site	**0**

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	2

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 37**

ID	Location	Details	
-	1260m S	Status: Historical Licence No: 9/40/04/0221/GR Details: General Farming & Domestic Direct Source: Southern Region Groundwater Point: WELL AT THE UNIVERSITY OF KENT, BLEAN Data Type: Point Name: The University of Kent at Canterbury Easting: 613110 Northing: 159730	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 01/11/1973 Version End Date: -
-	1727m NW	Status: Historical Licence No: 9/40/02/0077/GR Details: General Farming & Domestic Direct Source: Southern Region Groundwater Point: POINT 4, CLOWES FARM, ST.COSMUS & ST. DAMIAN IN THE BLEAN. Data Type: Point Name: Strand Easting: 612110 Northing: 162990	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 15/11/1983 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	**0**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	**0**

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

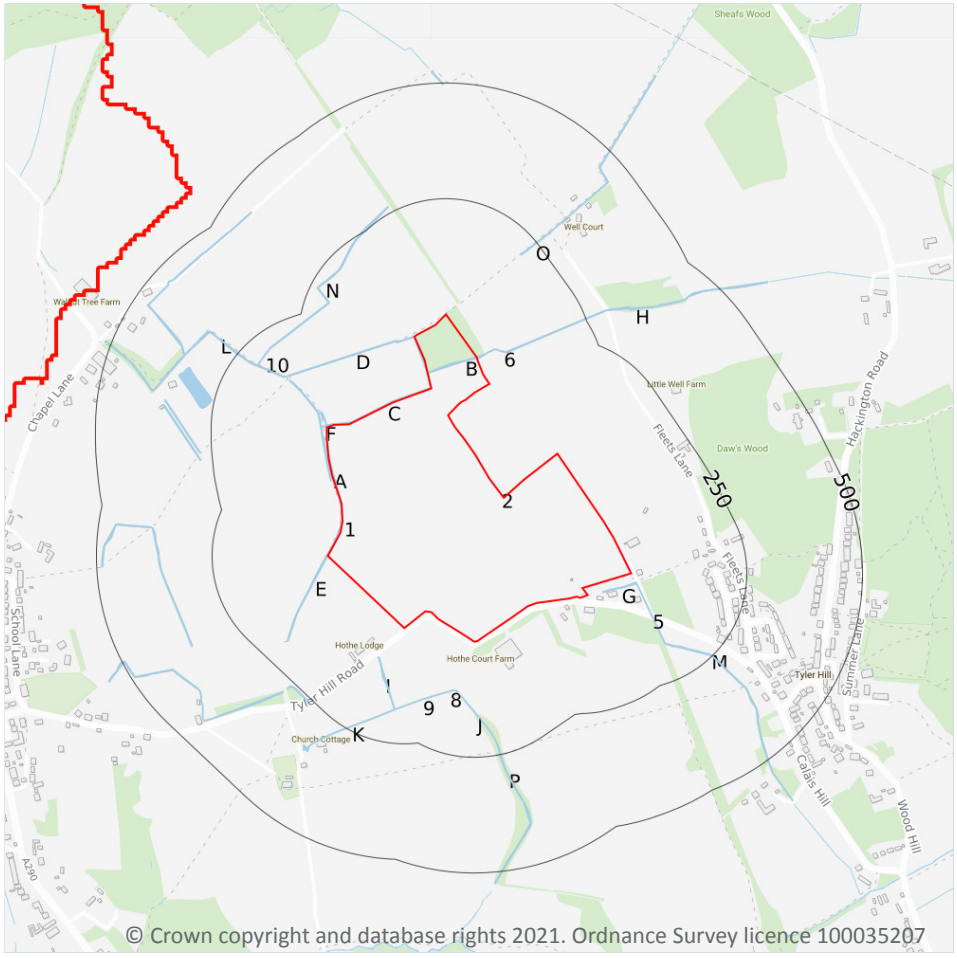
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



6.1 Water Network (OS MasterMap)

Records within 250m	27

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 40**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
B	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
C	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
D	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
E	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
F	3m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	3m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	4m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	12m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	20m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
5	25m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
6	48m E	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	63m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
I	83m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	112m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
8	120m SW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
9	122m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	156m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
I	159m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
M	167m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
K	176m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
N	198m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
10	201m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
L	201m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
O	206m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	225m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	21

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 40**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 40**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
2	**On site**	**River WB catchment**	**Sarre Penn and River Wantsum**	**GB107040019620**	**Stour Marshes**	**Stour**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	1

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 40**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	3369m E	River	Sarre Penn and River Wantsum	GB107040019620	Moderate	Good	Moderate	2016

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	0

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

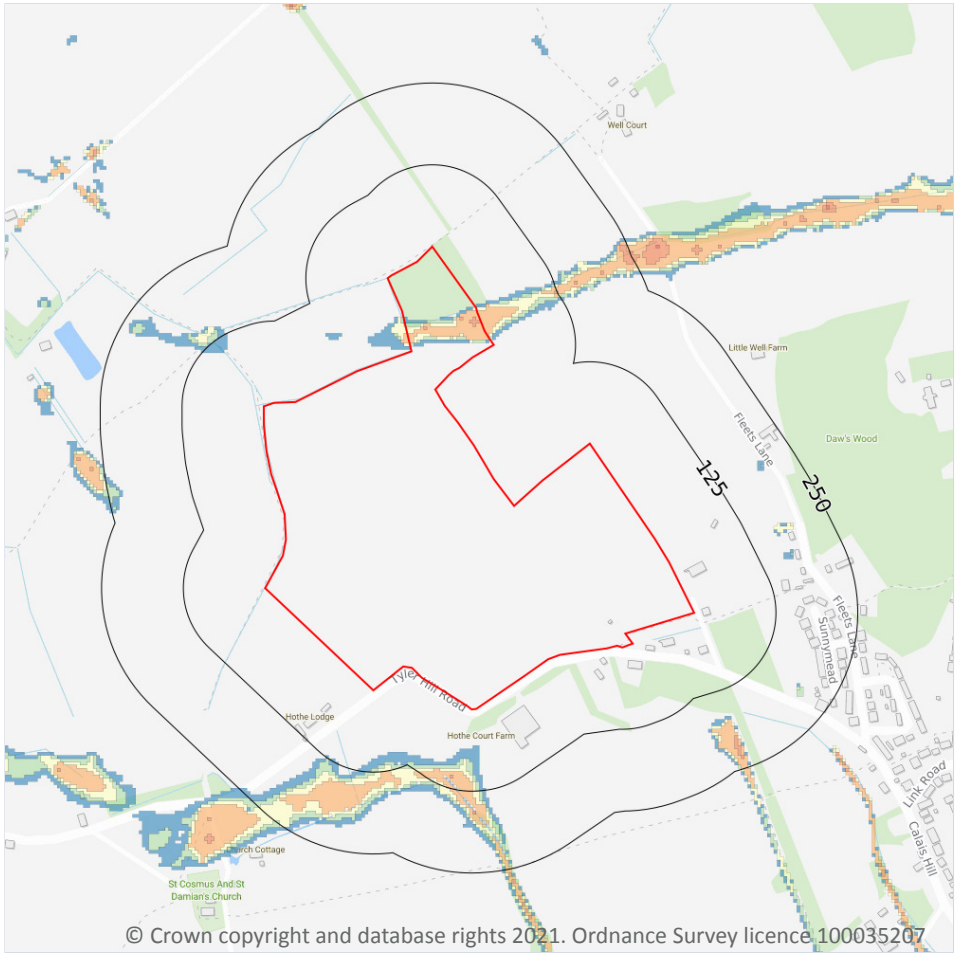
7.7 Flood Zone 3

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 0.3m - 1.0m**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 48**

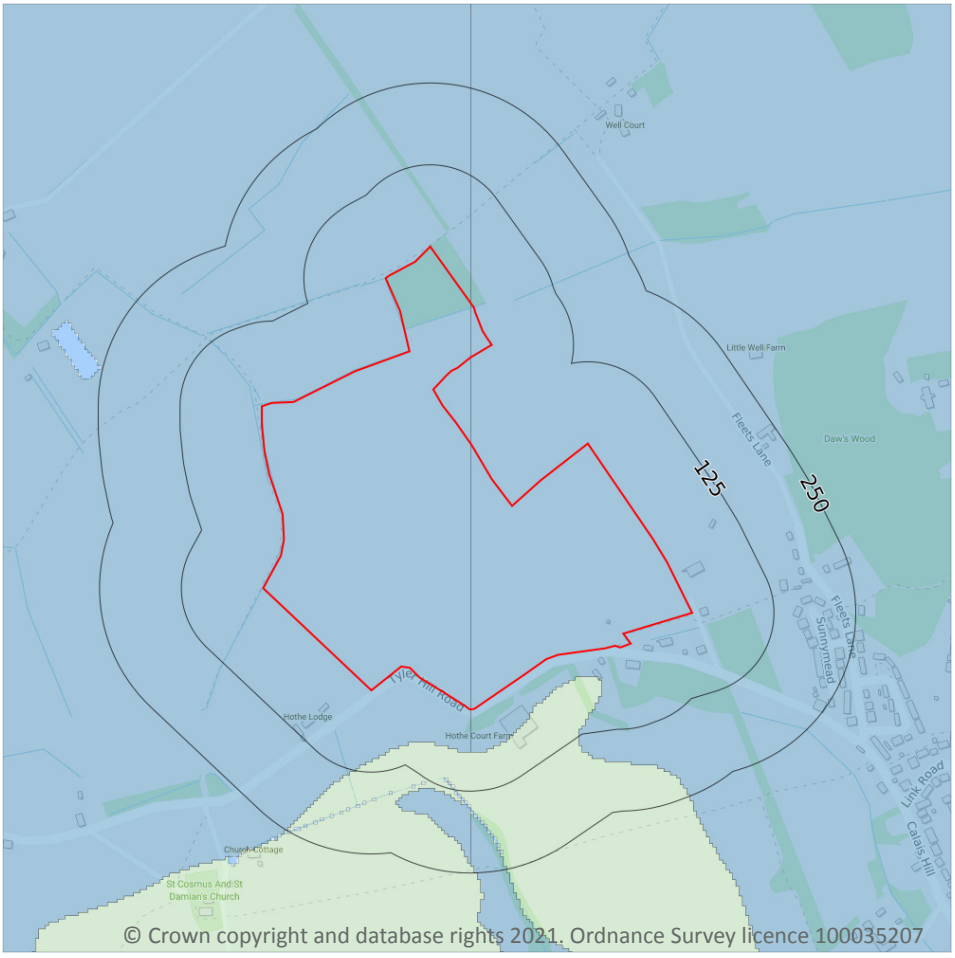
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 1.0m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

9.1 Groundwater flooding

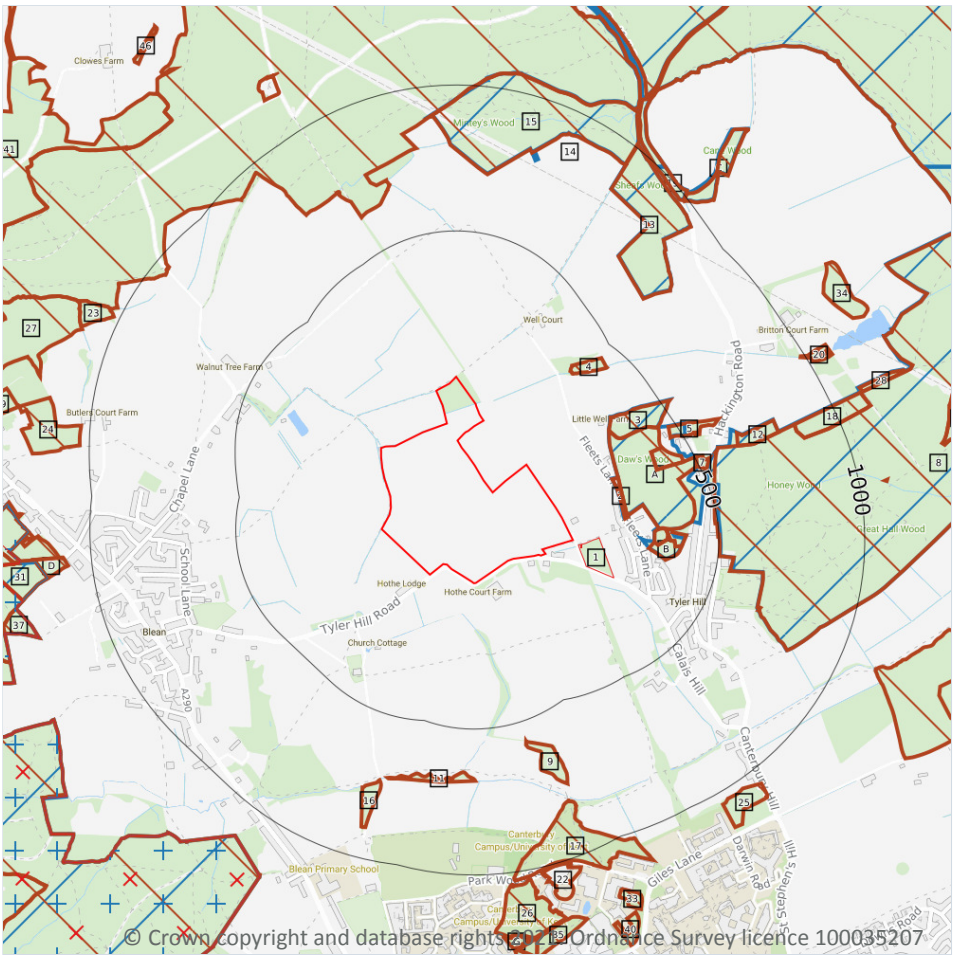
Highest risk on site	**Negligible**
Highest risk within 50m	**Low**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 50**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

Special Areas of Conservation (SAC)

National Nature Reserves (NNR)

Local Nature Reserves (LNR)

Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	10

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on **page 51**

ID	Location	Name	Data source
A	191m NE	West Blean and Thornden Woods	Natural England

ID	Location	Name	Data source
8	498m NE	West Blean and Thornden Woods	Natural England
14	680m NE	West Blean and Thornden Woods	Natural England
19	978m NE	West Blean and Thornden Woods	Natural England
C	988m NE	West Blean and Thornden Woods	Natural England
21	993m NE	West Blean and Thornden Woods	Natural England
E	1116m SW	Church Woods, Blean	Natural England
F	1154m NE	West Blean and Thornden Woods	Natural England
-	1498m N	West Blean and Thornden Woods	Natural England
-	1936m N	West Blean and Thornden Woods	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	**0**

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	**1**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

Features are displayed on the Environmental designations map on **page 51**

ID	Location	Name	Features of interest	Habitat description	Data source
E	1116m SW	Blean Complex	Beech forests on acid soils; Oak-hornbeam forests; Great crested newt.	Broad-leaved deciduous woodland	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	1

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

Features are displayed on the Environmental designations map on **page 51**

ID	Location	Name	Data source
E	1116m SW	Blean Woods	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	1

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

Features are displayed on the Environmental designations map on **page 51**

ID	Location	Name	Data source
1	25m SE	Tyler Hill Meadow	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	**65**

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 51**

ID	Location	Name	Woodland Type
2	193m E	Unknown	Ancient & Semi-Natural Woodland
A	204m NE	Daws Wood	Ancient & Semi-Natural Woodland
B	262m E	Daws Wood	Ancient & Semi-Natural Woodland
B	280m E	Dawes Wood	Ancient & Semi-Natural Woodland
3	299m NE	Unknown	Ancient & Semi-Natural Woodland
B	321m E	Daws Wood	Ancient & Semi-Natural Woodland
4	342m NE	Ozier Ground	Ancient & Semi-Natural Woodland
A	365m NE	Dawes Wood	Ancient & Semi-Natural Woodland
5	460m NE	Daws Wood	Ancient & Semi-Natural Woodland
6	491m E	Childs Forstal	Ancient & Semi-Natural Woodland
7	492m NE	Dawes Wood	Ancient & Semi-Natural Woodland
9	569m S	Unknown	Ancient & Semi-Natural Woodland
10	635m NW	Childs Forstal	Ancient Replanted Woodland
11	649m S	Unknown	Ancient & Semi-Natural Woodland
12	650m NE	Unknown	Ancient & Semi-Natural Woodland
13	679m NE	Childs Forstal	Ancient & Semi-Natural Woodland
15	702m N	Childs Forstal	Ancient & Semi-Natural Woodland
16	724m S	Unknown	Ancient & Semi-Natural Woodland
17	811m SE	Park Wood	Ancient & Semi-Natural Woodland
18	853m NE	Unknown	Ancient & Semi-Natural Woodland
20	984m NE	Honeywood, Ratscastle And Hickslees Woods	Ancient & Semi-Natural Woodland
C	988m NE	Childs Forstal	Ancient & Semi-Natural Woodland

ID	Location	Name	Woodland Type
22	1008m S	Park Wood	Ancient & Semi-Natural Woodland
23	1020m NW	Butlers Court	Ancient & Semi-Natural Woodland
24	1030m W	Upper Wood	Ancient & Semi-Natural Woodland
25	1031m SE	Unknown	Ancient & Semi-Natural Woodland
26	1033m S	Park Wood	Ancient & Semi-Natural Woodland
D	1081m W	Mincing Wood	Ancient & Semi-Natural Woodland
27	1102m W	Childs Forstal	Ancient & Semi-Natural Woodland
D	1109m W	Church/bossenden Woods	Ancient Replanted Woodland
28	1112m NE	Unknown	Ancient & Semi-Natural Woodland
29	1116m SW	Church/bossenden Woods	Ancient & Semi-Natural Woodland
30	1128m SE	Childs Forstal	Ancient & Semi-Natural Woodland
31	1157m W	Church/bossenden Woods	Ancient & Semi-Natural Woodland
32	1159m NE	Childs Forstal	Ancient & Semi-Natural Woodland
33	1163m SE	Brethren Wood	Ancient & Semi-Natural Woodland
34	1172m NE	Honeywood, Ratscastle And Hickslees Woods	Ancient & Semi-Natural Woodland
35	1192m S	Park Wood	Ancient & Semi-Natural Woodland
36	1210m W	Church/bossenden Woods	Ancient & Semi-Natural Woodland
G	1213m S	Unknown	Ancient & Semi-Natural Woodland
37	1231m W	Crawfords Rough	Ancient & Semi-Natural Woodland
G	1237m S	Park Wood	Ancient & Semi-Natural Woodland
38	1245m W	Church/bossenden Woods	Ancient Replanted Woodland
39	1246m W	Willow Wood	Ancient & Semi-Natural Woodland
40	1254m SE	Brethren Wood	Ancient & Semi-Natural Woodland
G	1268m S	Unknown	Ancient & Semi-Natural Woodland
41	1296m NW	Childs Forstal	Ancient & Semi-Natural Woodland
-	1300m S	Unknown	Ancient & Semi-Natural Woodland
42	1309m E	Unknown	Ancient & Semi-Natural Woodland
-	1344m S	Unknown	Ancient & Semi-Natural Woodland

ID	Location	Name	Woodland Type
-	1402m E	Childs Forstal	Ancient Replanted Woodland
-	1489m SE	Unknown	Ancient & Semi-Natural Woodland
46	1516m NW	Round Wood	Ancient & Semi-Natural Woodland
-	1533m SW	Church/bossenden Woods	Ancient Replanted Woodland
-	1560m E	Pomfrett Hill Wood	Ancient & Semi-Natural Woodland
-	1669m N	Childs Forstal	Ancient Replanted Woodland
49	1678m SW	Church/bossenden Woods	Ancient Replanted Woodland
-	1692m NW	Round Wood	Ancient & Semi-Natural Woodland
51	1831m NW	Childs Forstal	Ancient & Semi-Natural Woodland
-	1852m SW	Church/bossenden Woods	Ancient & Semi-Natural Woodland
-	1862m E	Unknown	Ancient & Semi-Natural Woodland
-	1900m E	Unknown	Ancient & Semi-Natural Woodland
-	1924m N	Childs Forstal	Ancient & Semi-Natural Woodland
-	1939m N	Childs Forstal	Ancient & Semi-Natural Woodland
-	1970m NE	Childs Forstal	Ancient Replanted Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or ‘classified’) under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

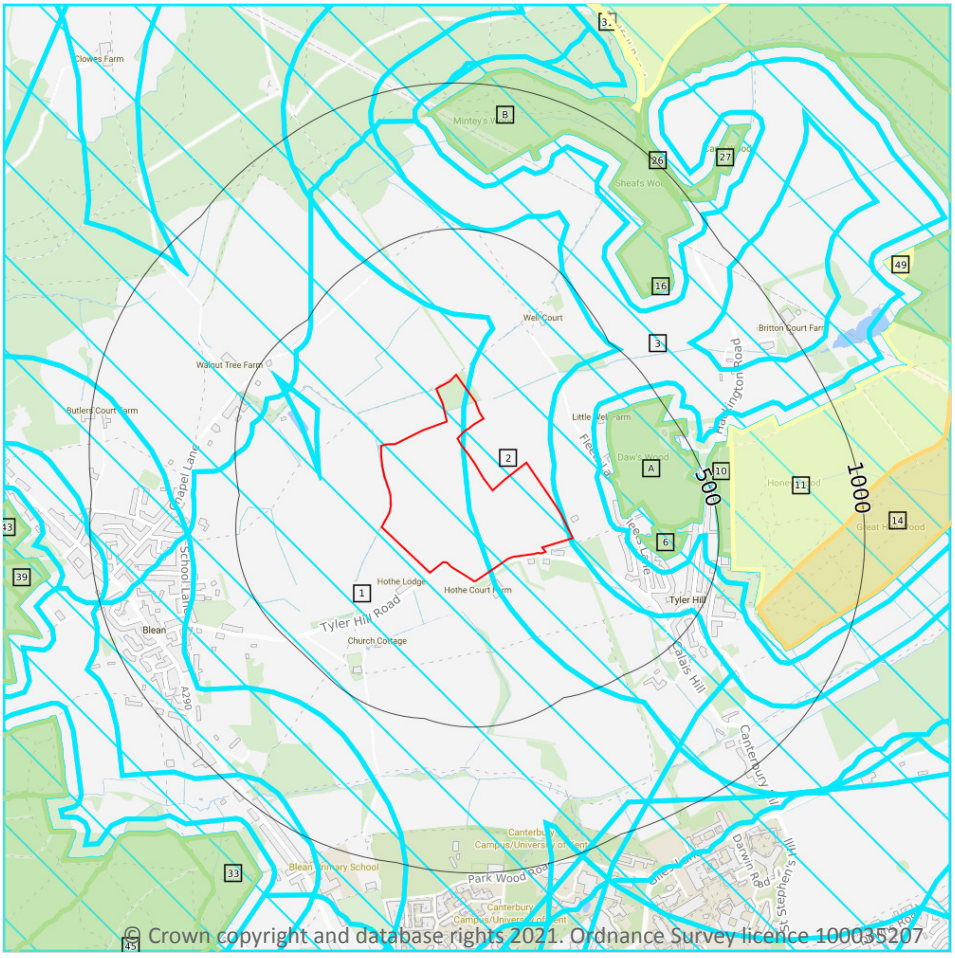
Records within 2000m	2

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
1240m SW	R. GREAT STOUR NVZ	Surface Water	S515	Existing
1251m SE	R. GREAT STOUR NVZ	Surface Water	S515	Existing

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site	3

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 59**

ID	Location	Type of developments requiring consultation
1	On site	**Infrastructure - Airports, helipads and other aviation proposals. Wind and Solar - Wind turbines. Residential - Residential development of 500 units or more. Rural residential - Any residential development of 500 or more houses outside existing settlements/urban areas. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons > 200m² & manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 500 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Notes: For new residential development in this area financial contributions are required to mitigate increased recreational disturbance on coastal SPAs and Ramsar Sites. Check with Local Planning Authority.**
2	On site	**Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines Minerals, Oil and Gas - Planning applications for quarries: new proposals or extensions, outside or extending outside existing settlements/urban areas affecting greenspace, farmland or semi natural habitats. Oil & gas exploration/extraction Rural non-residential - Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha. Residential - Residential development of 500 units or more. Rural residential - Any residential development of 50 or more houses outside existing settlements/urban areas. Air pollution - Any development that could cause AIR POLLUTION (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons/manure stores). Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Notes: For new residential development in this area financial contributions are required to mitigate increased recreational disturbance on coastal SPAs and Ramsar Sites. Check with Local Planning Authority.**

ID	Location	Type of developments requiring consultation
3	**On site**	**All applications - All Planning Applications (Except Householder) Outside Or Extending Outside Existing Settlements/urban Areas Affecting Greenspace, Farmland, Semi Natural Habitats Or Landscape Features Such As Trees, Hedges, Streams, Rural Buildings/structures** **Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals** **Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines** **Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.** **Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha** **Residential - Residential development of 10 units or more.** **Rural residential - Any residential development of 10 or more houses outside existing settlements/urban areas.** **Air pollution - Any development that could cause AIR POLLUTION or DUST either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons/manure stores).** **Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.** **Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management** **Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.** **Notes: For new residential development in this area financial contributions are required to mitigate increased recreational disturbance on coastal SPAs and Ramsar Sites. Check with Local Planning Authority.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	**29**

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on **page 59**

ID:	A
Location:	191m NE
SSSI name:	West Blean and Thornden Woods
Unit name:	Daw's Wood - Main
Broad habitat:	Broadleaved, Mixed And Yew Woodland - Lowland
Condition:	Favourable
Reportable features:	

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900

ID: 6
Location: 236m E
SSSI name: West Blean and Thornden Woods
Unit name: Daw's Wood South
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 10
Location: 498m NE
SSSI name: West Blean and Thornden Woods
Unit name: Honey Wood - West
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Favourable	16/03/2013

ID: 11
Location: 549m E
SSSI name: West Blean and Thornden Woods
Unit name: S15 Honey Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 14
Location: 678m E
SSSI name: West Blean and Thornden Woods
Unit name: S15 Honey Wood 2
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Unfavourable - No change	12/07/2010
Invert. assemblage A1 arboreal canopy	Unfavourable - No change	12/07/2010
Lowland mixed deciduous woodland	Unfavourable - No change	12/07/2010
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Unfavourable - No change	12/07/2010

ID: B
Location: 680m NE
SSSI name: West Blean and Thornden Woods
Unit name: Mintey's Wood And Sheafs Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900

Feature name	Feature condition	Date of assessment
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 16
Location: 714m NE
SSSI name: West Blean and Thornden Woods
Unit name: Se Corner Of Sheafs Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Favourable	16/03/2013

ID: 26
Location: 978m NE
SSSI name: West Blean and Thornden Woods
Unit name: Mintey's Wood And Sheafs Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 27
Location: 988m NE
SSSI name: West Blean and Thornden Woods
Unit name: Mintey's Wood And Sheafs Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 31
Location: 1102m NE
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (West)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Unfavourable - Recovering	12/07/2010
Invert. assemblage A1 arboreal canopy	Unfavourable - Recovering	12/07/2010
Invert. assemblage F2 grassland & scrub matrix	Unfavourable - Recovering	12/07/2010
Lowland mixed deciduous woodland	Unfavourable - Recovering	12/07/2010
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Unfavourable - Recovering	12/07/2010

ID: 33
Location: 1116m SW
SSSI name: Church Woods, Blean
Unit name: East Of Church Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	05/08/2005

ID: 37
Location: 1146m NE
SSSI name: West Blean and Thornden Woods
Unit name: Cane Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 38
Location: 1154m NE
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (West)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Unfavourable - Recovering	12/07/2010
Invert. assemblage A1 arboreal canopy	Unfavourable - Recovering	12/07/2010
Invert. assemblage F2 grassland & scrub matrix	Unfavourable - Recovering	12/07/2010
Lowland mixed deciduous woodland	Unfavourable - Recovering	12/07/2010
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Unfavourable - Recovering	12/07/2010

ID: 39
Location: 1157m W
SSSI name: Church Woods, Blean
Unit name: East Of Nnr
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable

Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	21/01/2004

ID: 43
Location: 1210m W
SSSI name: Church Woods, Blean
Unit name: Adjacent To Caravan Site
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	12/06/2013
Lowland mixed deciduous woodland	Favourable	25/06/2013

ID: 44
Location: 1231m W
SSSI name: Church Woods, Blean
Unit name: English Nature - Grimshill (North) And Mincing Woo
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Woodland	Favourable	11/05/2011
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Favourable	11/05/2011
Lowland beech and yew woodland	Favourable	11/05/2011
Lowland mixed deciduous woodland	Favourable	11/05/2011
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 45
Location: 1250m SW
SSSI name: Church Woods, Blean
Unit name: Church Wood South
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	22/06/2011

ID: 46
Location: 1300m SW
SSSI name: Church Woods, Blean
Unit name: Woodland Trust
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Woodland	Favourable	15/06/2011
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	15/06/2011
Invert. assemblage A1 arboreal canopy	Favourable	15/06/2011
Lowland mixed deciduous woodland	Favourable	15/06/2011
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Favourable	15/06/2011

ID: 48
Location: 1326m NE
SSSI name: West Blean and Thornden Woods
Unit name: 9
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900

Feature name	Feature condition	Date of assessment
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 49
Location: 1405m NE
SSSI name: West Blean and Thornden Woods
Unit name: S15 Honey Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 50
Location: 1453m SW
SSSI name: Church Woods, Blean
Unit name: Church Wood North
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	15/06/2011

ID: -
Location: 1494m E
SSSI name: West Blean and Thornden Woods
Unit name: Little Hall Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900

ID: -
Location: 1498m N
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (West)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Unfavourable - Recovering	12/07/2010
Invert. assemblage A1 arboreal canopy	Unfavourable - Recovering	12/07/2010
Invert. assemblage F2 grassland & scrub matrix	Unfavourable - Recovering	12/07/2010
Lowland mixed deciduous woodland	Unfavourable - Recovering	12/07/2010
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Unfavourable - Recovering	12/07/2010

ID: -
Location: 1747m W
SSSI name: Church Woods, Blean
Unit name: North Of Nnr 2 (Anderson)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	21/01/2004

ID: -
Location: 1828m N
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (North West)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: -
Location: 1919m E
SSSI name: West Blean and Thornden Woods
Unit name: Barton Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: -
Location: 1936m N
SSSI name: West Blean and Thornden Woods
Unit name: Lypeatt Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Declining
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: -
Location: 1944m NE
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (South East)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

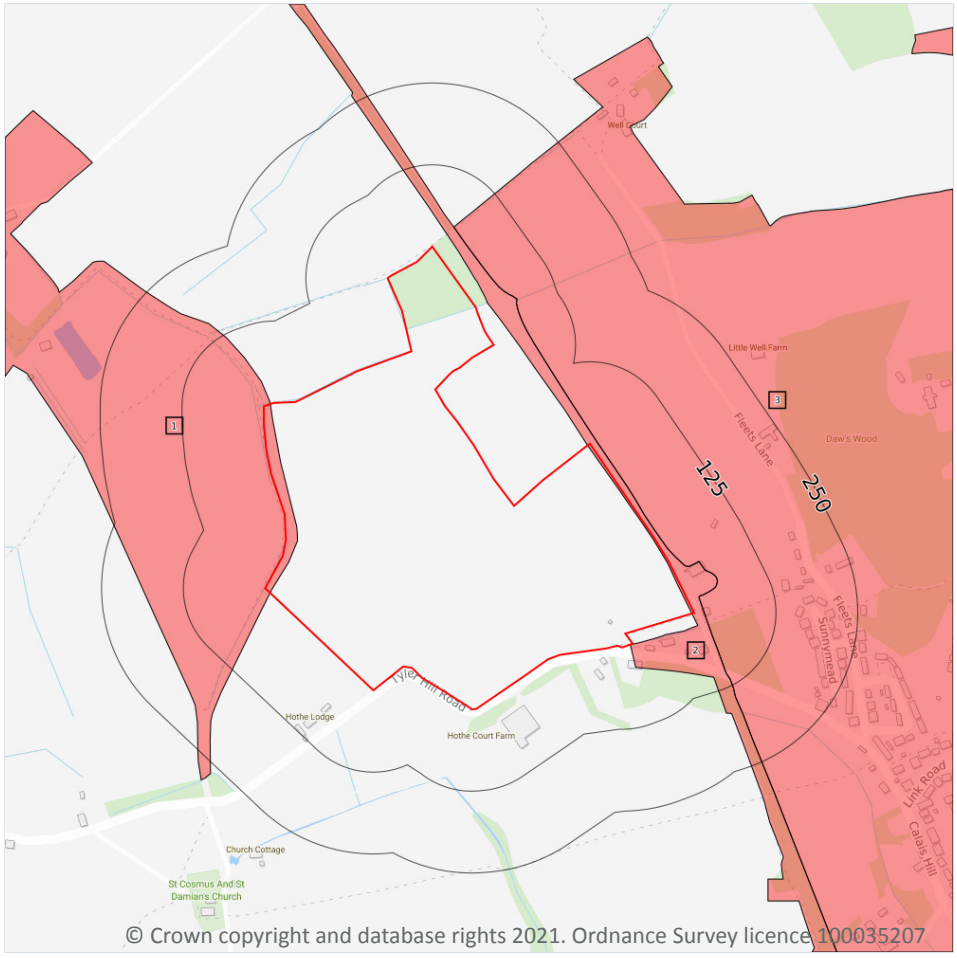
Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: -
Location: 1969m NE
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (North Central)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	3

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 74**

ID	Location	Name	District	Date of designation
1	**On site**	**Amery Court, Blean**	**Canterbury**	**28/02/1995**
2	**On site**	**Canterbury and Whitstable Railway, Hackington and Blean**	**Canterbury**	**28/02/1995**
3	7m NE	Tyler Hill	Canterbury	28/02/1995

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	**0**

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

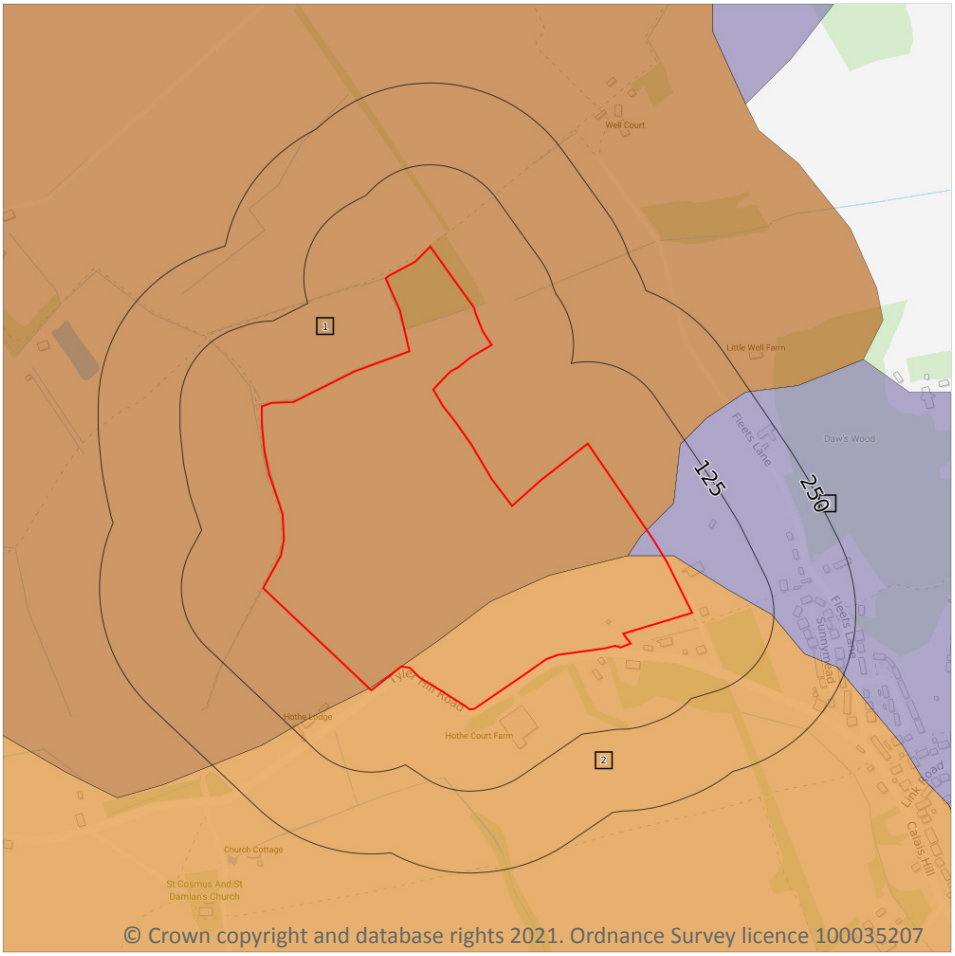
11.7 Registered Parks and Gardens

Records within 250m	**0**

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	3

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 77**

ID	Location	Classification	Description
1	On site	Grade 2	Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.
2	On site	Grade 3	Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.
3	On site	Non Agricultural	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations

Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks
Primary Habitat
Restorable Habitat
Associated Habitats
Habitat Restoration-Creation
Network Enhancement Zone 1
Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	12

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 80**

ID	Location	Main Habitat	Other habitats
1	0m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	24m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	25m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	29m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
A	59m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	63m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
5	92m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	193m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%, ENSIS L1)
7	204m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%, ENSIS L1)
8	209m NE	No main habitat but additional habitats present	Main habitat: DWOOD (INV > 50%)
9	232m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
10	237m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%, ENSIS L1)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	**0**

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	**0**

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

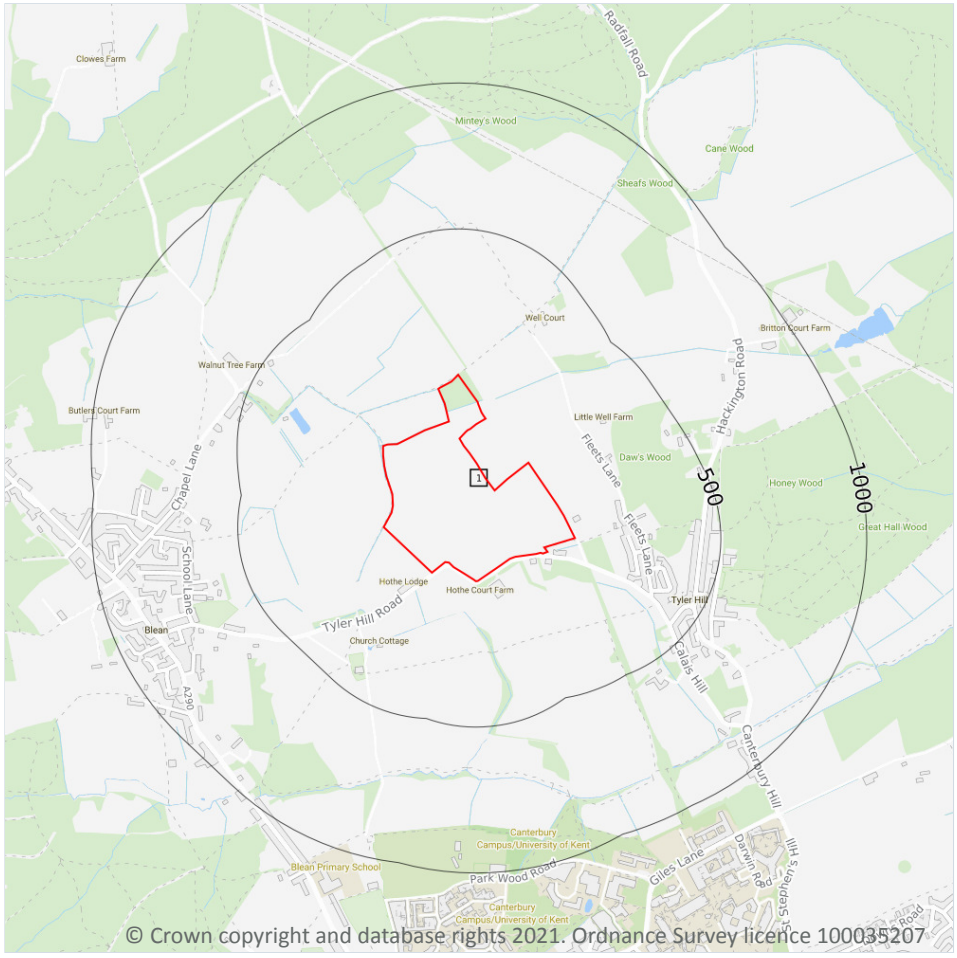
Records within 250m	**0**

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK

Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 83**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	No coverage	No coverage	No coverage	NoCov

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground

14.2 Artificial and made ground (10k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

This data is sourced from the British Geological Survey.

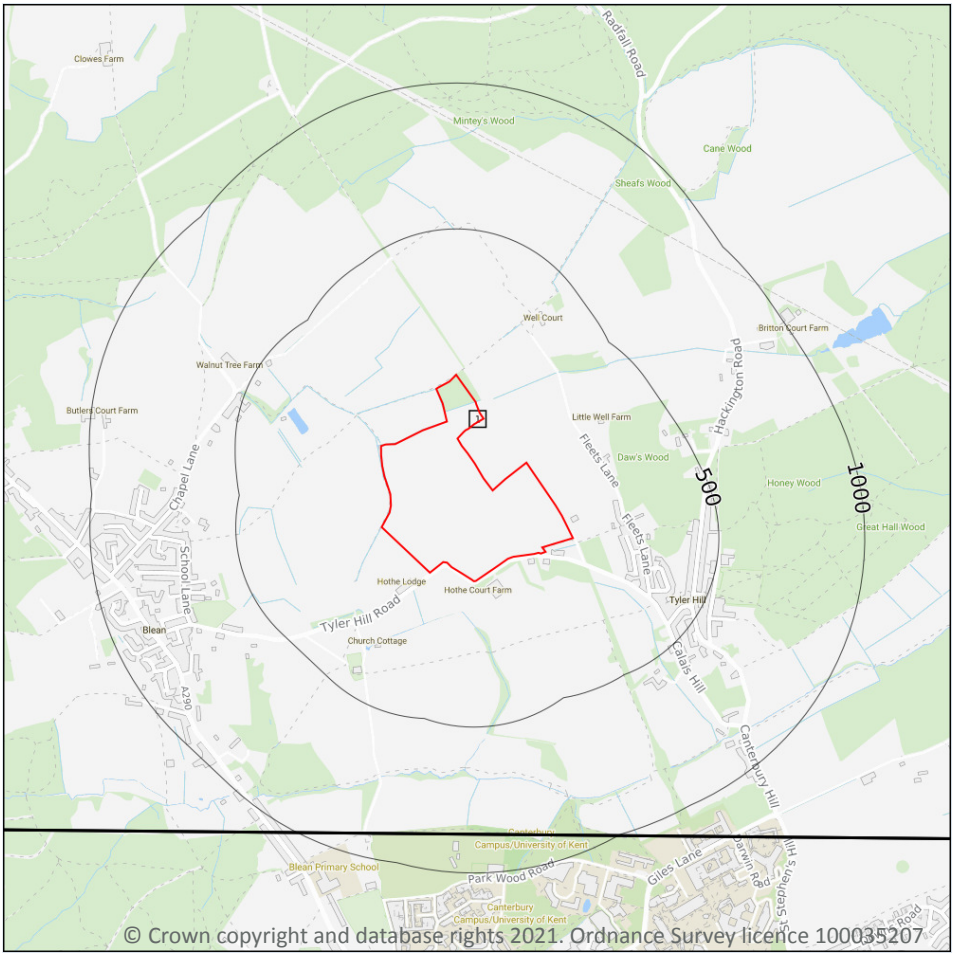
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 87**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**Full**	**EW273_faversham_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground

15.2 Artificial and made ground (50k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

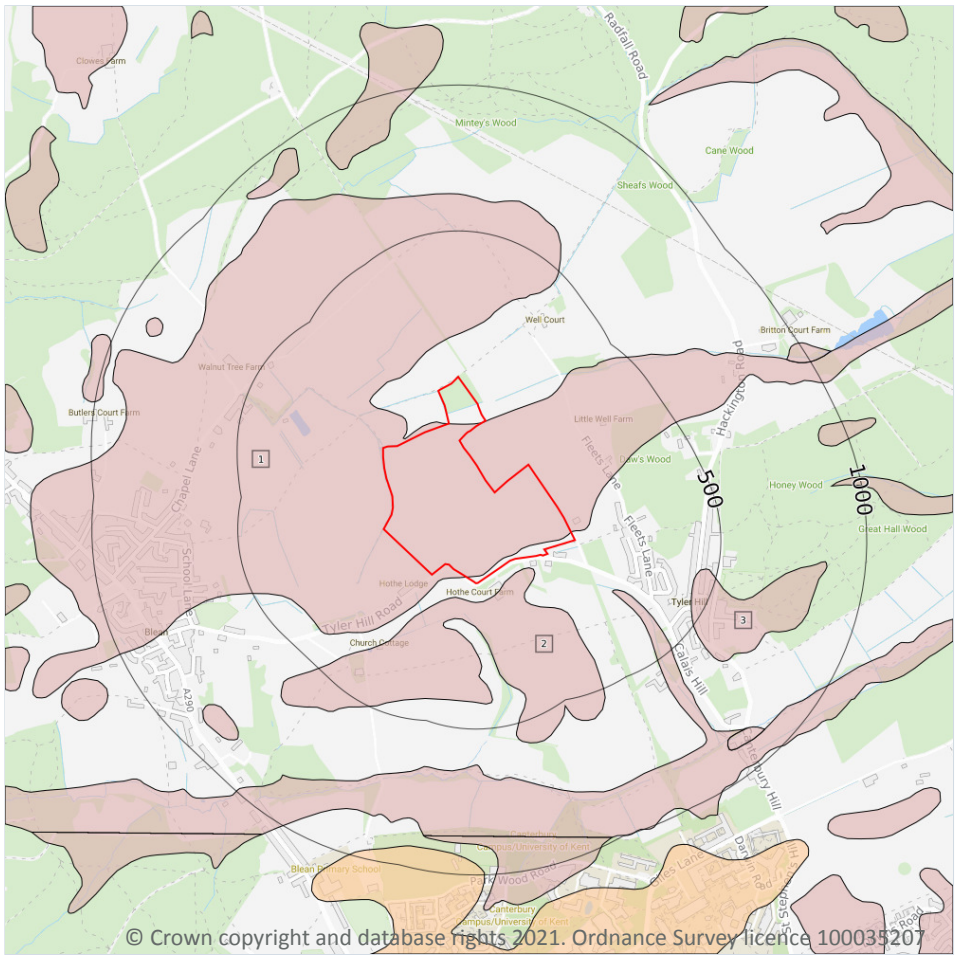
15.3 Artificial ground permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m **3**

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 89**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**HEAD-XCZ**	**HEAD**	**CLAY AND SILT**
2	37m S	HEAD-XVSZC	HEAD	GRAVEL, SAND, SILT AND CLAY
3	430m E	HEAD-XVSZC	HEAD	GRAVEL, SAND, SILT AND CLAY

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	2

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Low**	**Very Low**
37m S	Intergranular	Very High	Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

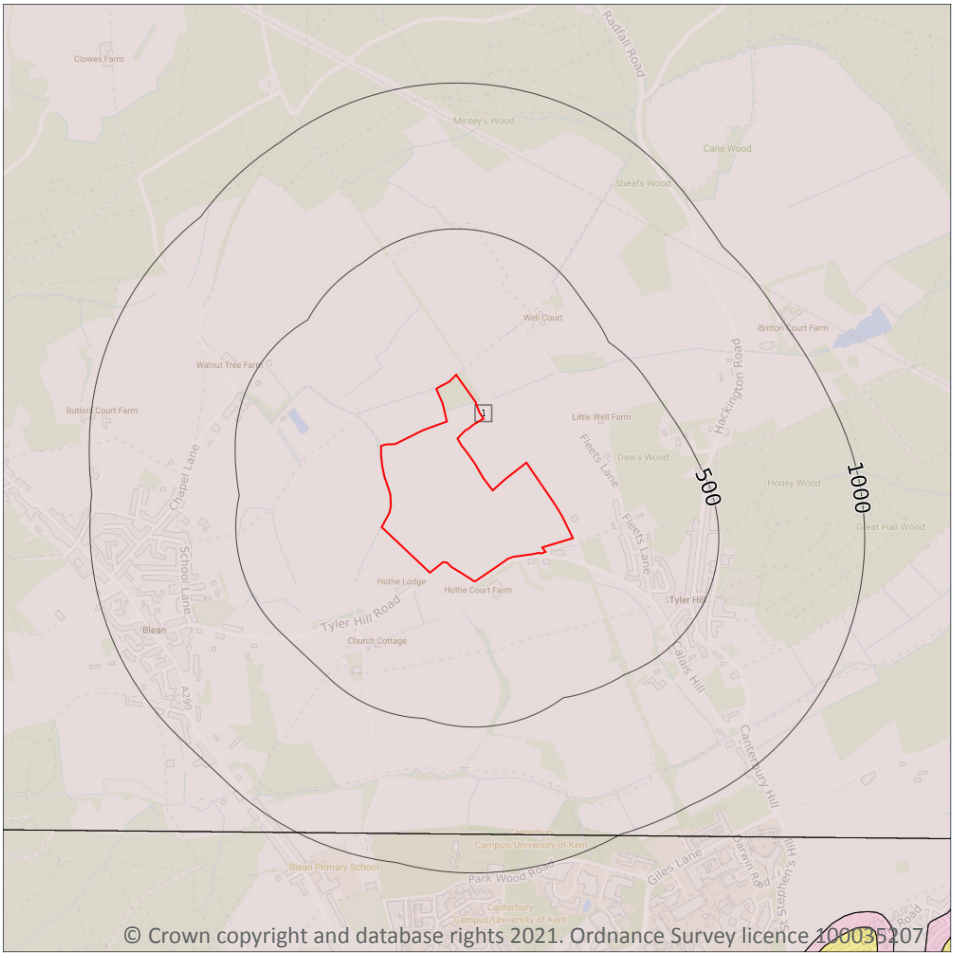
15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m	1

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 91**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**LC-XCZ**	**LONDON CLAY FORMATION - CLAY AND SILT**	**YPRESIAN**

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Low**	**Very Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

16 Boreholes

Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

16.1 BGS Boreholes

Records within 250m	1

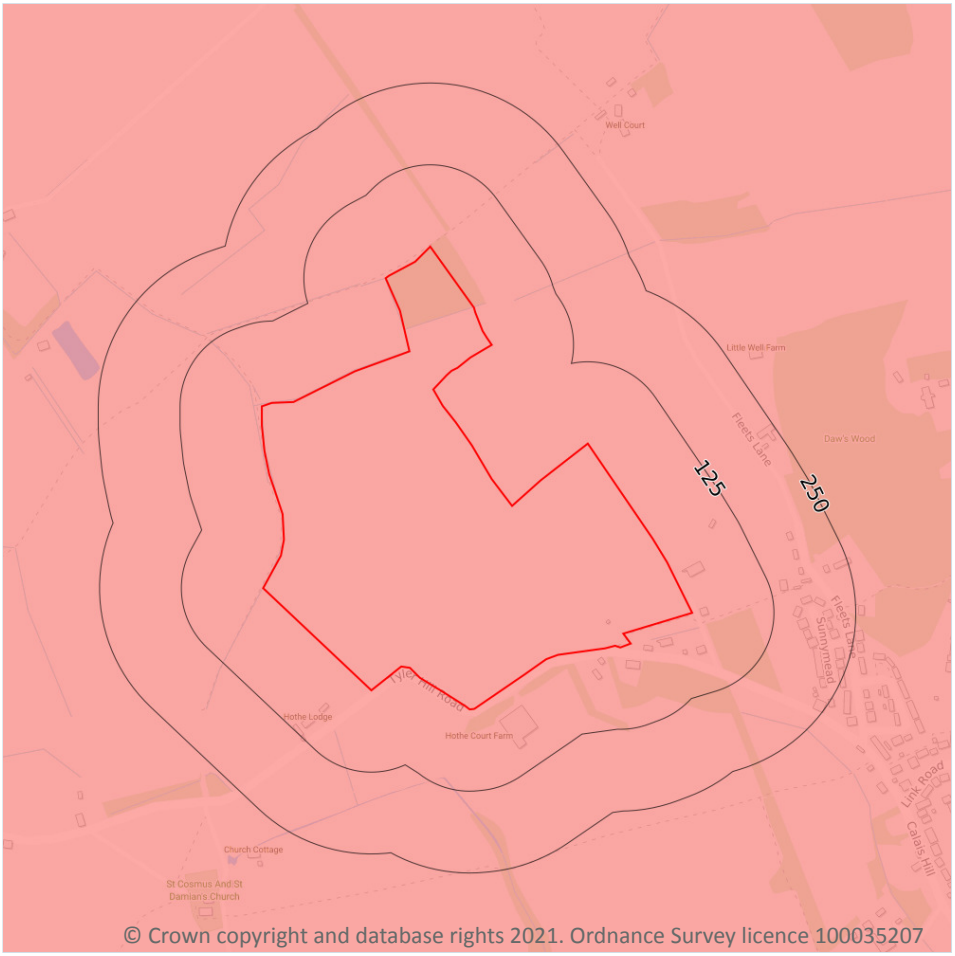
The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 93**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	216m E	613860 161080	21 SUNNYMEAD TYLER HILL CANTERBURY TP1	-	Y	N/A

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	1

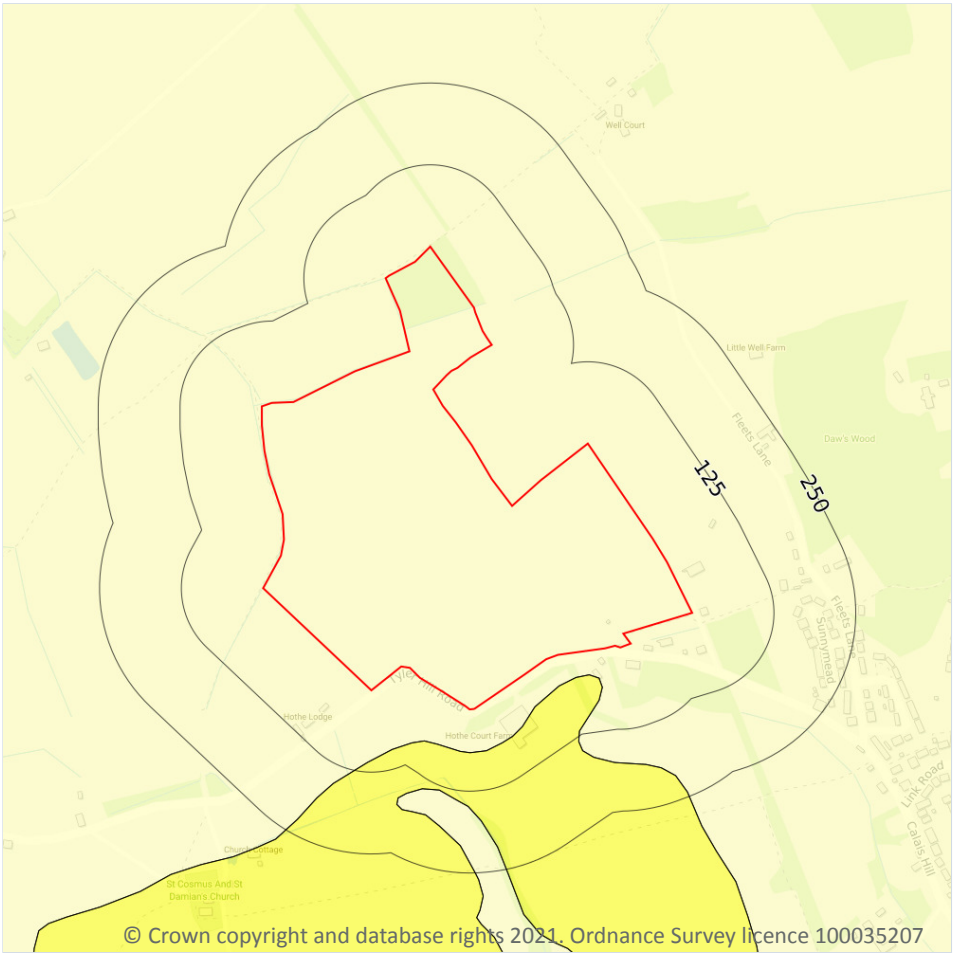
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 94**

Location	Hazard rating	Details
On site	**Moderate**	**Ground conditions predominantly high plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	2

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

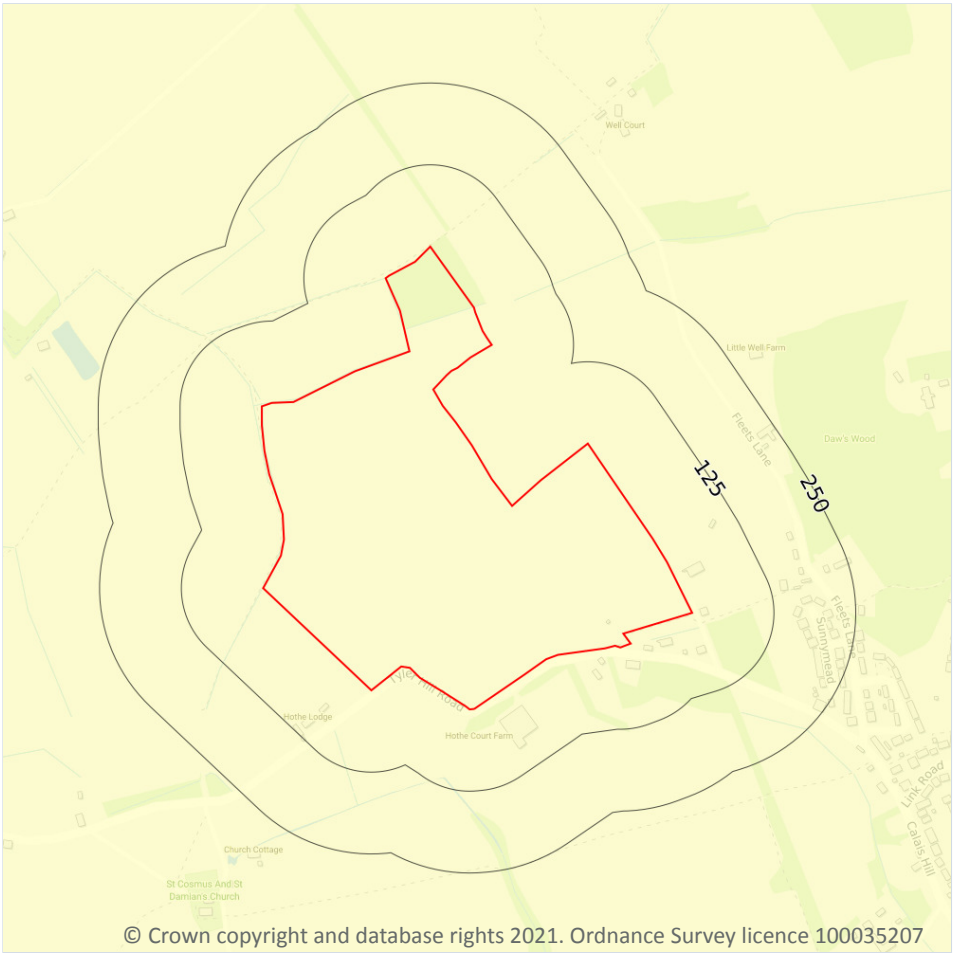
Features are displayed on the Natural ground subsidence - Running sands map on **page 95**

Location	Hazard rating	Details
On site	**Negligible**	**Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.**

Location	Hazard rating	Details
37m S	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	1

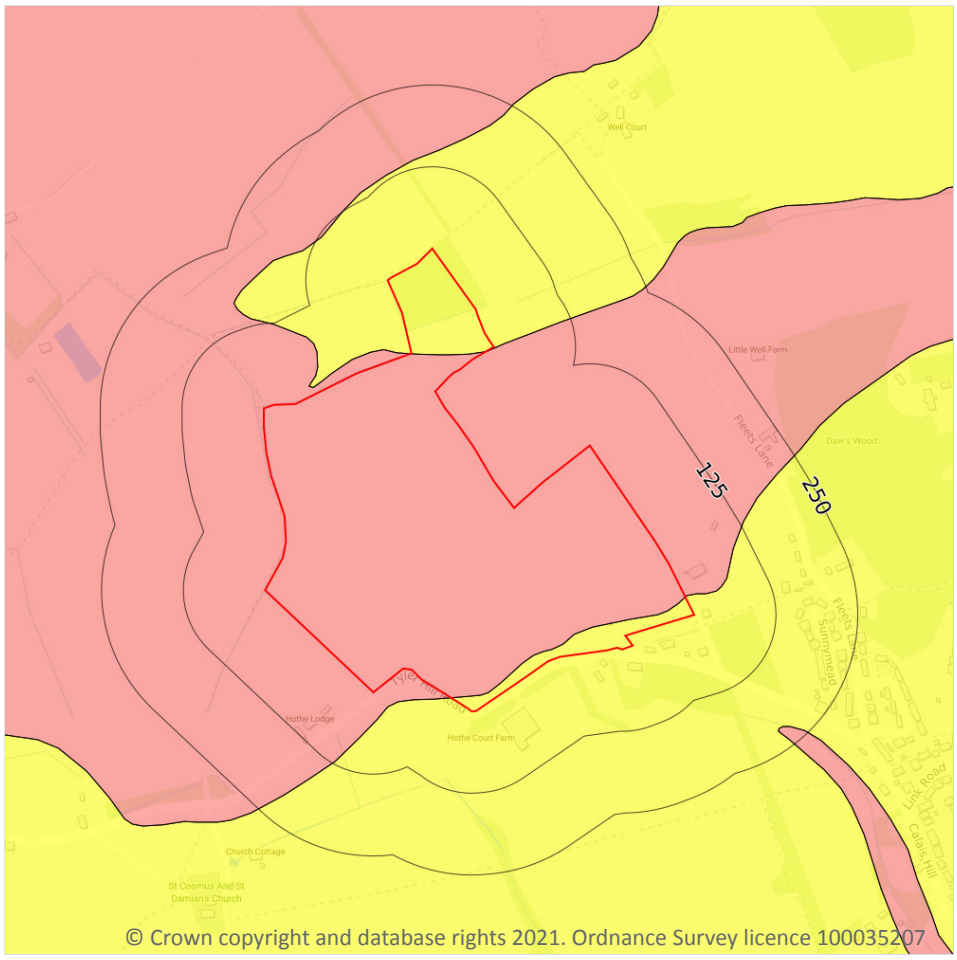
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 97**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	2

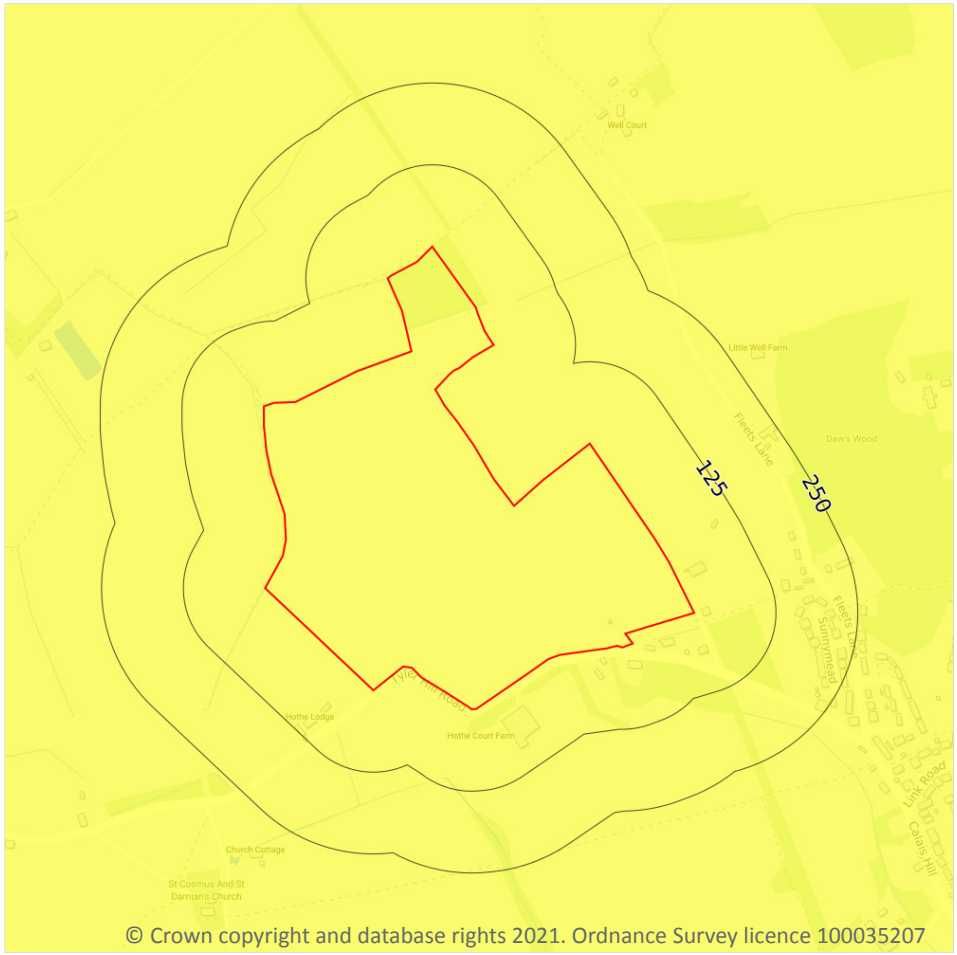
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 98**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**
On site	**Moderate**	**Deposits with potential to collapse when loaded and saturated are probably present in places.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	1

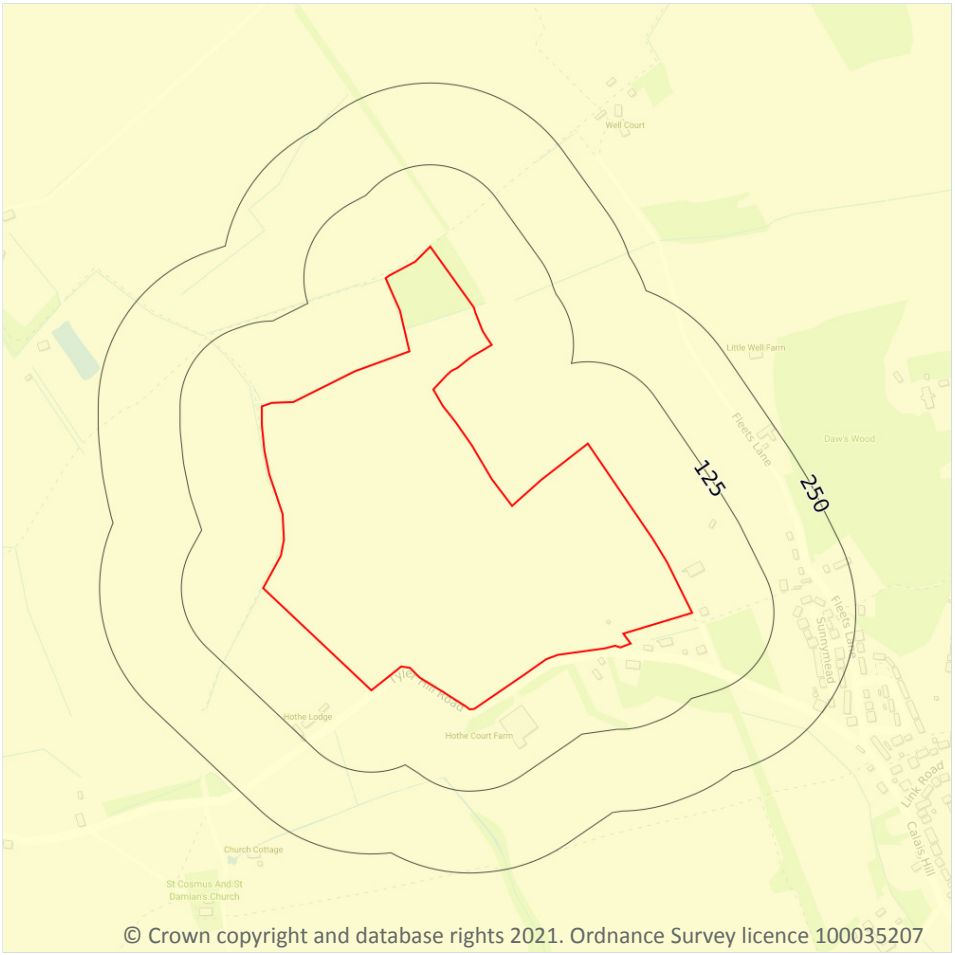
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 99**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	1

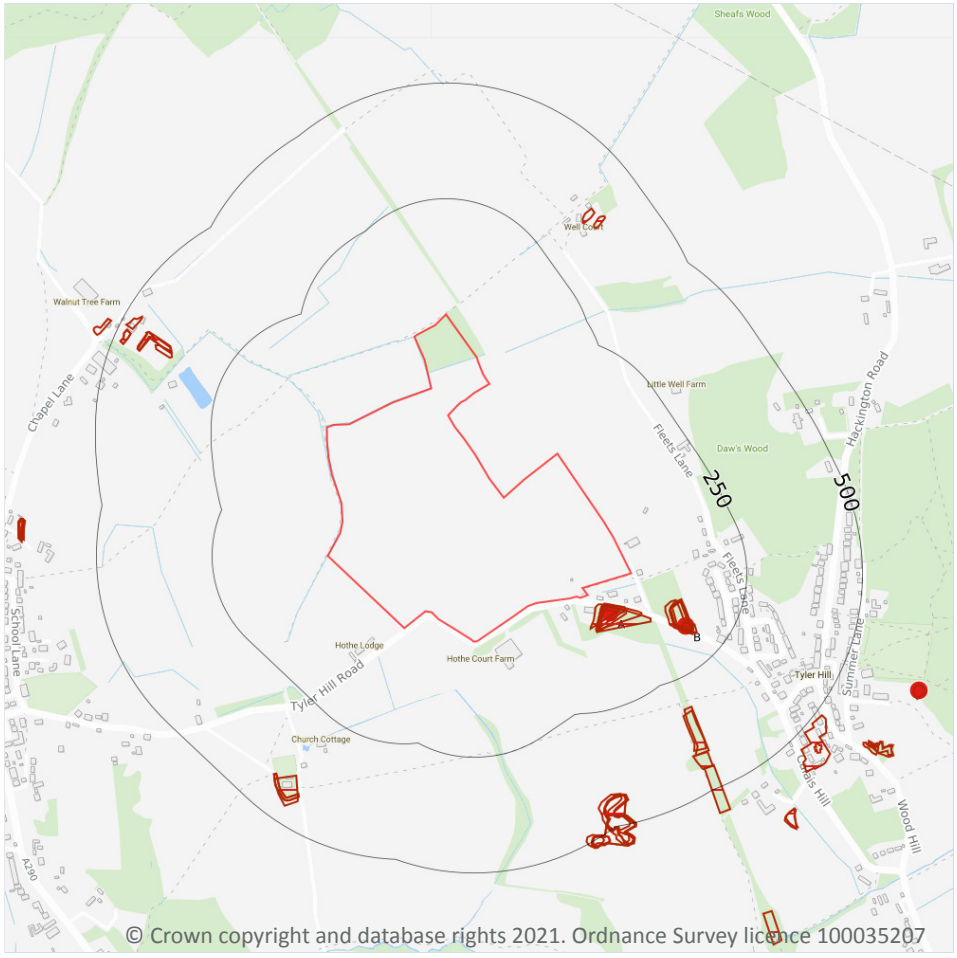
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 100**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



Site Outline

Search buffers in metres (m)

Natural cavities (Area)

Natural cavities (Point)

BritPits

Surface ground workings

Underground workings

Historical Mineral Planning Areas

Mining Cavities

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Peter Brett Associates (PBA).

18.2 BritPits

Records within 500m	2

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining, ground workings and natural cavities map on **page 102**

ID	Location	Details	Description
A	60m SE	Name: Tylerhill Clay Pit Address: Tyler Hill, CANTERBURY, Kent Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
B	163m SE	Name: Tyler Hill Clay Pit Address: Tyler Hill, CANTERBURY, Kent Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	12

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 102**

ID	Location	Land Use	Year of mapping	Mapping scale
A	31m SE	Unspecified Pit	1938	1:10560
A	39m SE	Unspecified Ground Workings	1957	1:10560
A	40m SE	Unspecified Pit	1906	1:10560
A	41m SE	Old Clay Pit	1896	1:10560
A	43m SE	Unspecified Pit	1947	1:10560
A	50m SE	Unspecified Pit	1873	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
B	103m SE	Unspecified Pit	1938	1:10560
B	112m SE	Unspecified Pit	1957	1:10560
B	112m SE	Unspecified Pit	1906	1:10560
B	114m SE	Unspecified Pit	1947	1:10560
B	116m SE	Old Clay Pit	1896	1:10560
B	155m SE	Clay Pit	1873	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	**2**

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

Features are displayed on the Mining, ground workings and natural cavities map on **page 102**

ID	Location	Land Use	Year of mapping	Mapping scale
-	999m SE	Tunnel	1872	1:10560
-	999m SE	Tunnel	1872	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	**0**

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Peter Brett Associates (PBA).

18.8 JPB mining areas

Records on site	0

Areas which could be affected by former coal mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

18.13 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon

© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

19.1 Radon

Records on site	1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 107**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None****

This data is sourced from the British Geological Survey and Public Health England.

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	18

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
10m NW	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
34m NW	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
37m SE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
41m SE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
46m SE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
46m S	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects

Site Outline

Search buffers in metres (m)

- Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 1 Worksites
- Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	1

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 110**

Location	Land Use	Year of mapping	Mapping scale
28m NE	Railway Sidings	1938	2500

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	1

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

Features are displayed on the Railway infrastructure and projects map on **page 110**

Location	Description
20m E	Abandoned

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

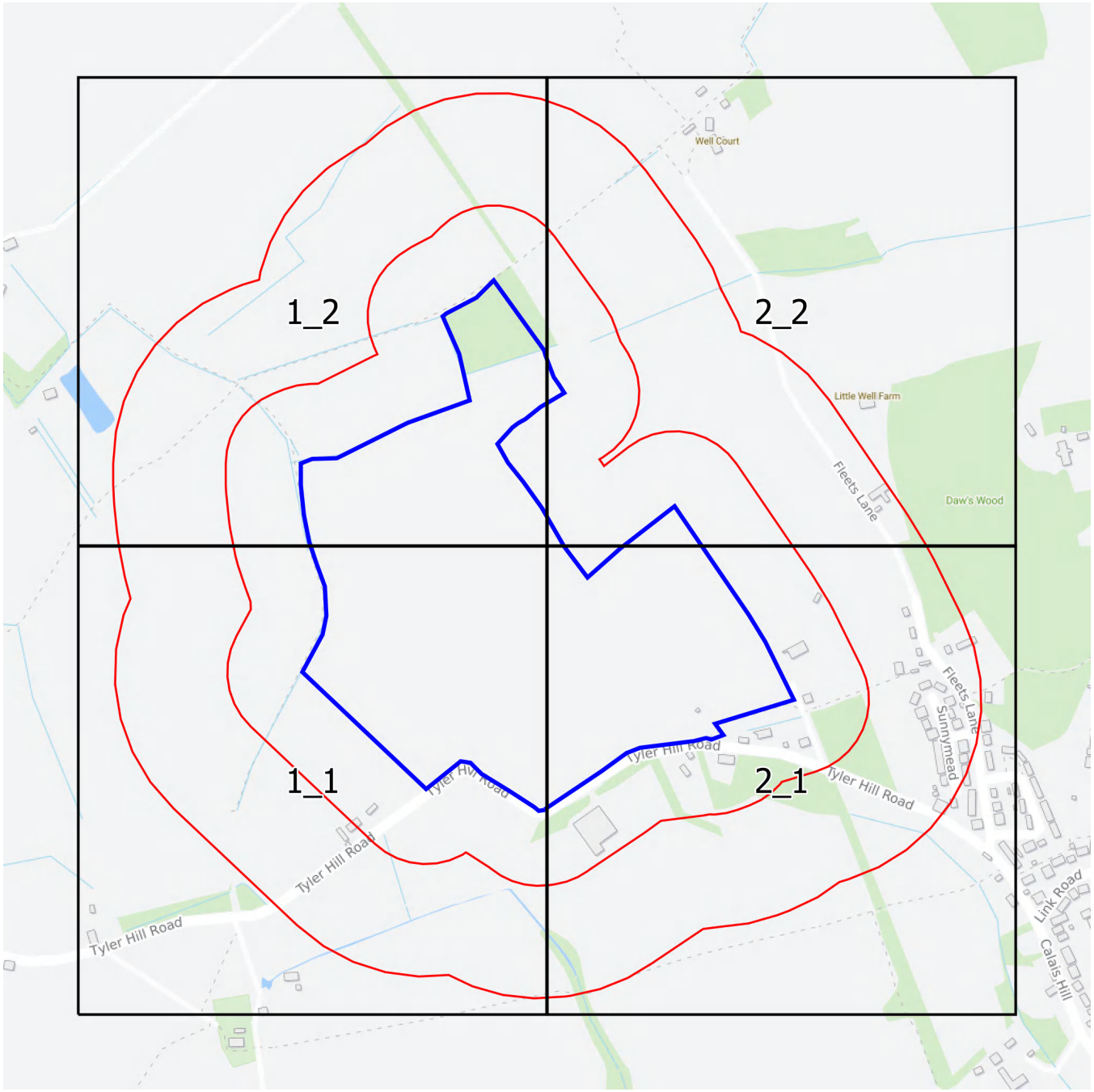
This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

Terms and conditions

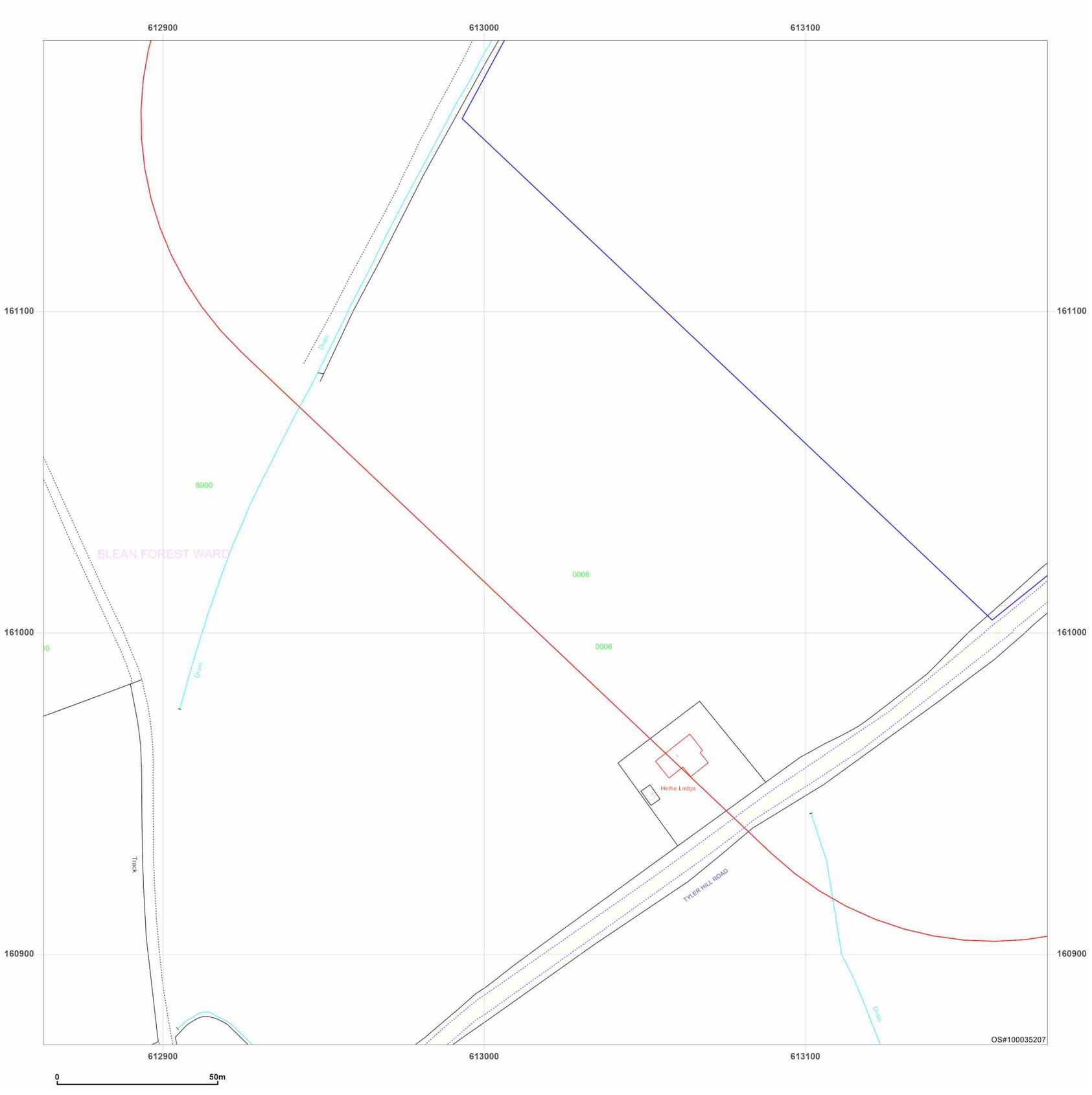
Groundsure's Terms and Conditions can be accessed at this link: https://www.groundsure.com/terms-and-conditions-jan-2020/.



Groundsure INSIGHTS

1:2,500 Scale Grid Index

N
W
E
S



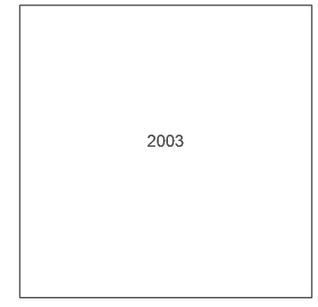
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_1_1
Grid Ref: 613019, 161028

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

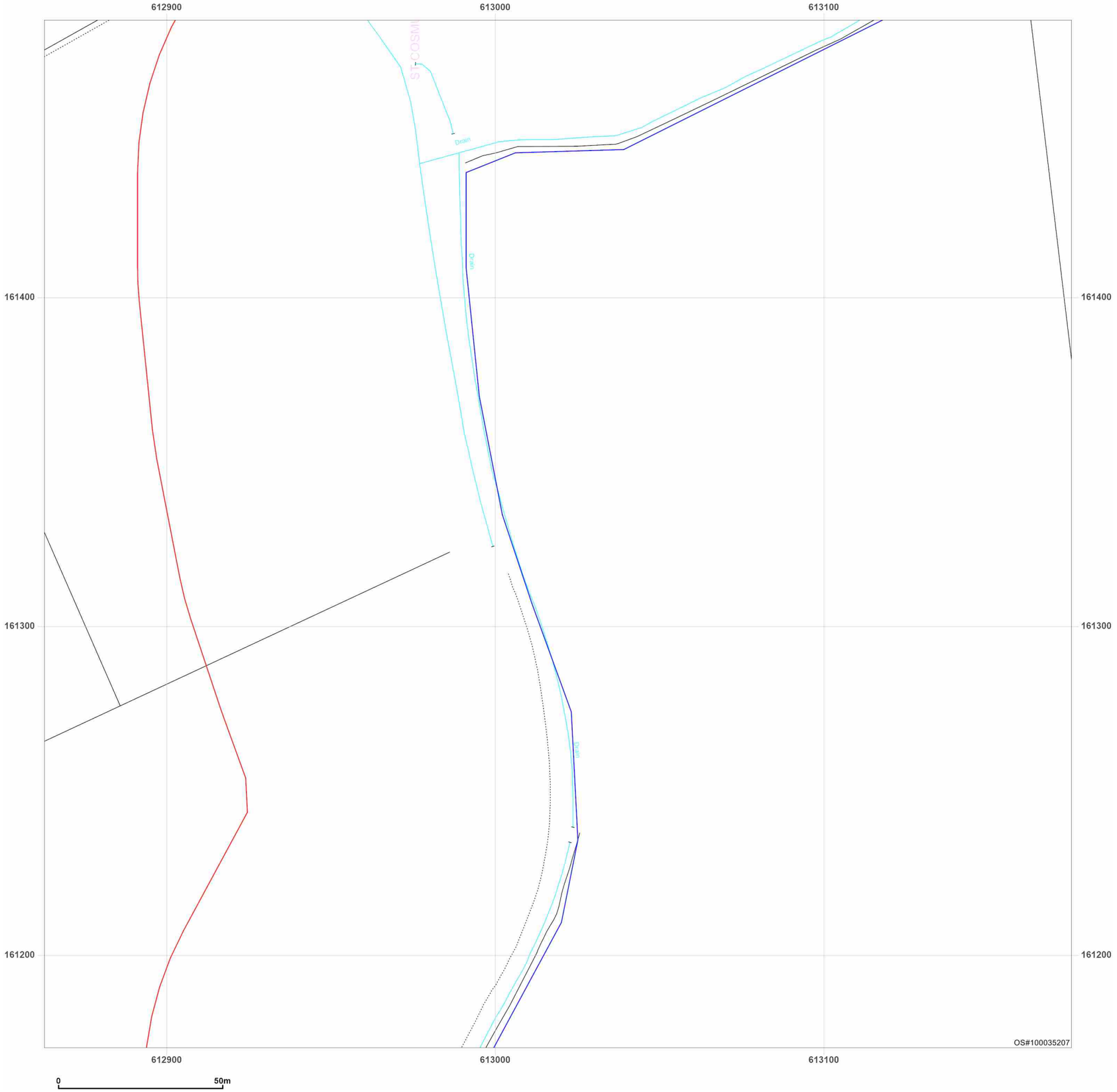
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



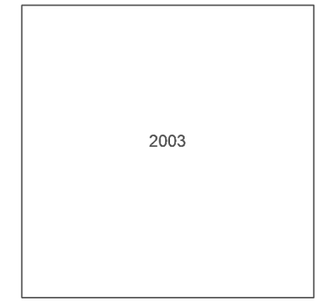
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_1_2
Grid Ref: 613019, 161328

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

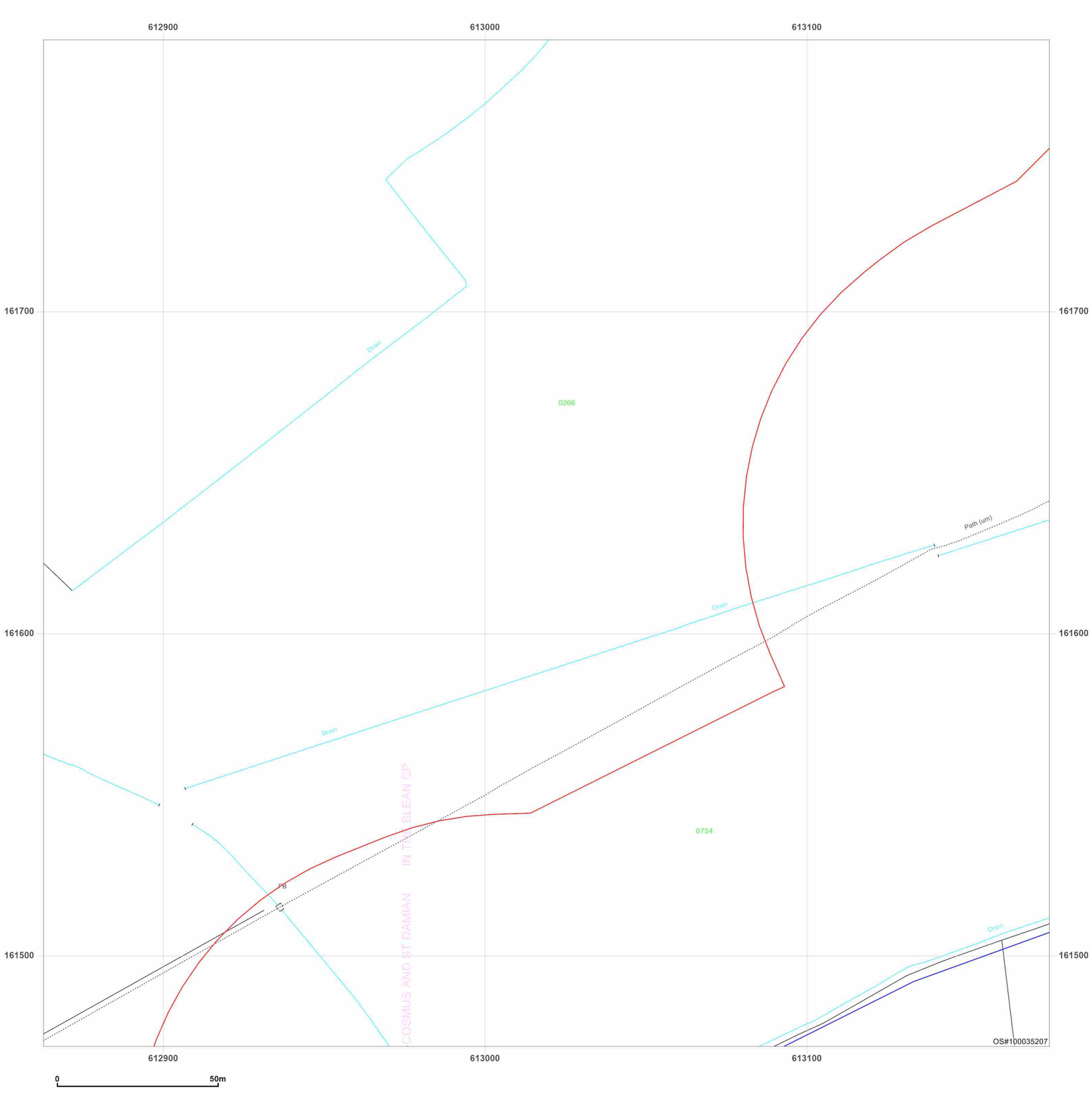
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



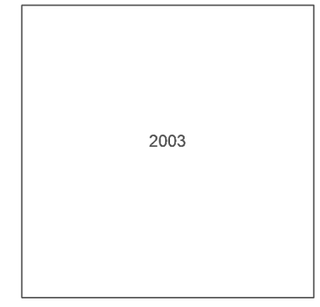
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_1_3
Grid Ref: 613019, 161628

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

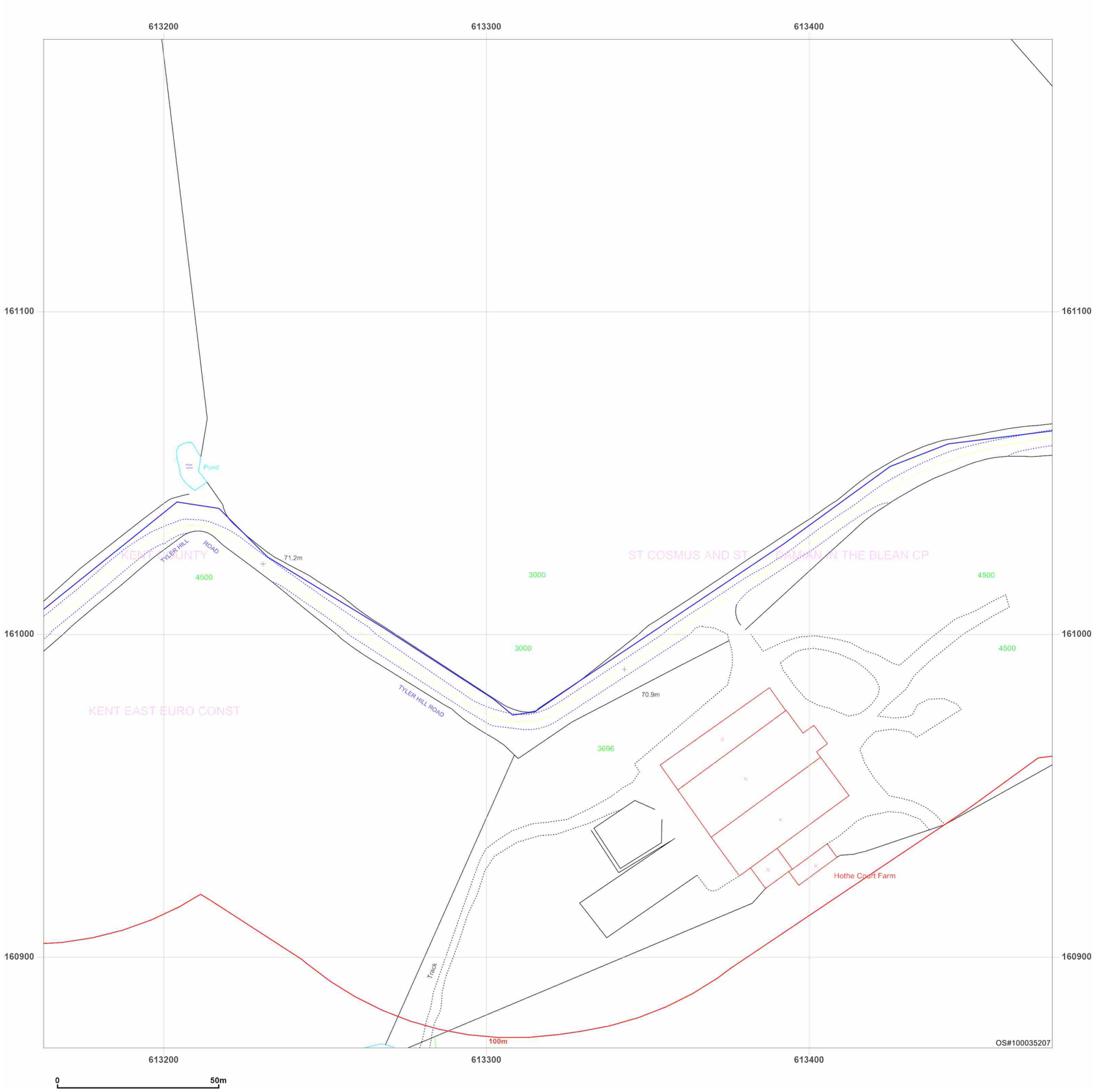
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



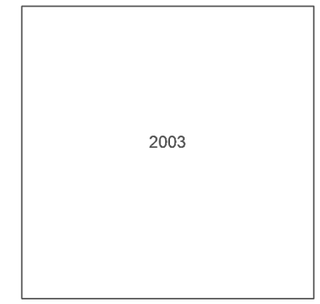
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_2_1
Grid Ref: 613319, 161028

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

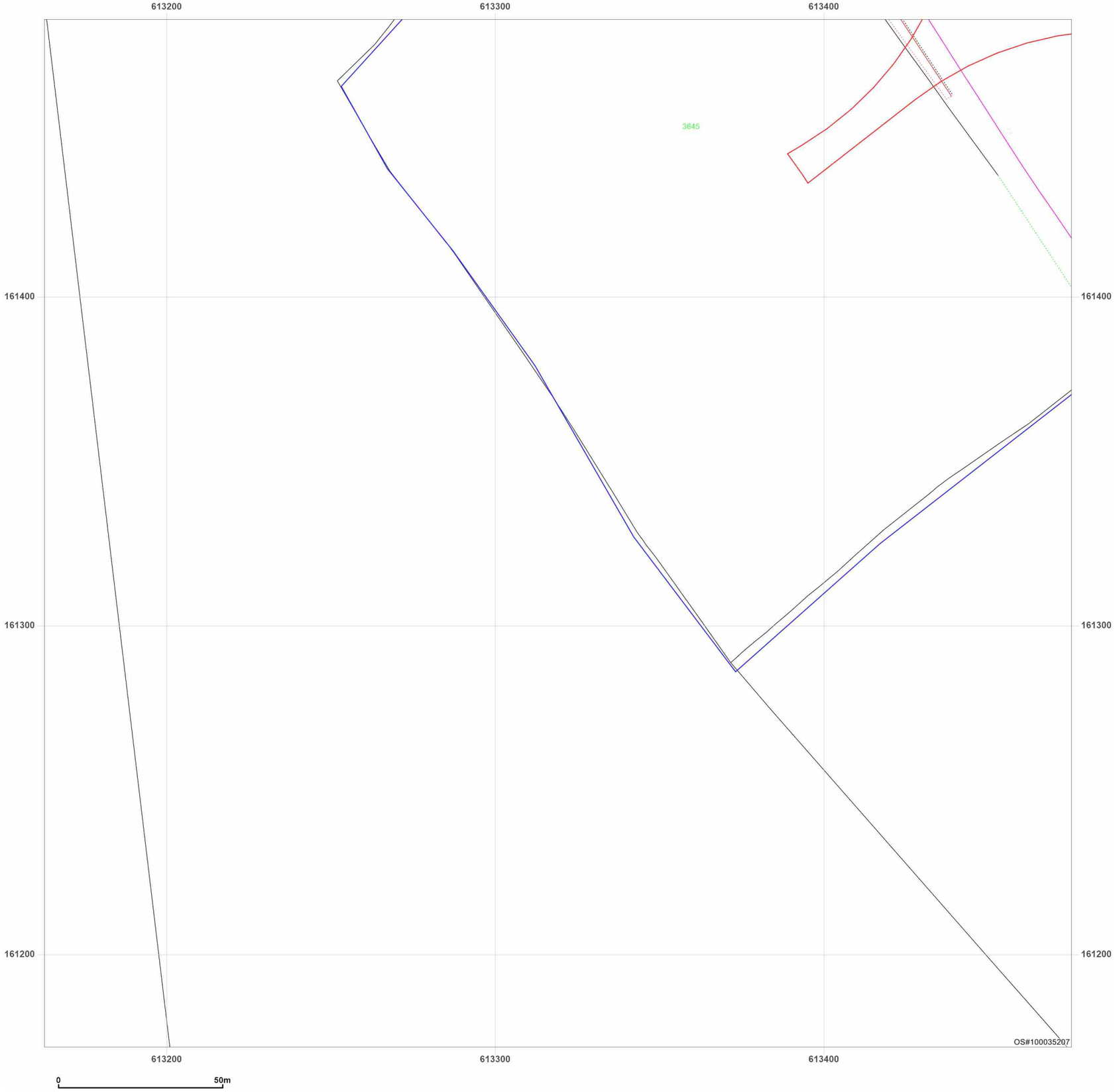
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



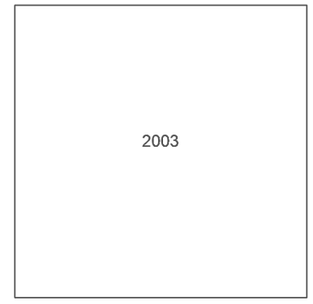
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_2_2
Grid Ref: 613319, 161328

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

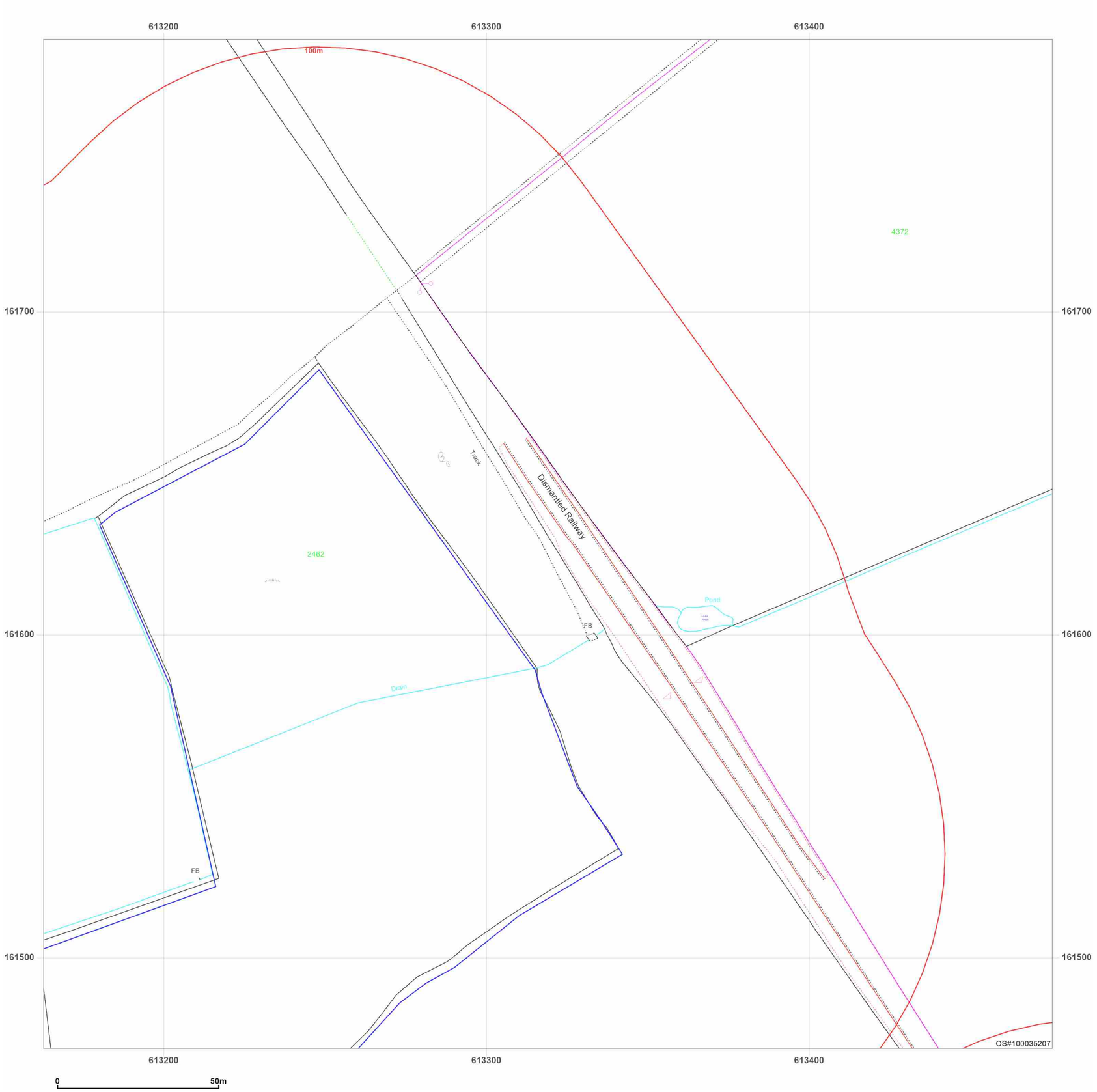
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



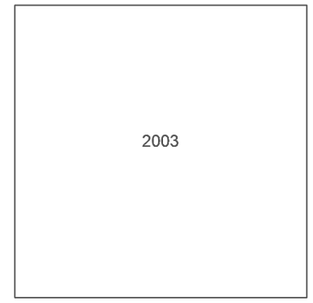
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_2_3
Grid Ref: 613319, 161628

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

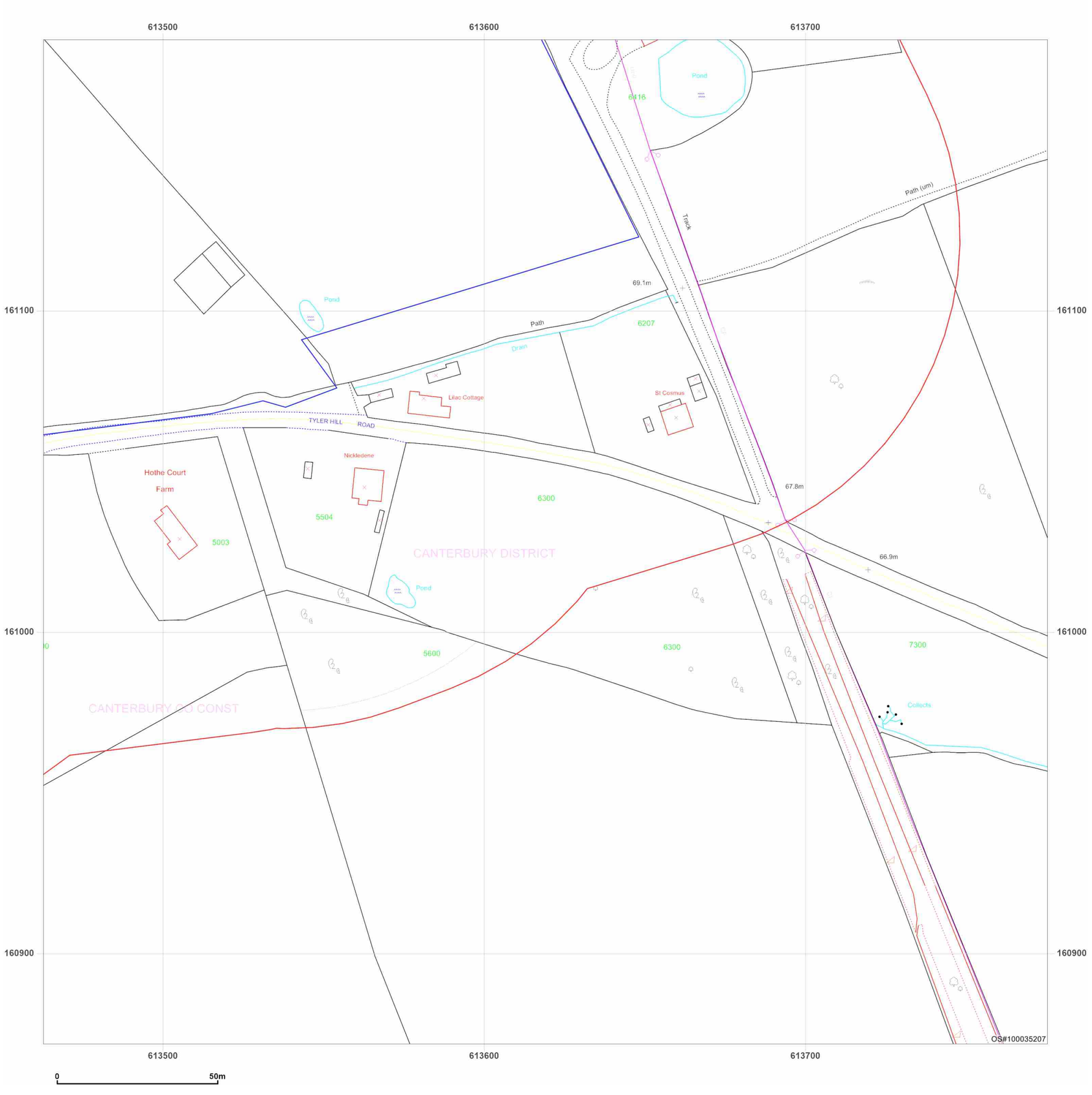
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_3_1
Grid Ref: 613619, 161028

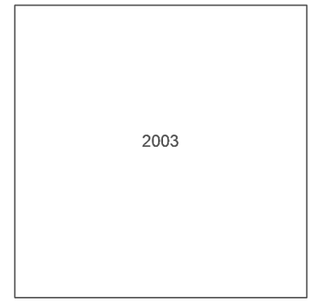
Map Name: LandLine

Map date: **2003**

Scale: 1:1,250

Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

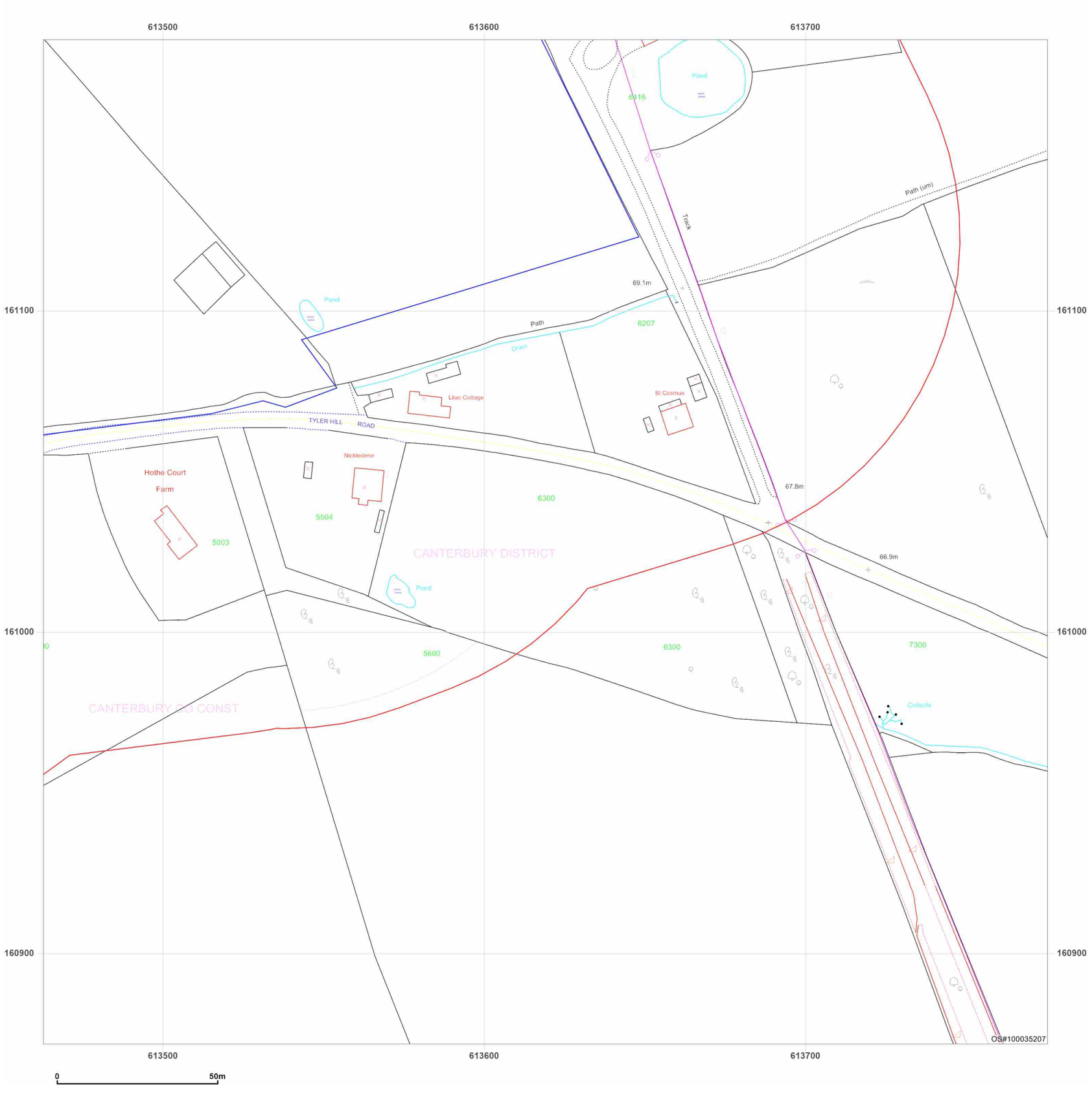
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_3_1
Grid Ref: 613619, 161028

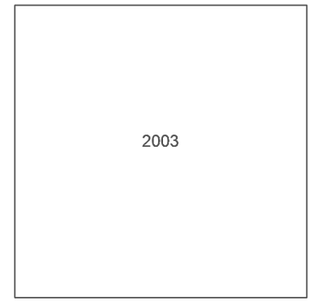
Map Name: LandLine

Map date: **2003**

Scale: 1:1,250

Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

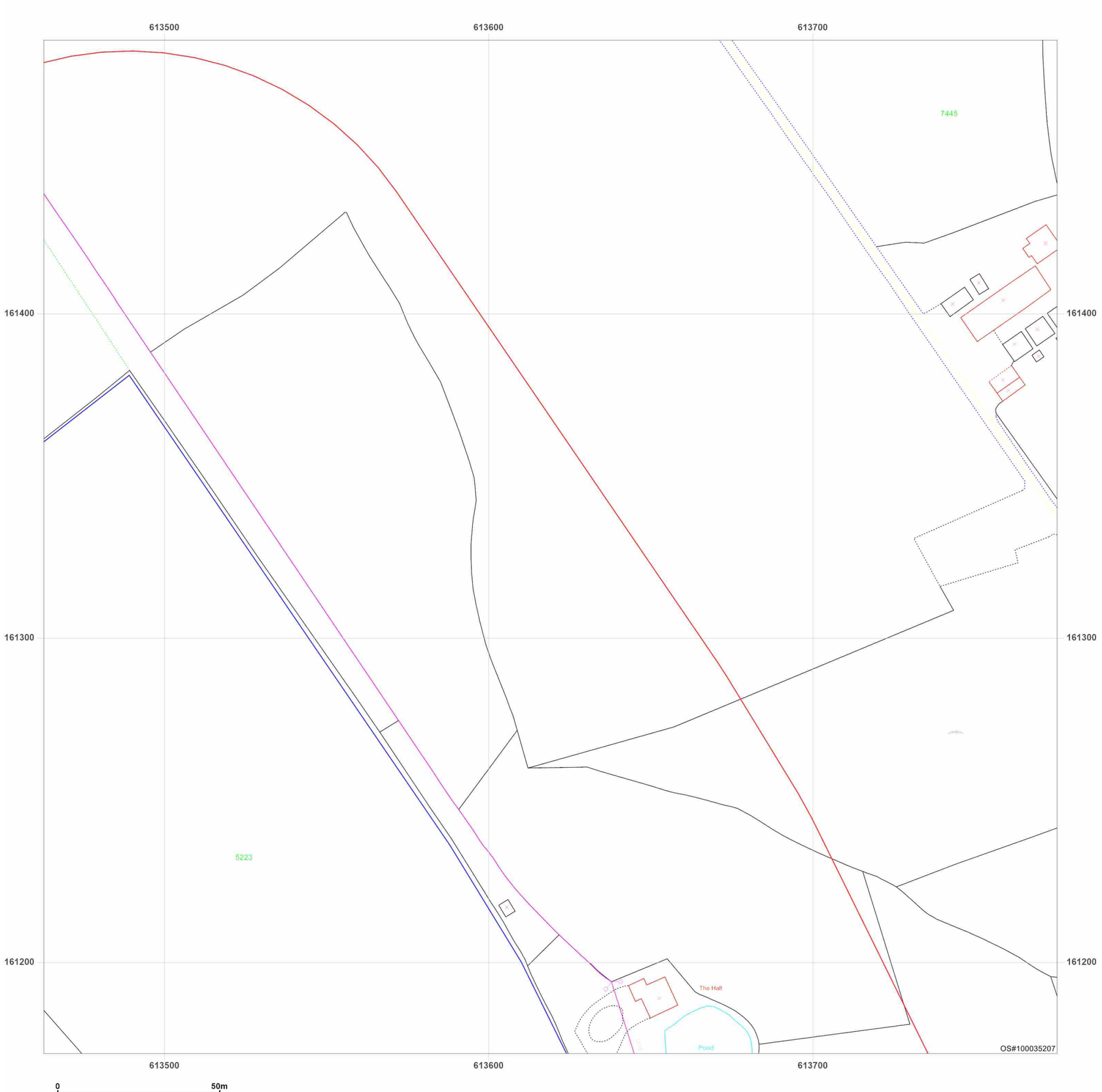
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



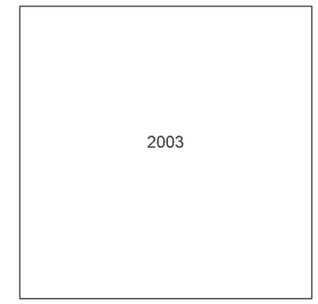
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_3_2
Grid Ref: 613619, 161328

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

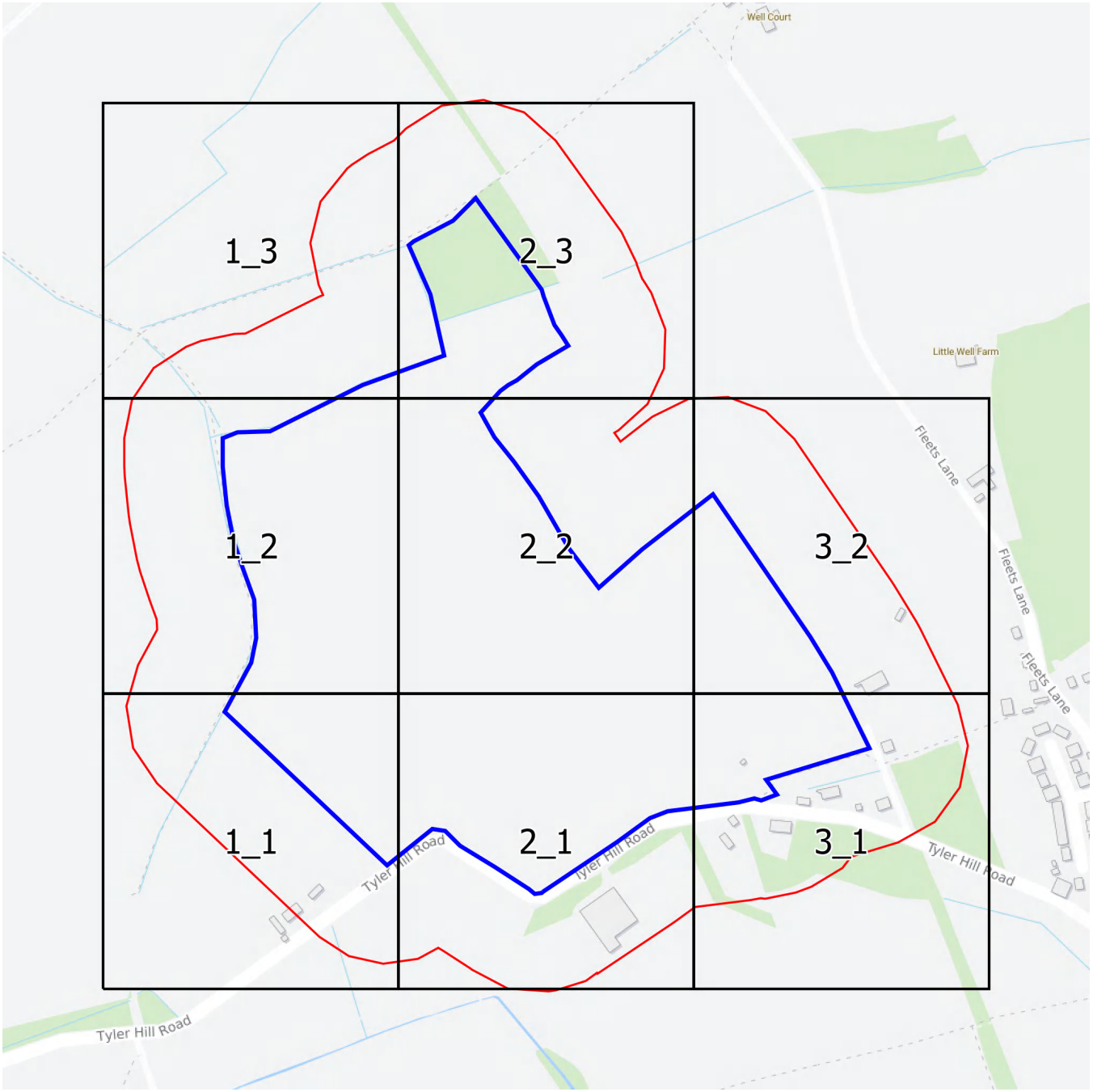
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

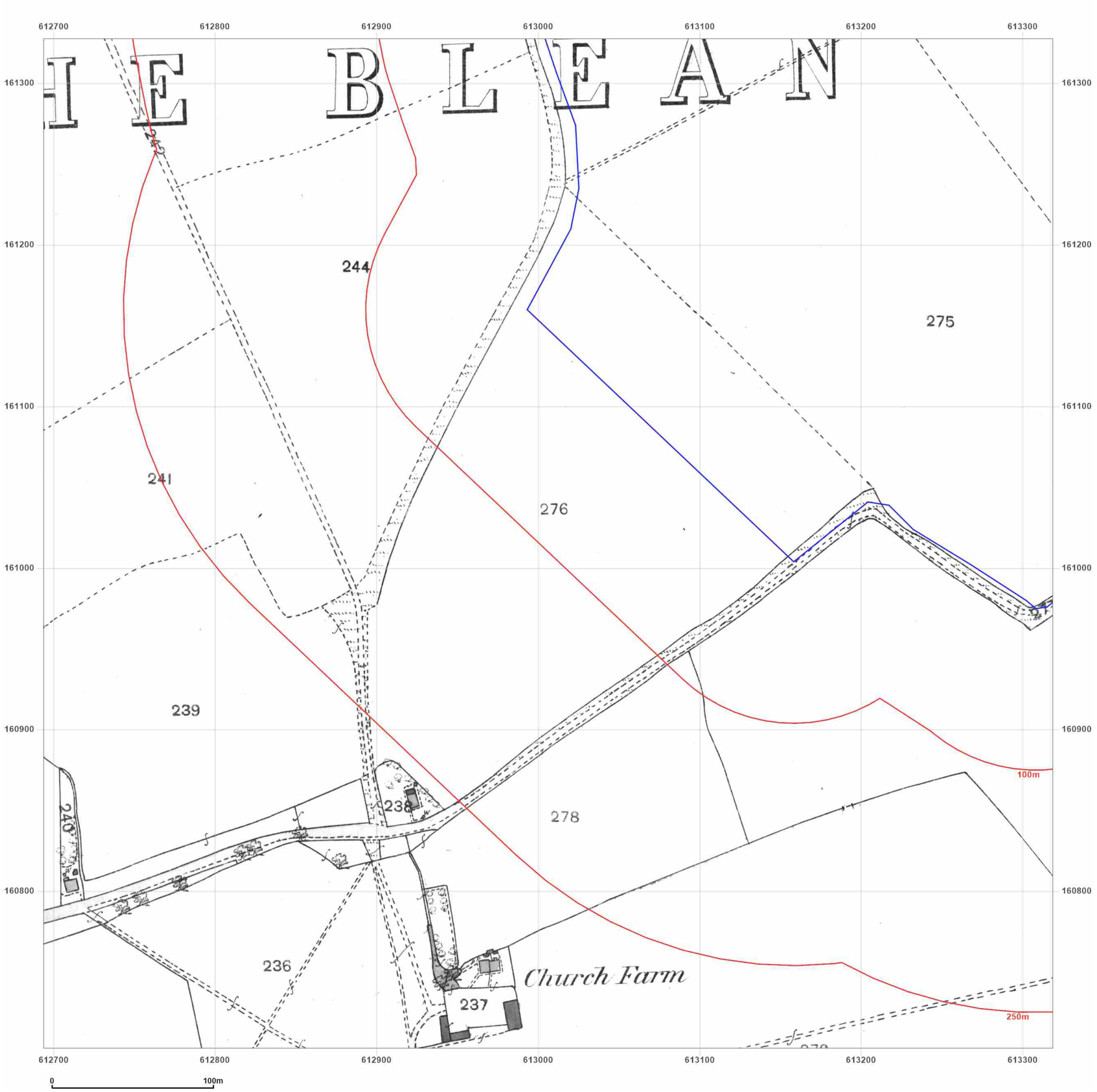
Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Landline Scale Grid Index



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

Map Name: County Series

Map date: **1873**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

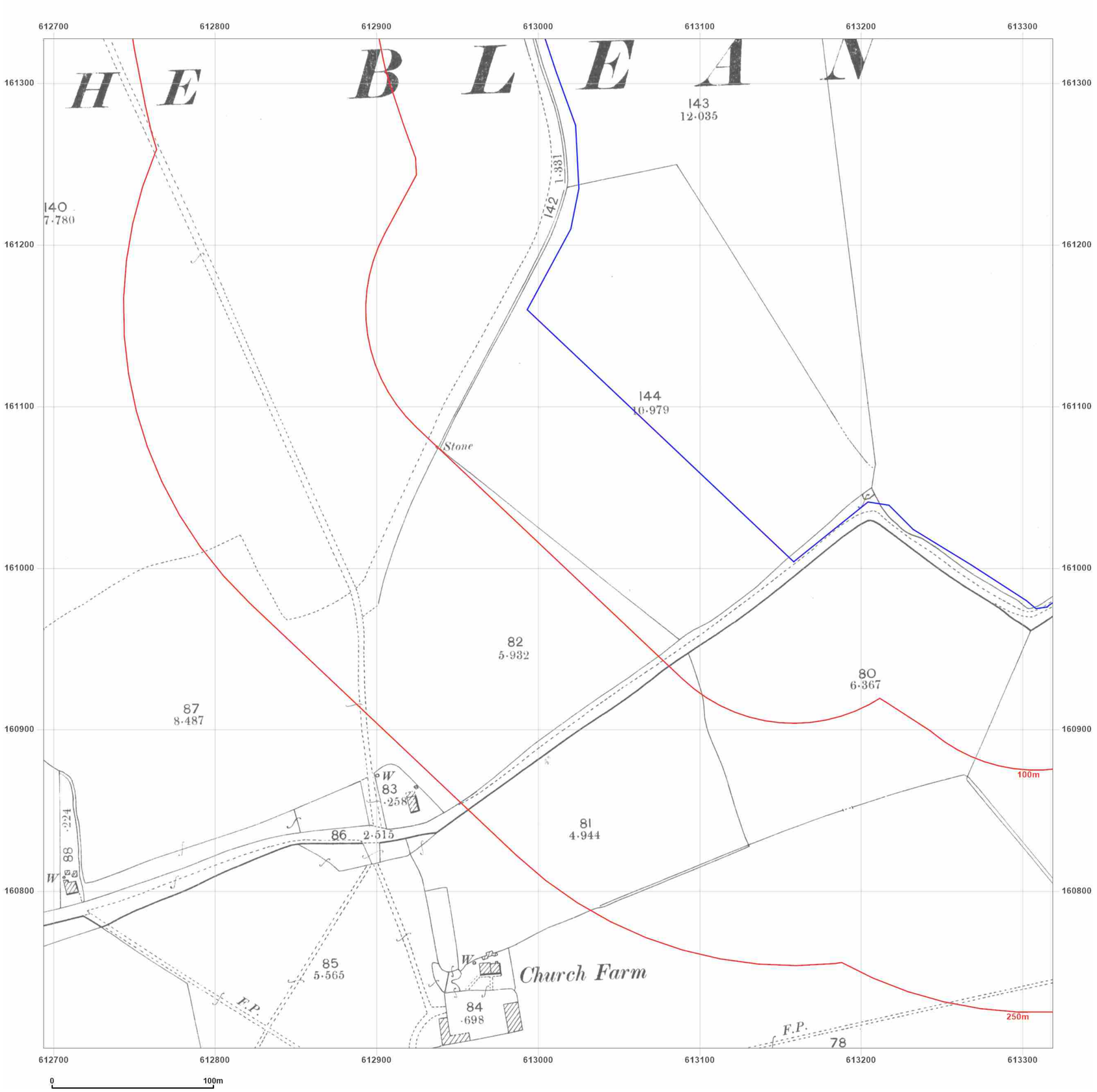
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

Map Name: County Series

Map date: **1898**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

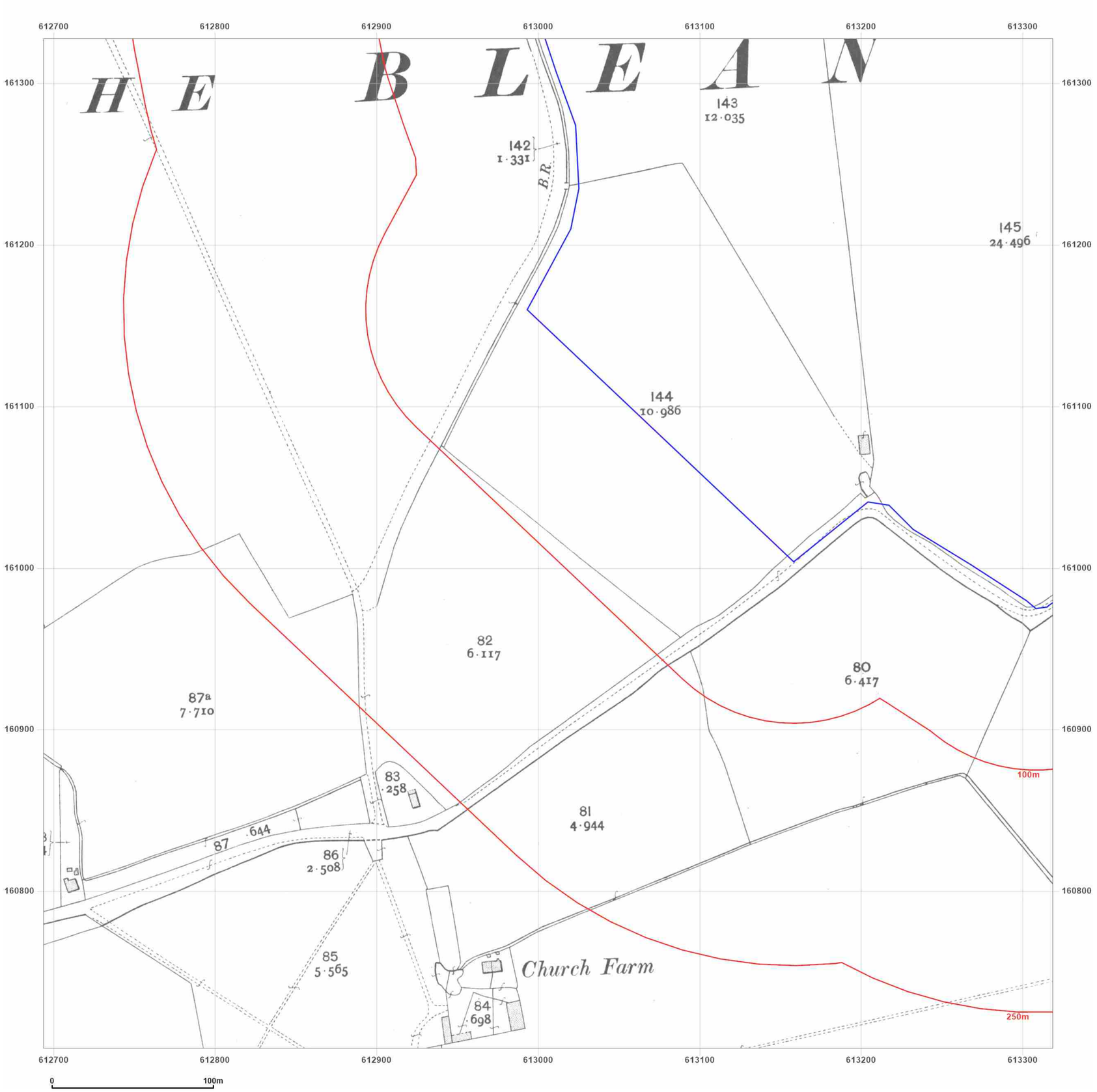
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

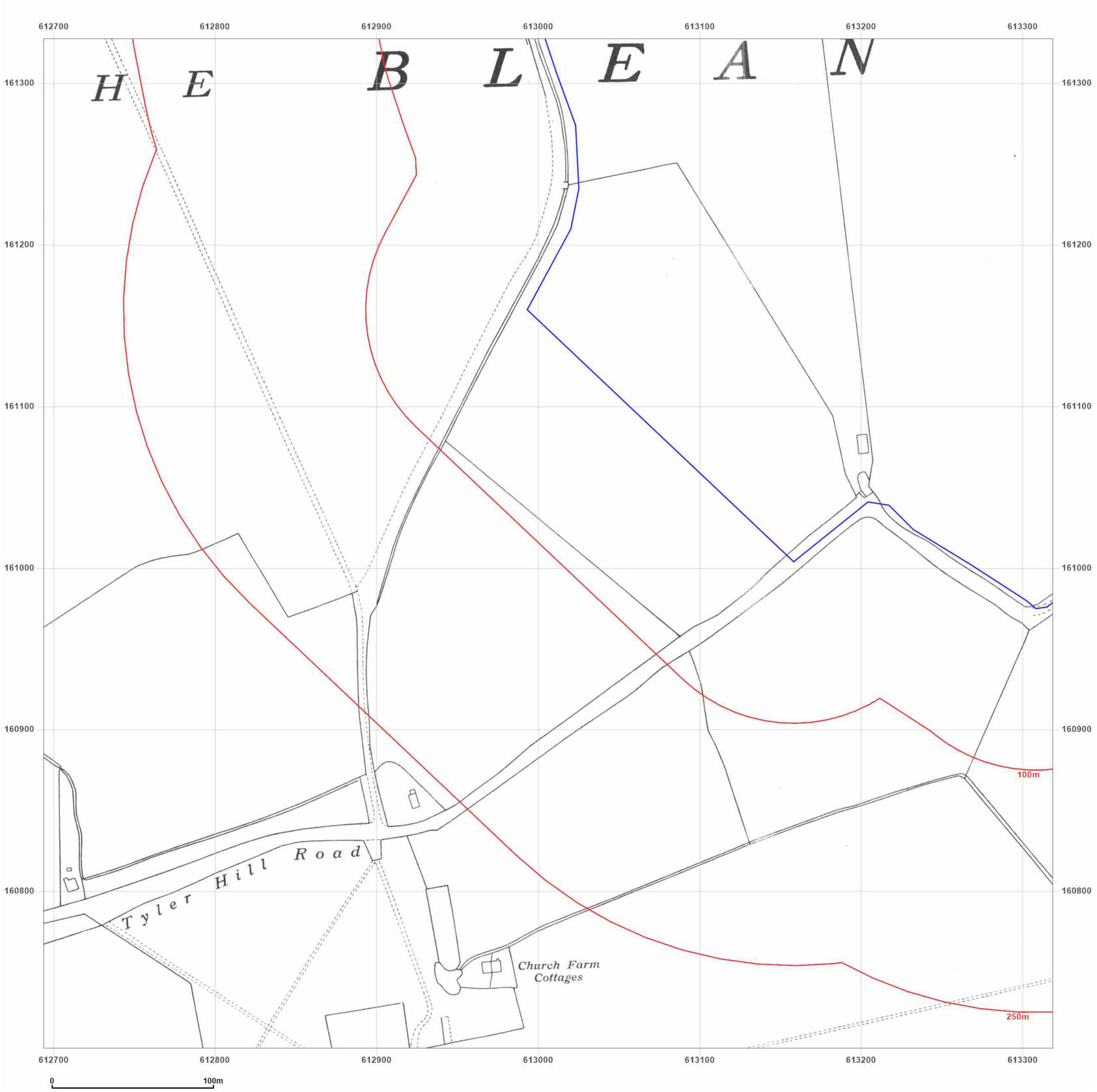
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

Map Name: County Series

Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

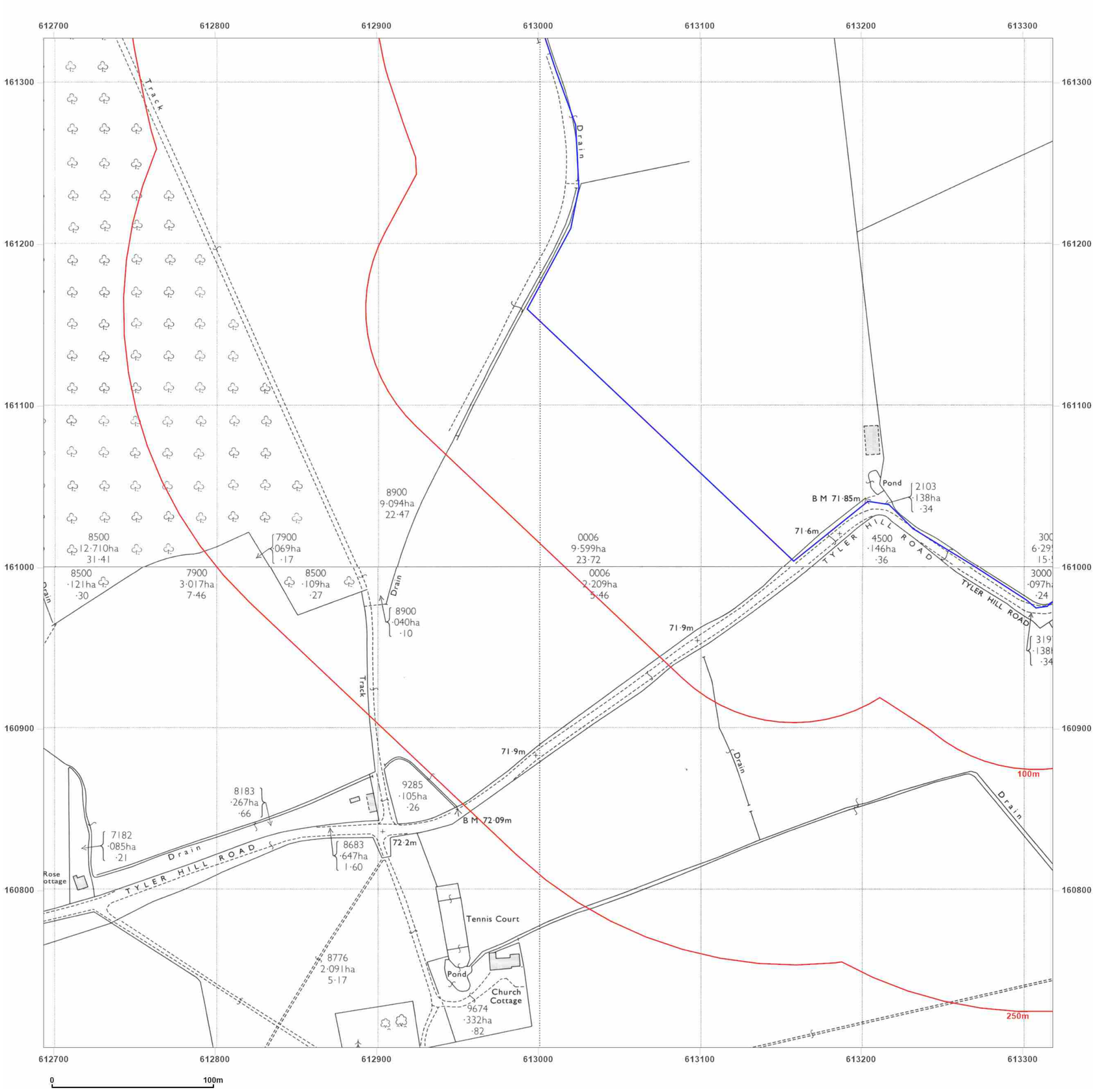
Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

Map Name: National Grid

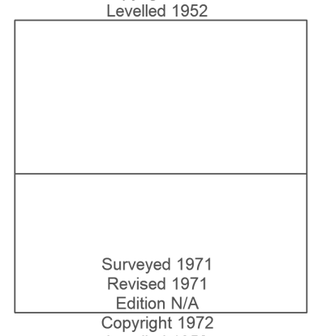
Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952



Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

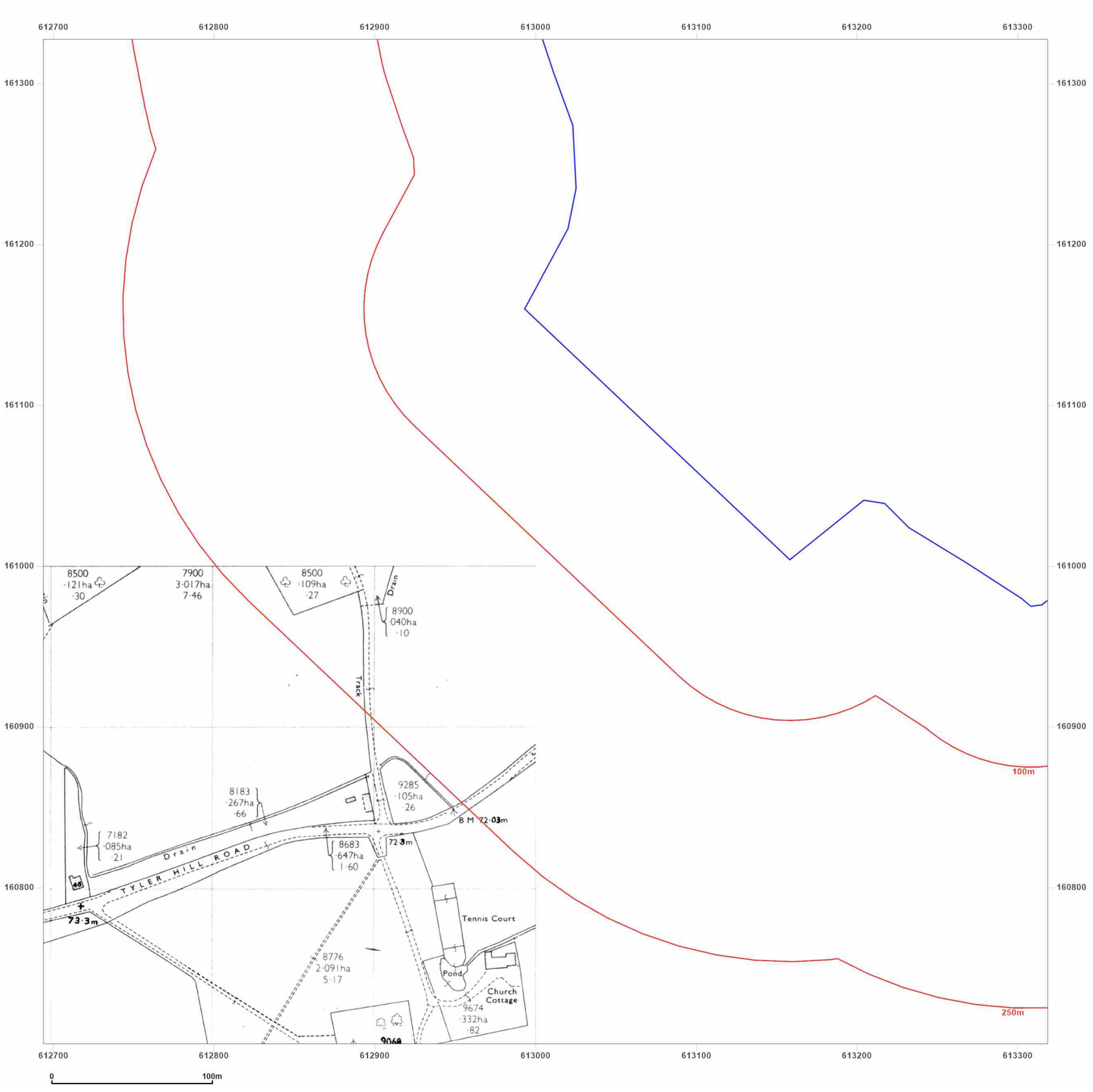
Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Powered by OS

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

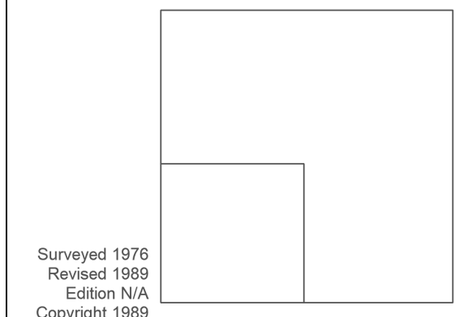
Map Name: National Grid

Map date: **1989**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Surveyed 1976
Revised 1989
Edition N/A
Copyright 1989
Levelled 1976

Groundsure INSIGHTS

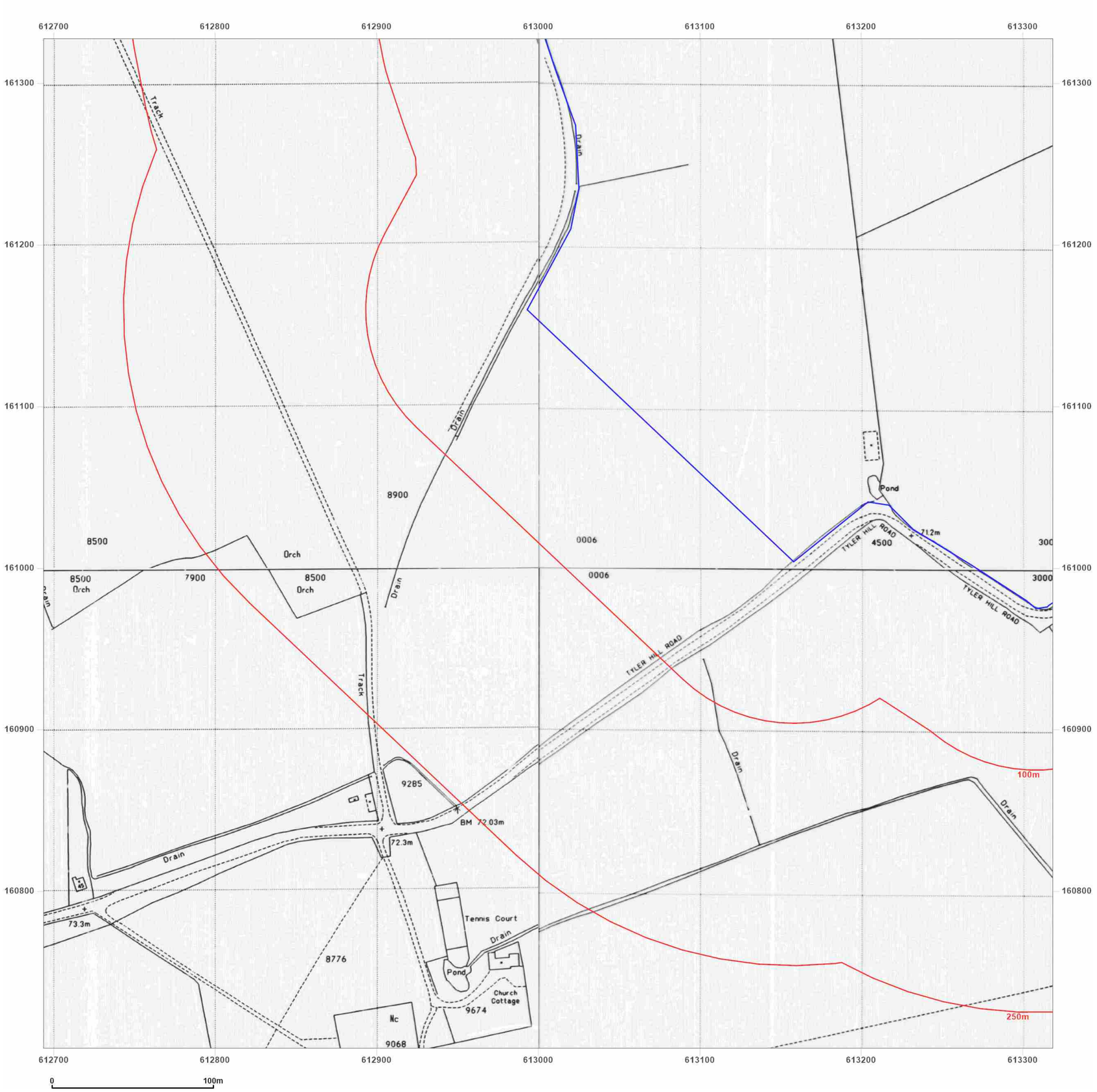
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Groundsure INSIGHTS

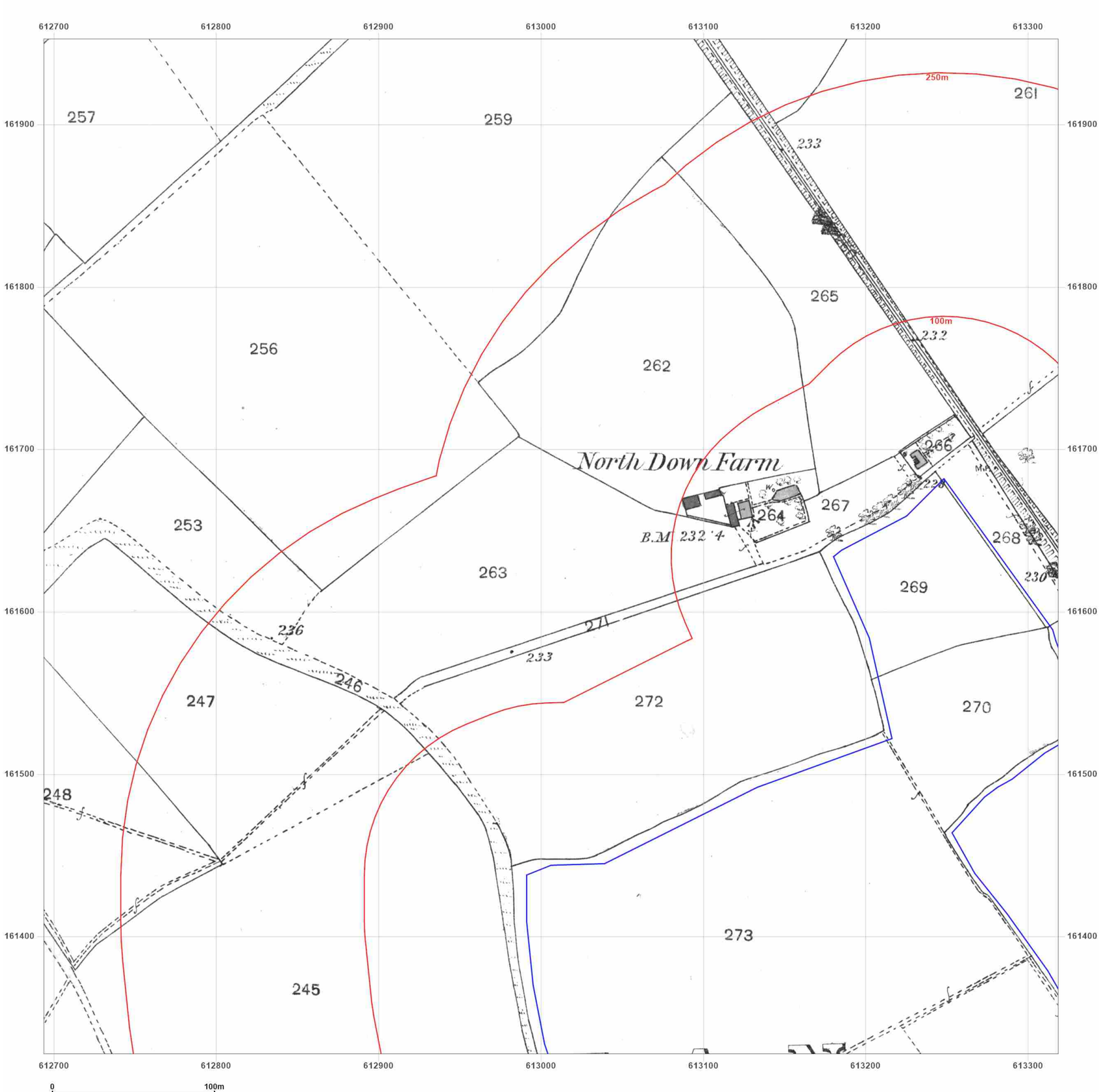
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_2
Grid Ref: 613006, 161640

Map Name: County Series

Map date: **1873**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

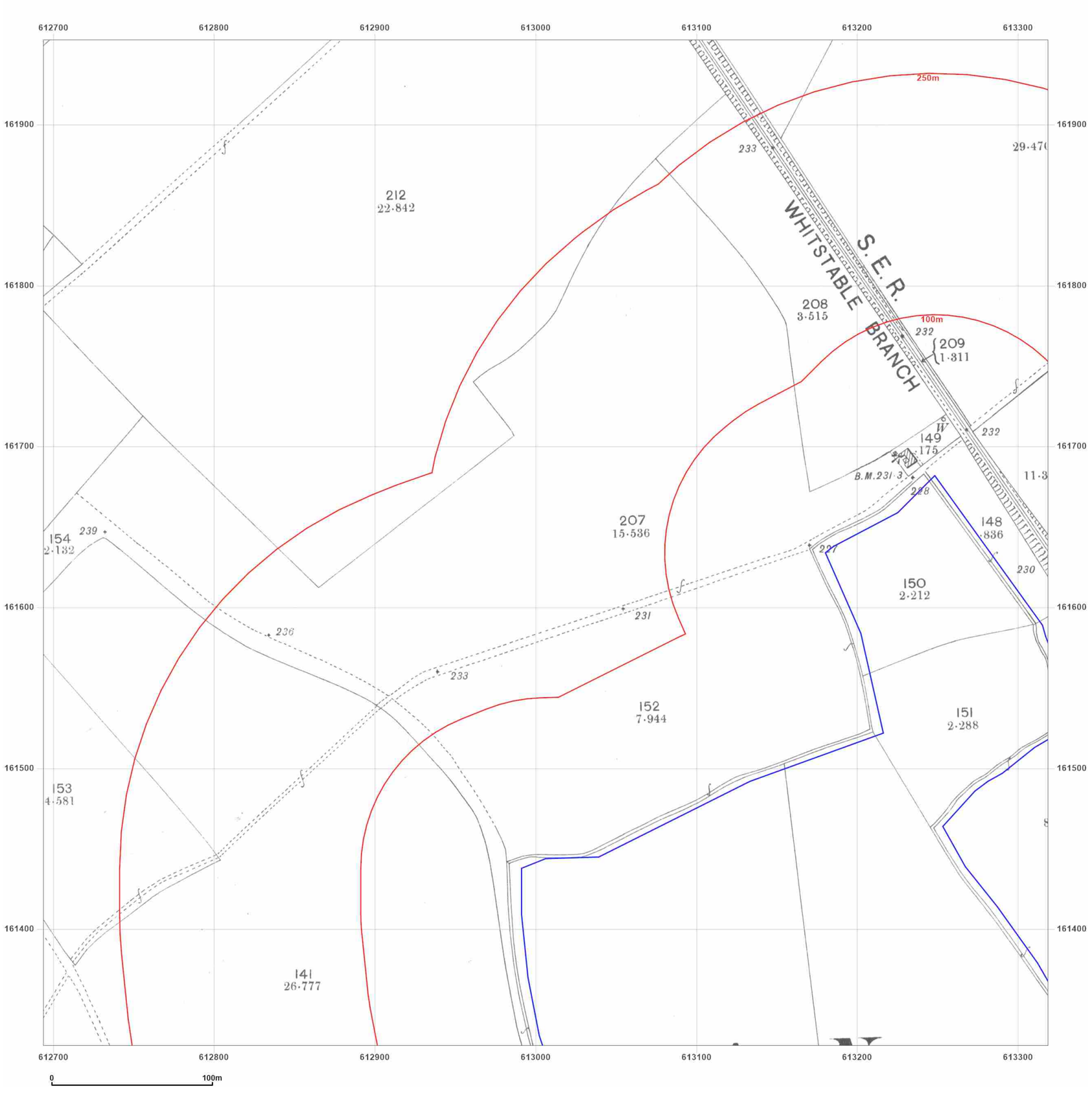
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_2
Grid Ref: 613006, 161640

Map Name: County Series
Map date: **1898**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

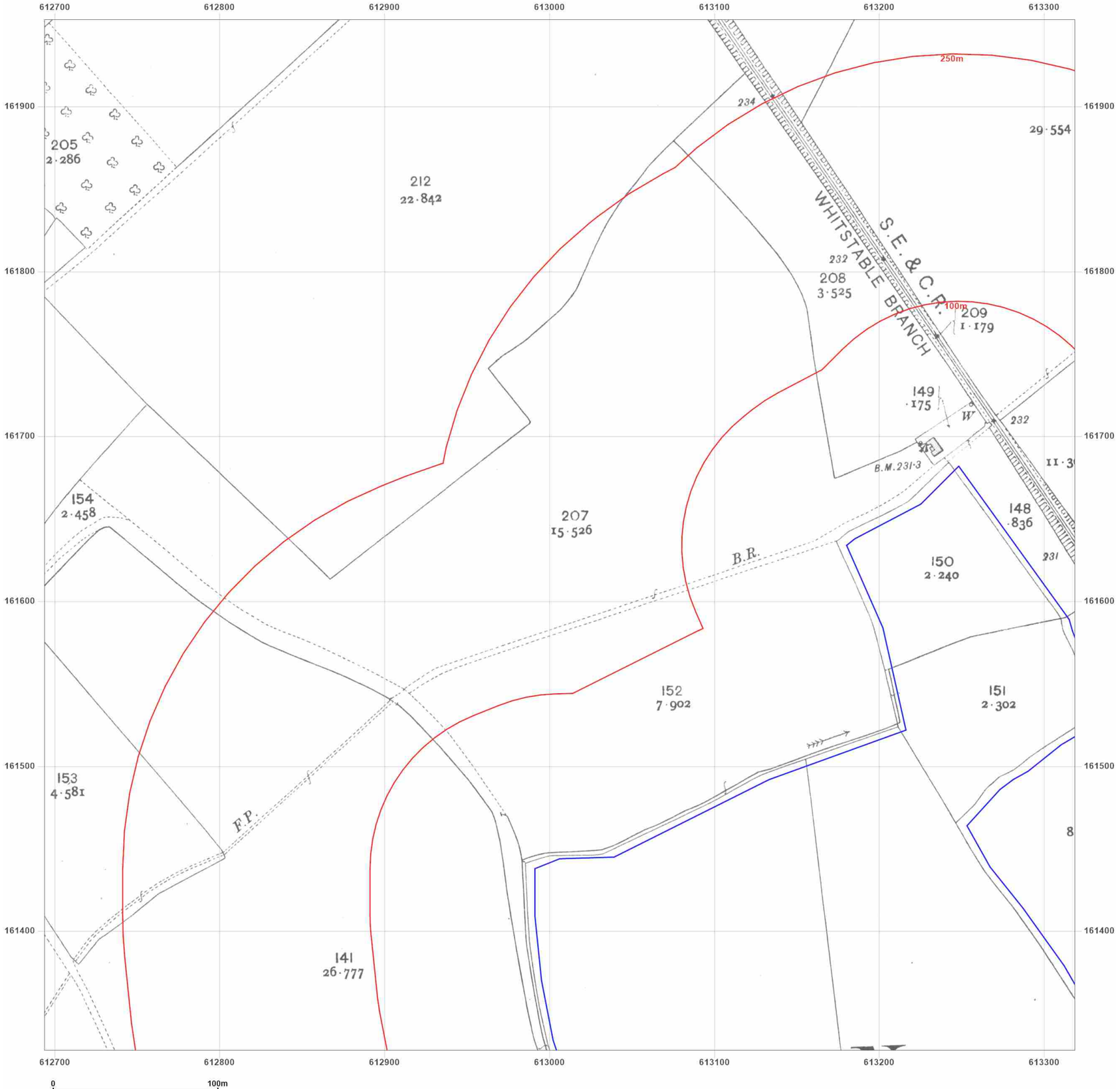
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_2
Grid Ref: 613006, 161640

Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

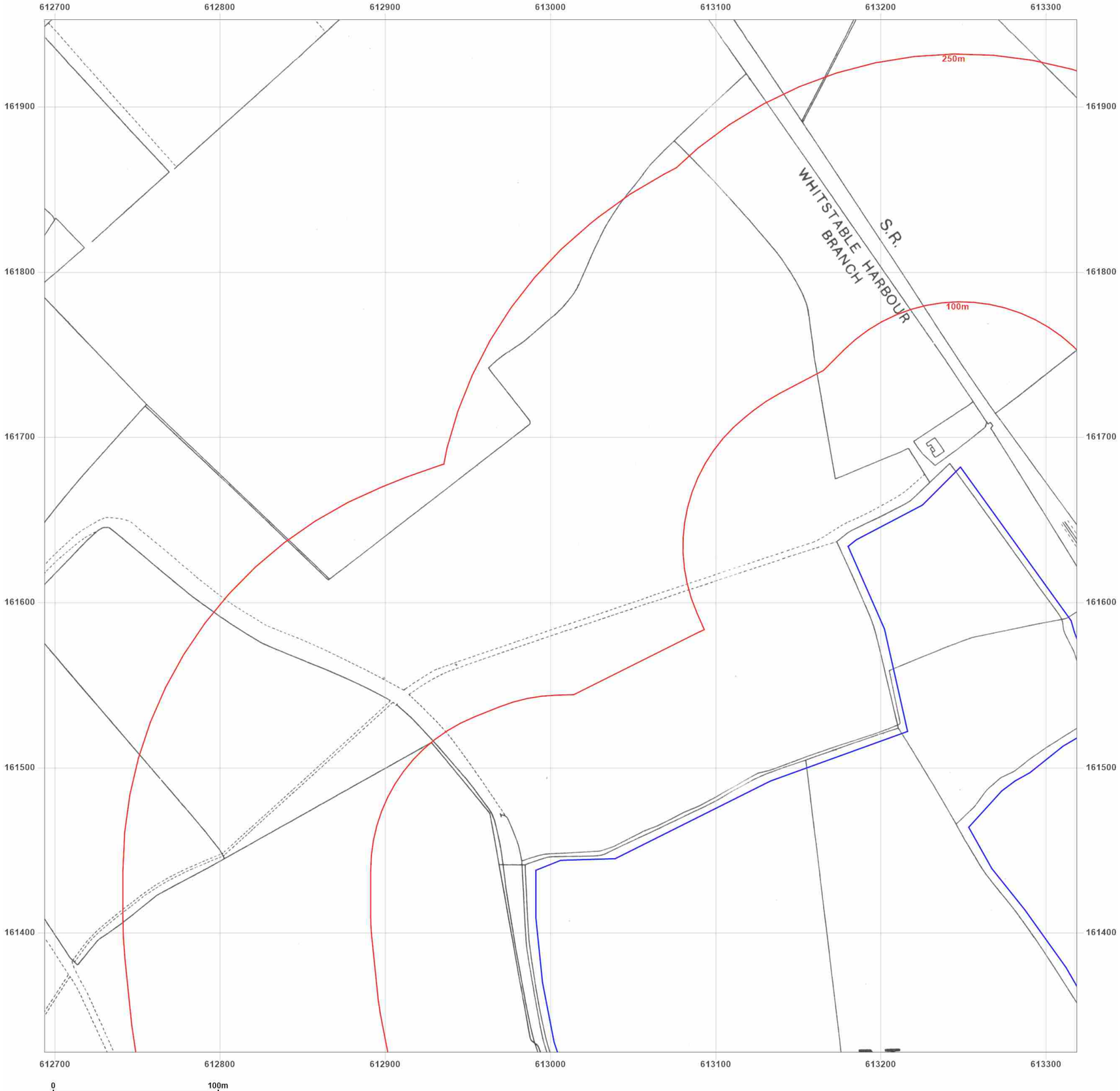
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_2
Grid Ref: 613006, 161640

Map Name: County Series

Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

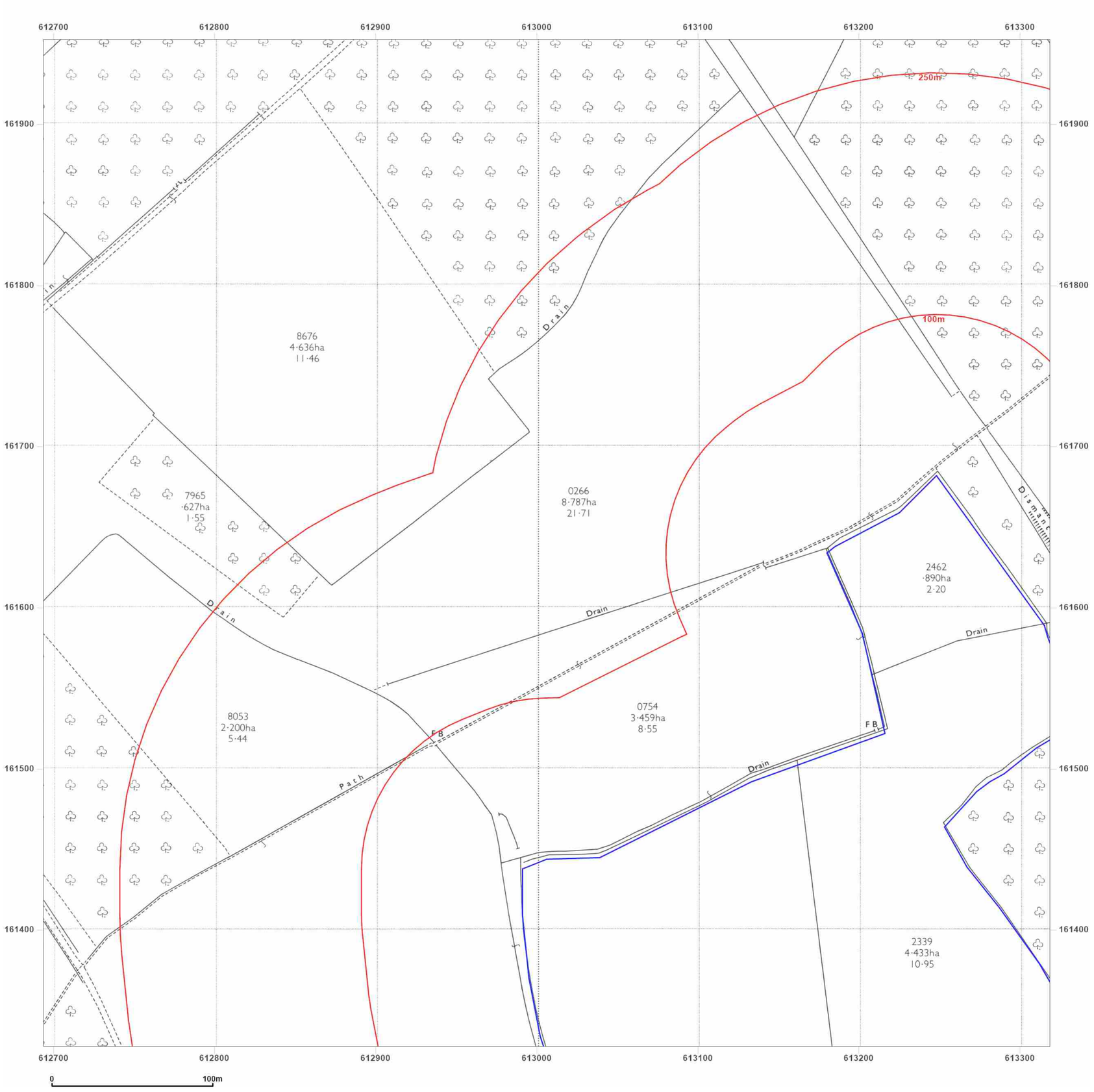
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_2
Grid Ref: 613006, 161640

Map Name: National Grid

Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

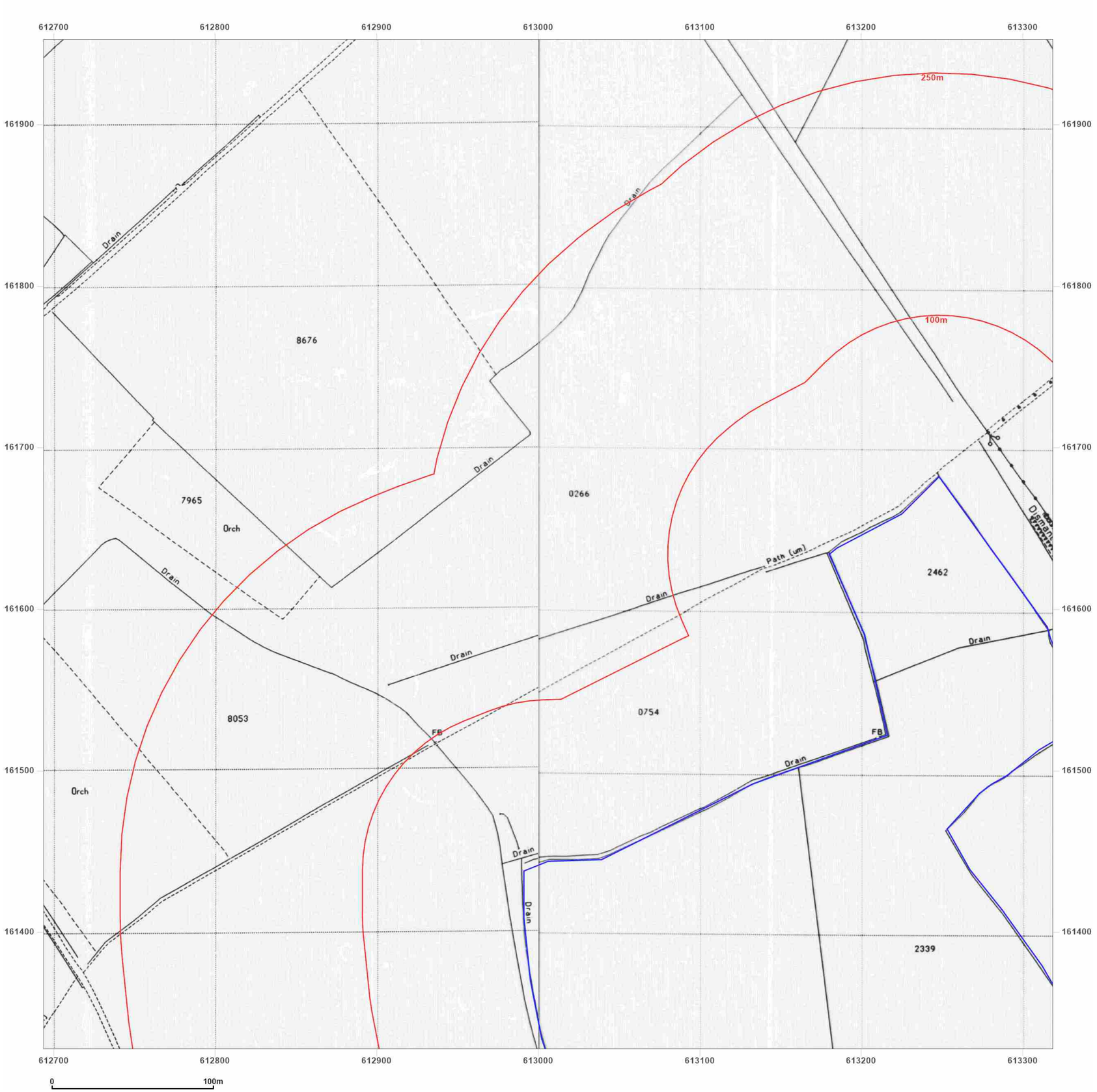
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_2
Grid Ref: 613006, 161640

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Groundsure INSIGHTS

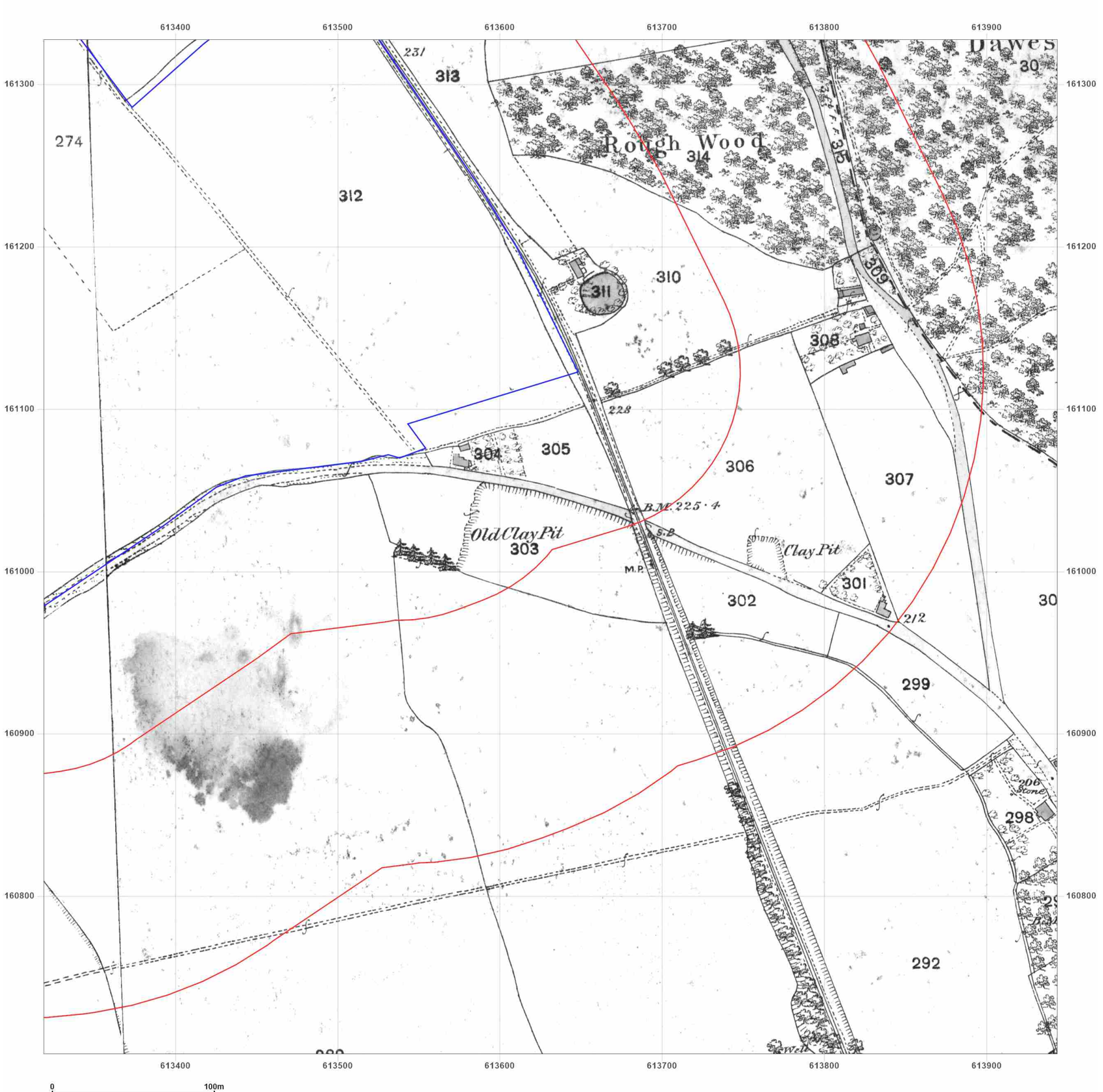
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



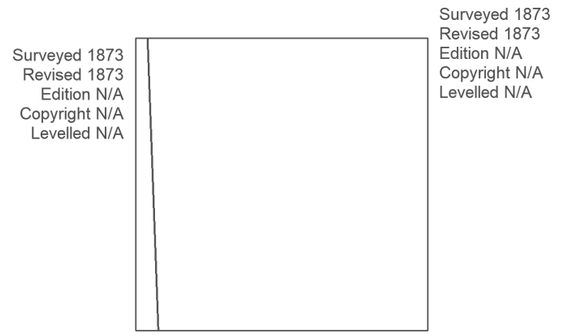
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: County Series
Map date: **1873**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

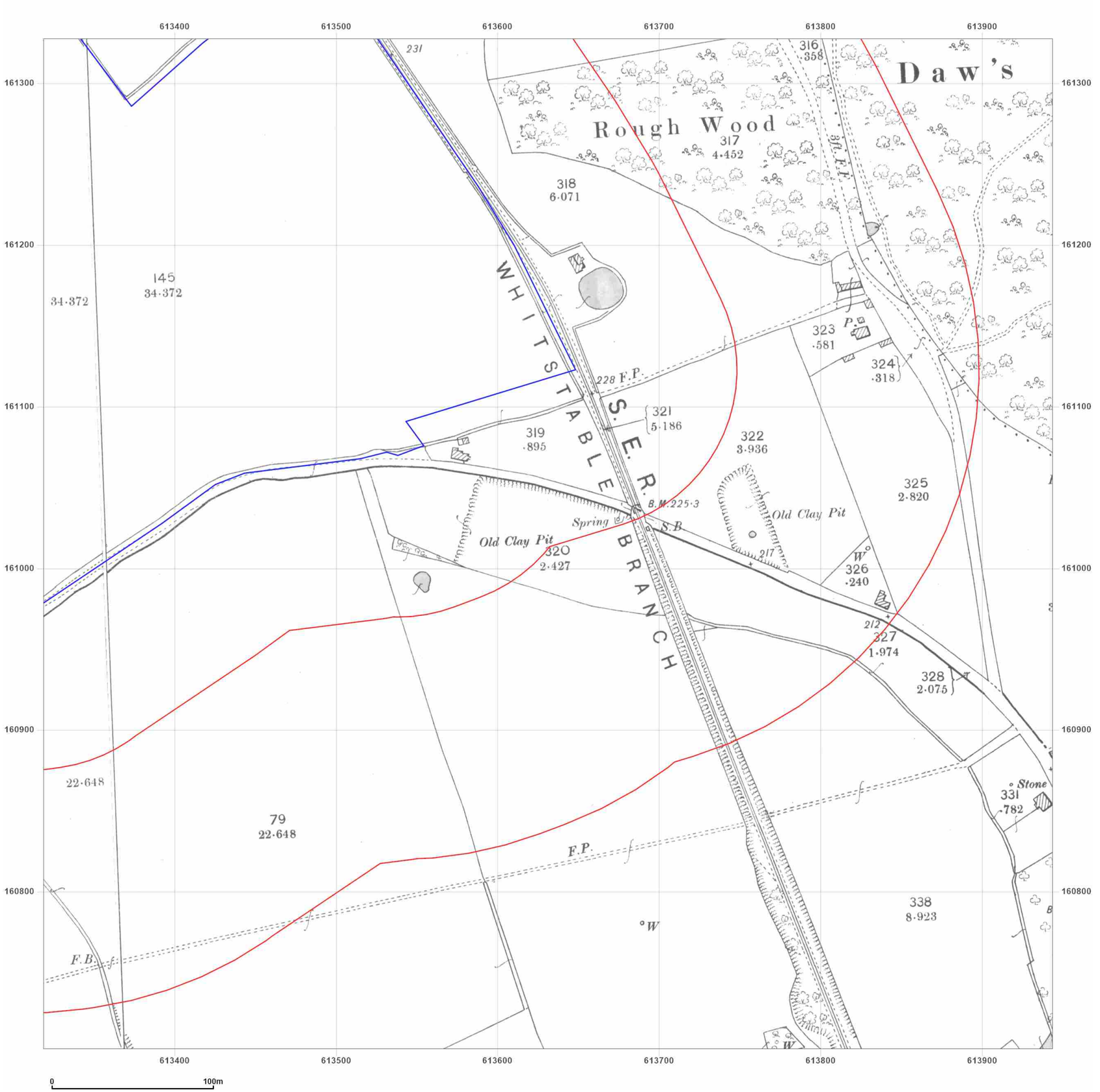
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

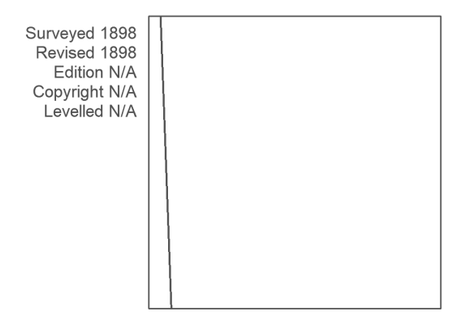
Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: County Series
Map date: **1898**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

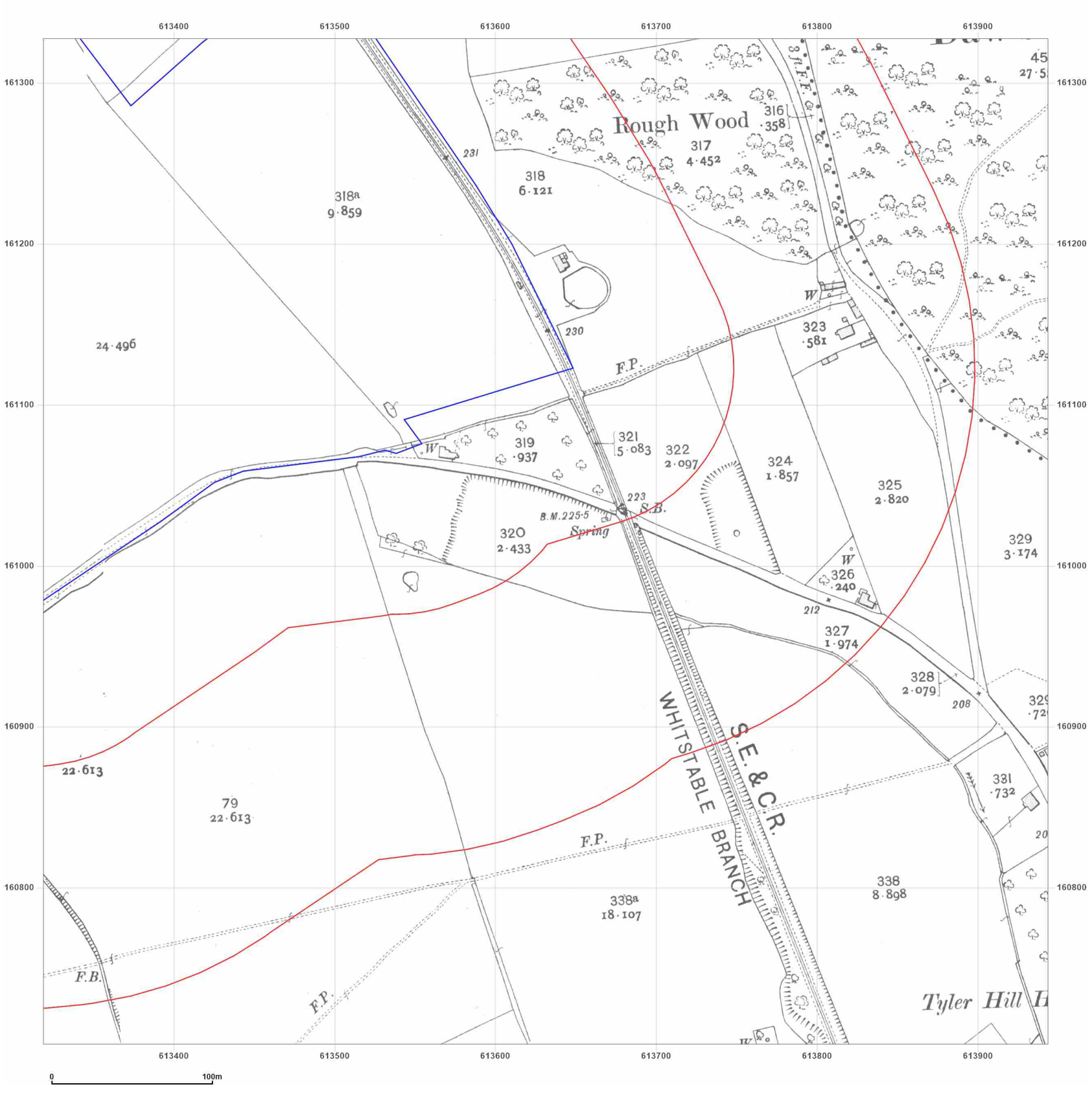
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

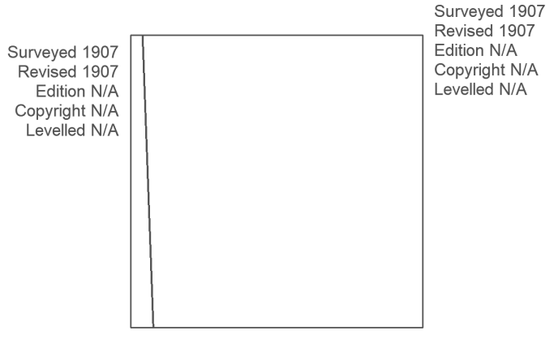
Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

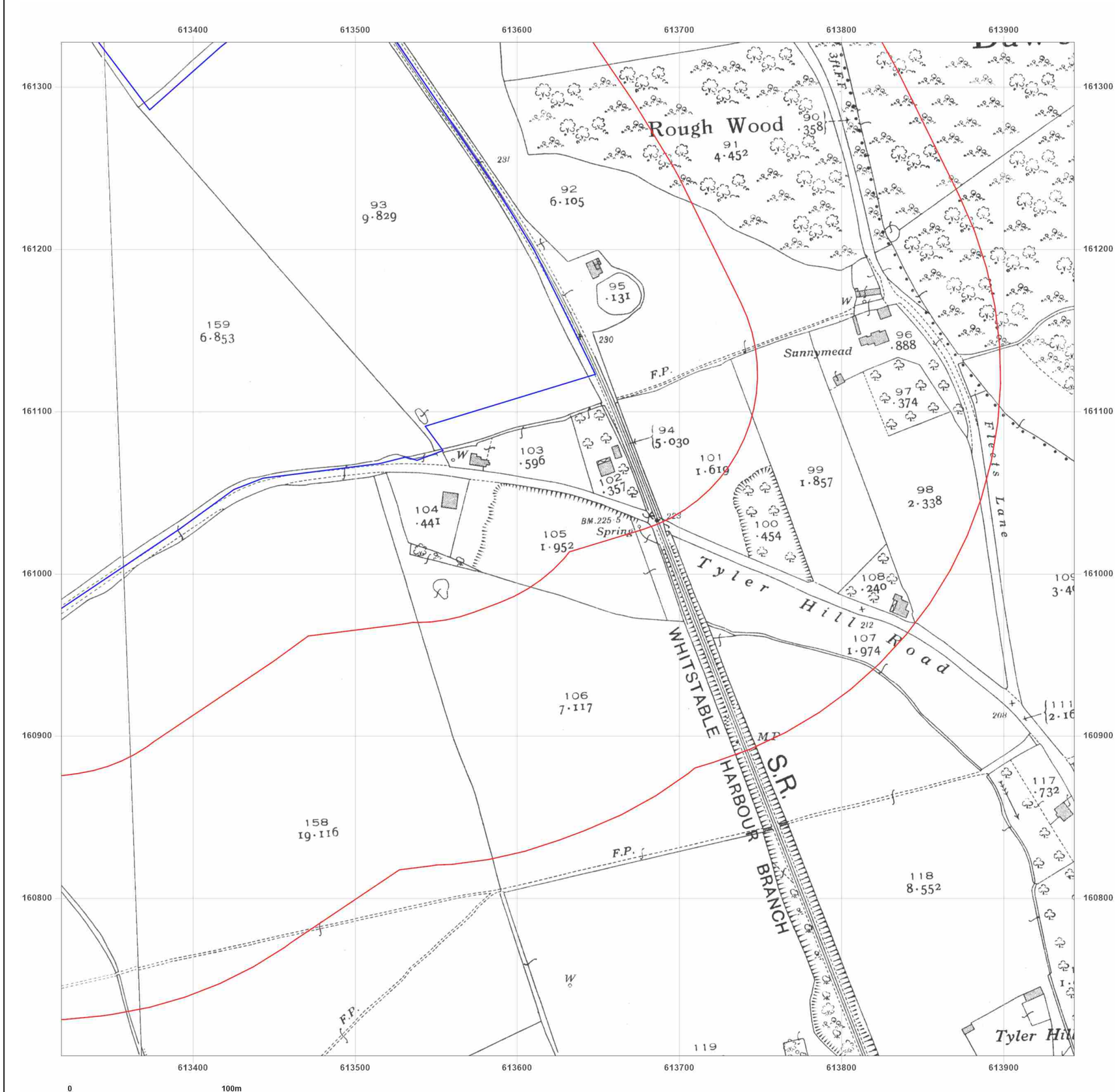
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

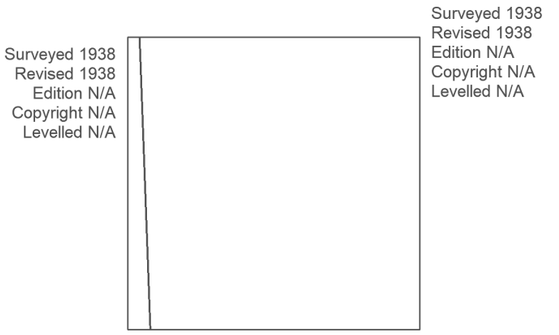
Map Name: County Series

Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

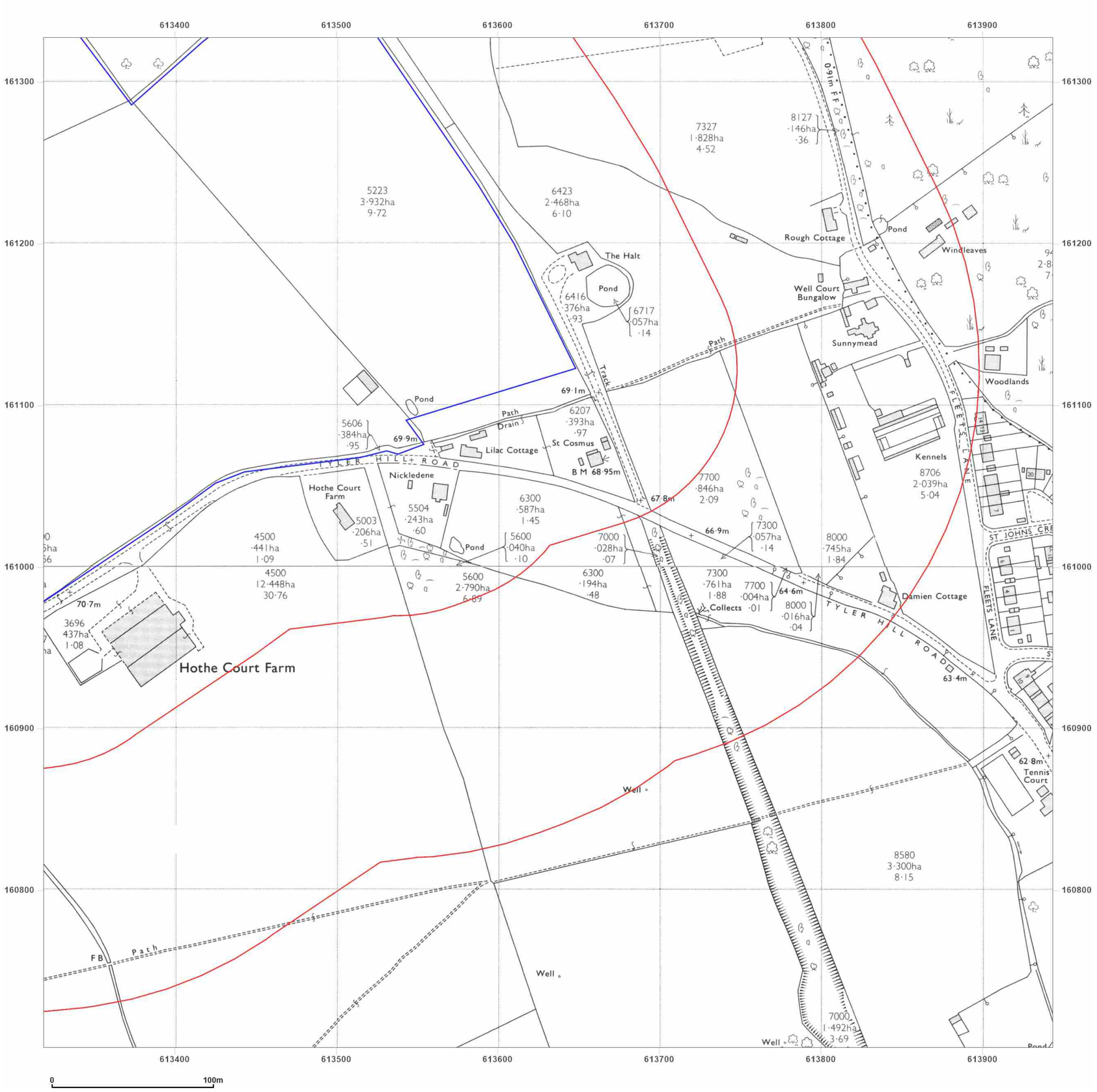
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: National Grid

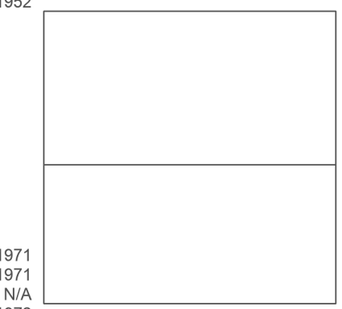
Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952



Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

WSP

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Groundsure INSIGHTS

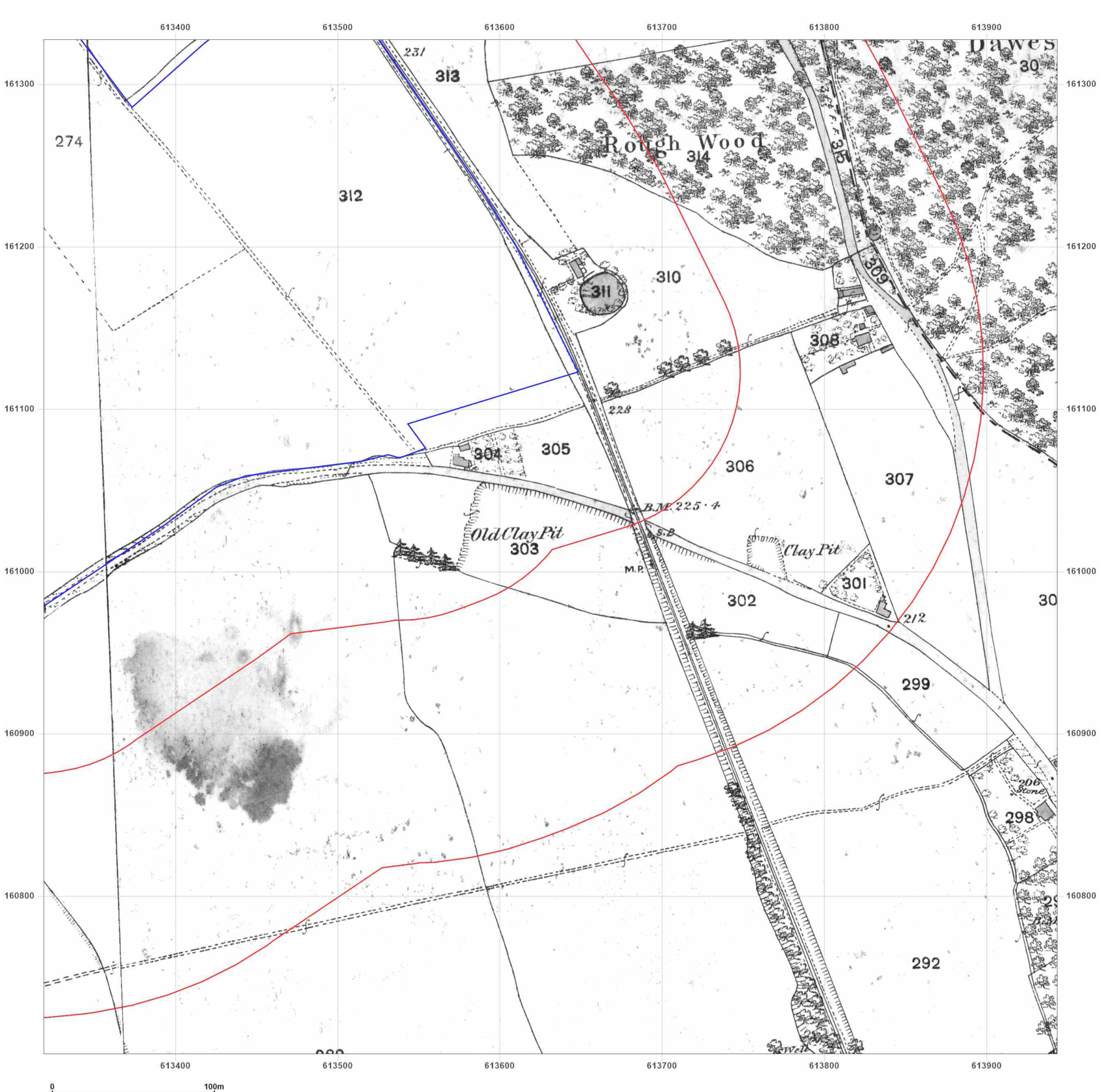
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



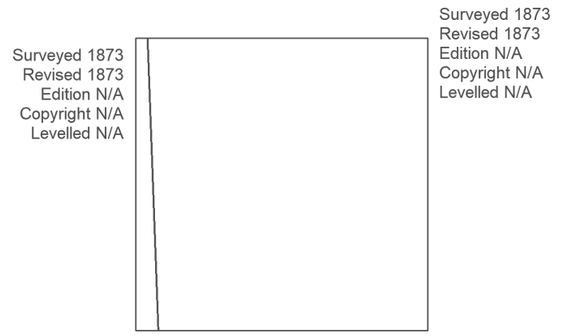
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: County Series
Map date: **1873**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

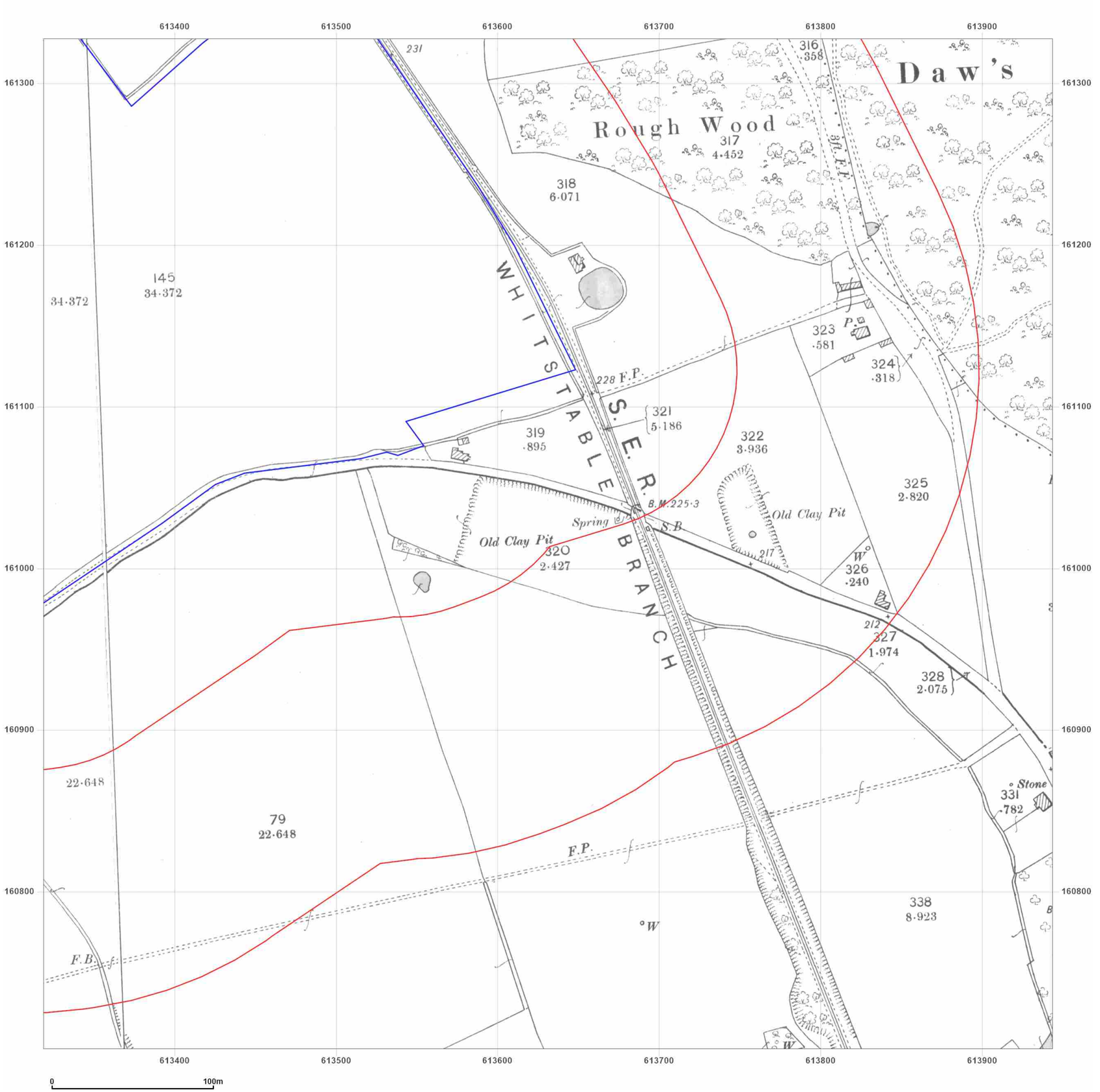
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: County Series
Map date: **1898**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

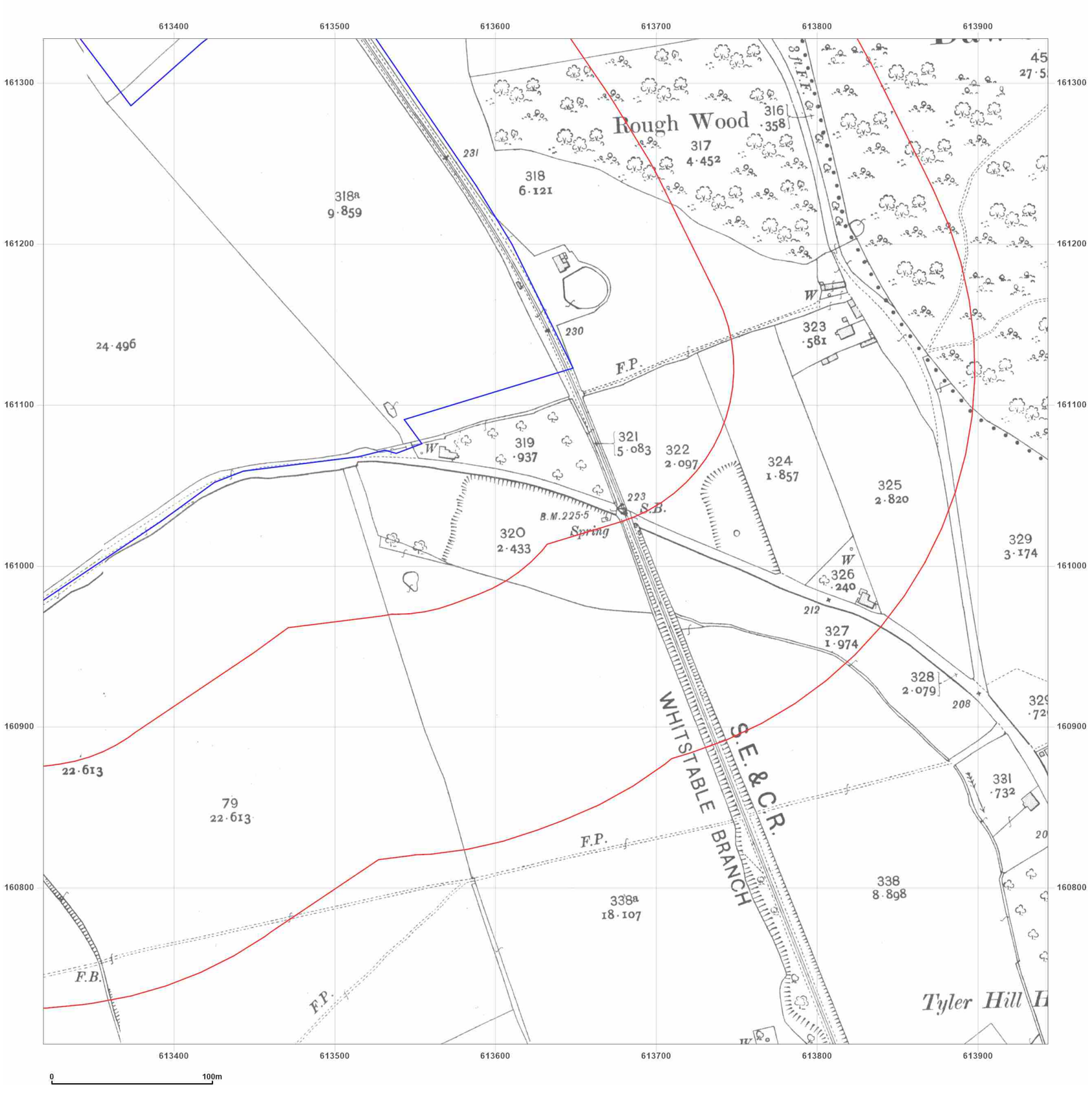
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

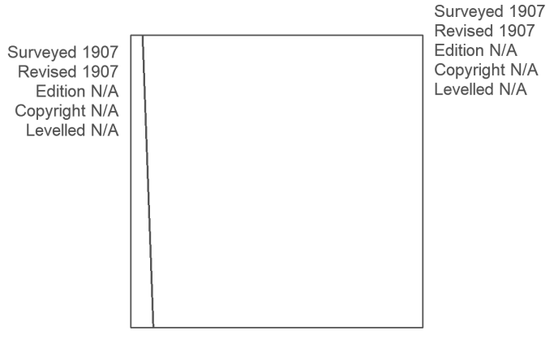
Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

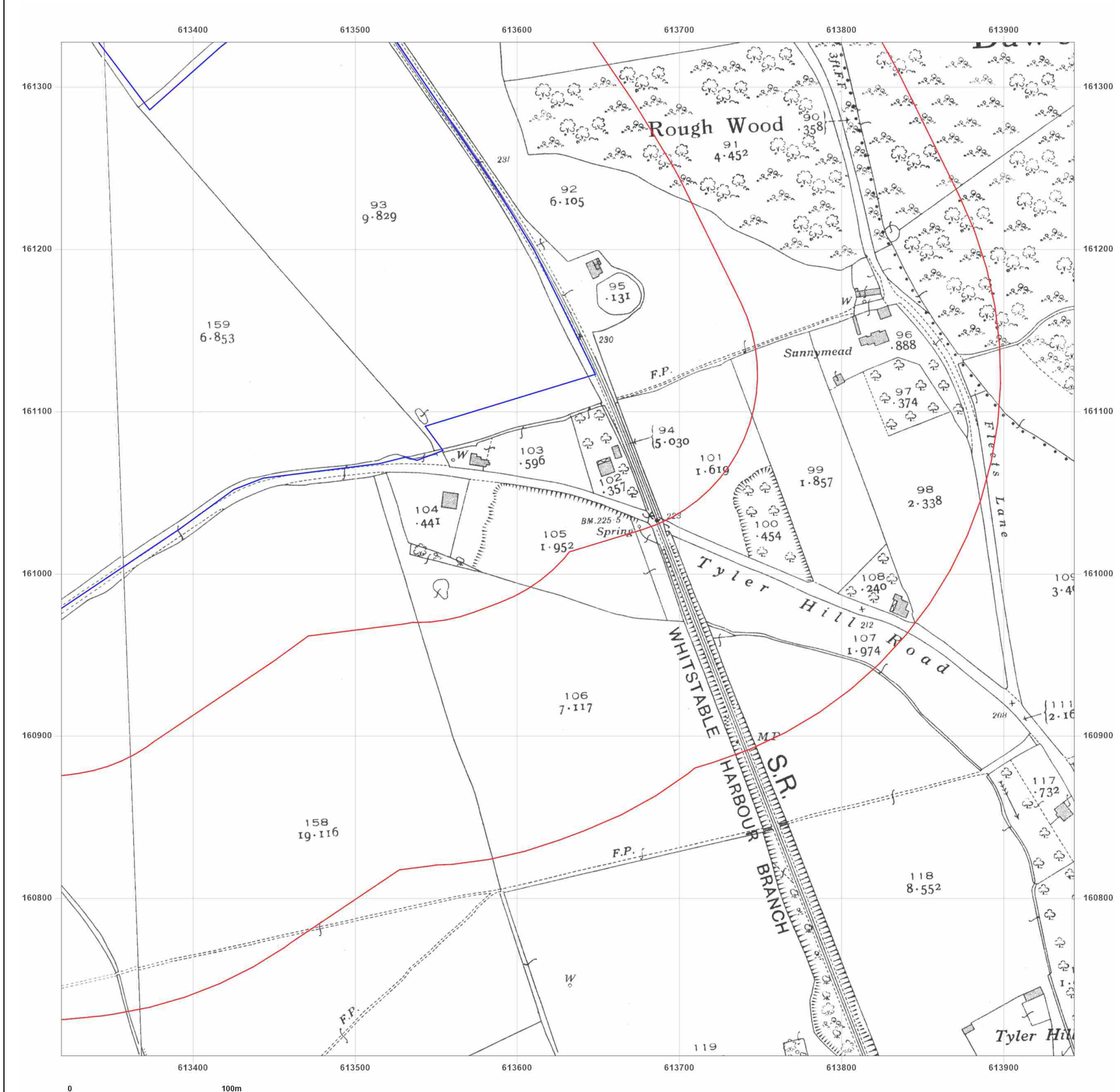
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

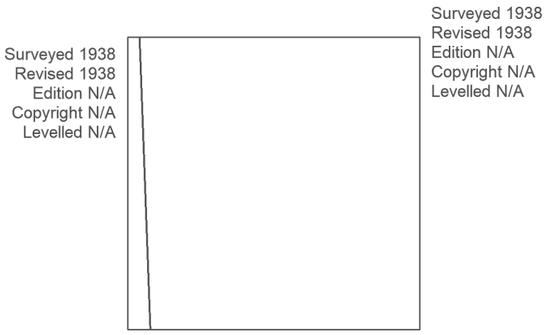
Map Name: County Series

Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

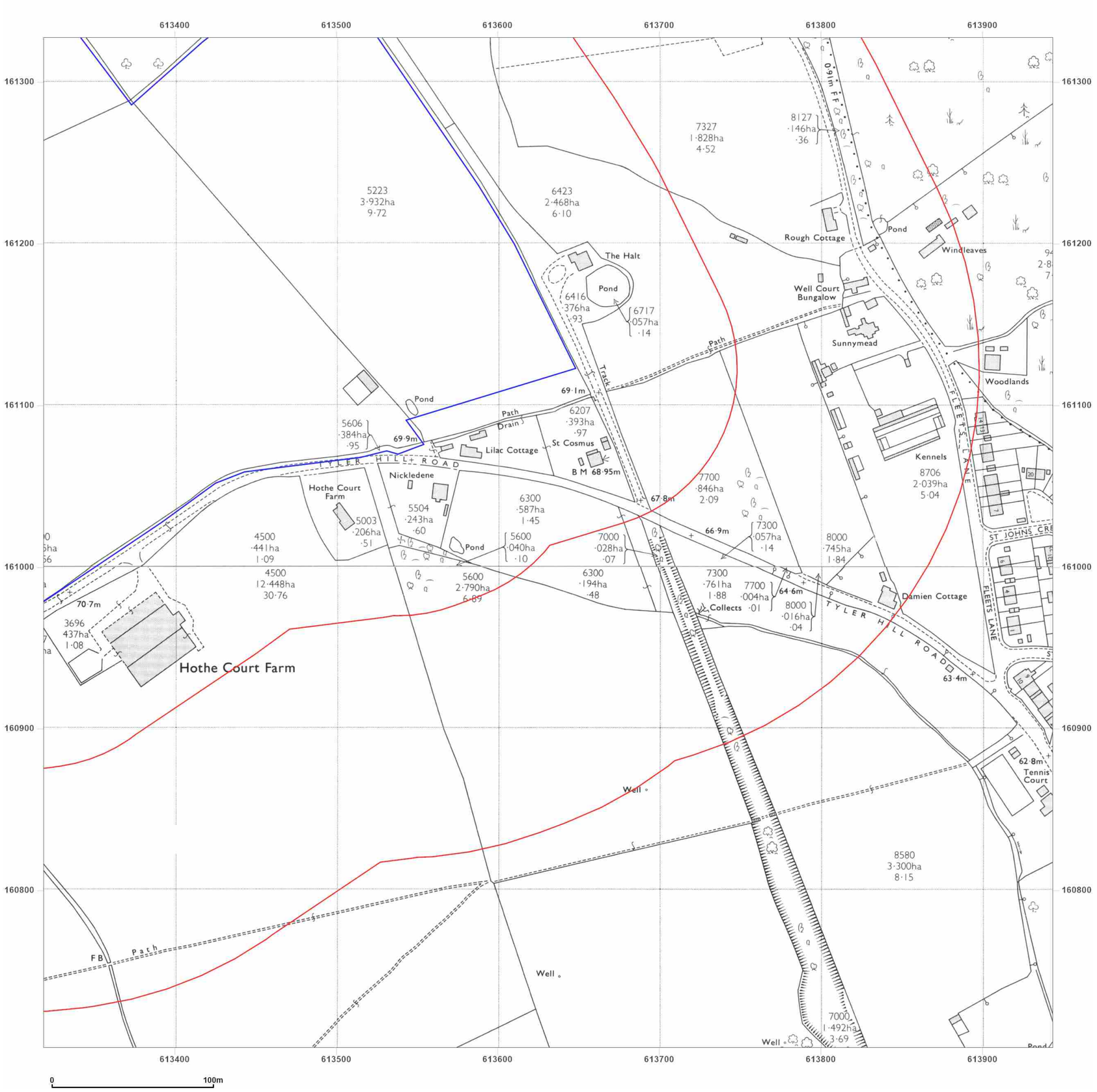
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: National Grid

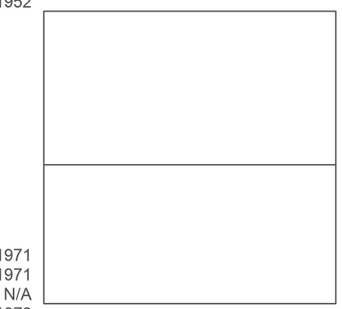
Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952



Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

WSP

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Groundsure INSIGHTS

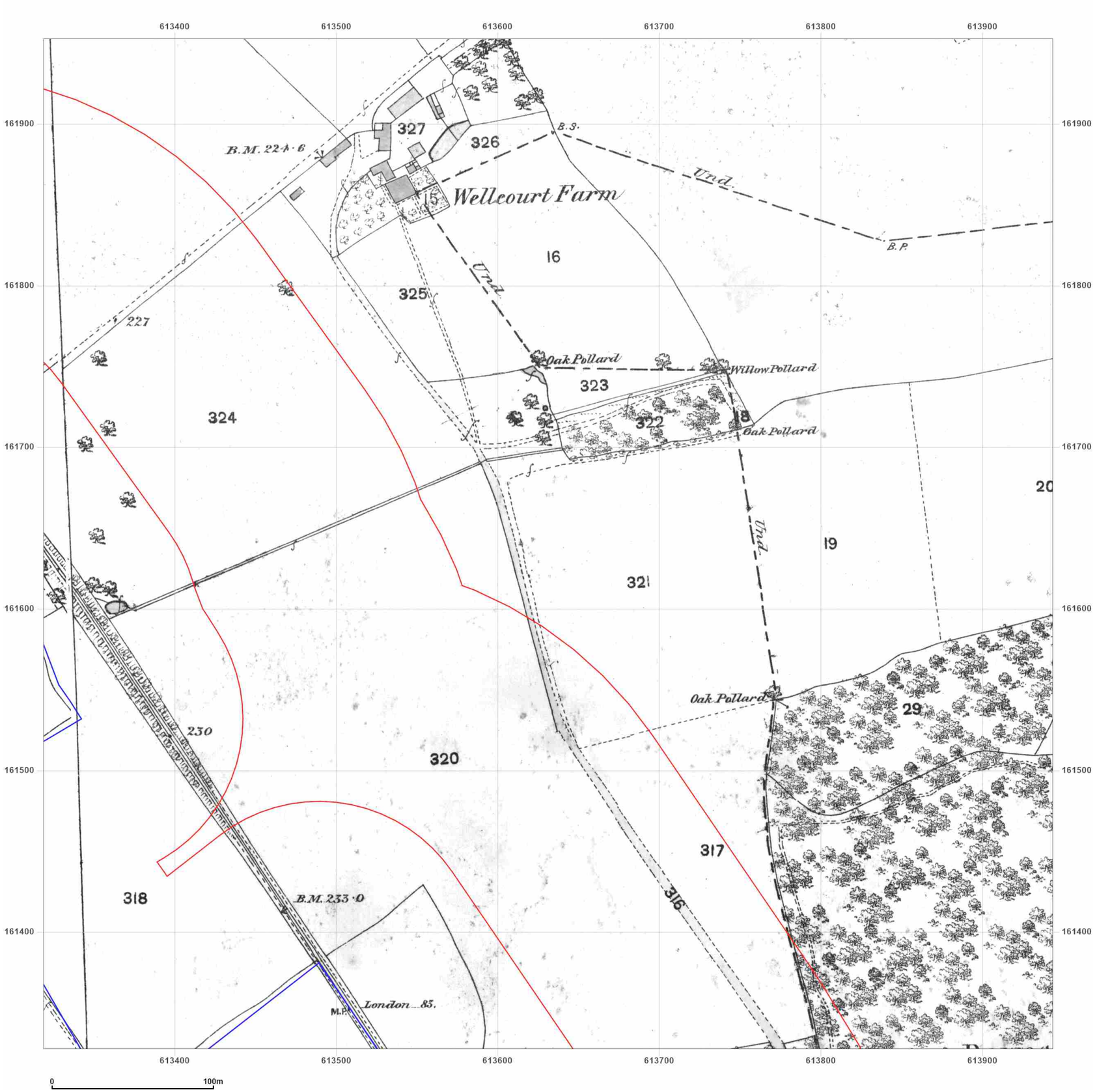
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_2
Grid Ref: 613631, 161640

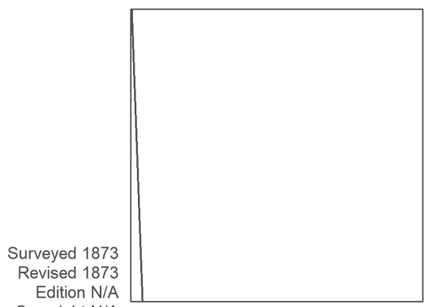
Map Name: County Series

Map date: **1873**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

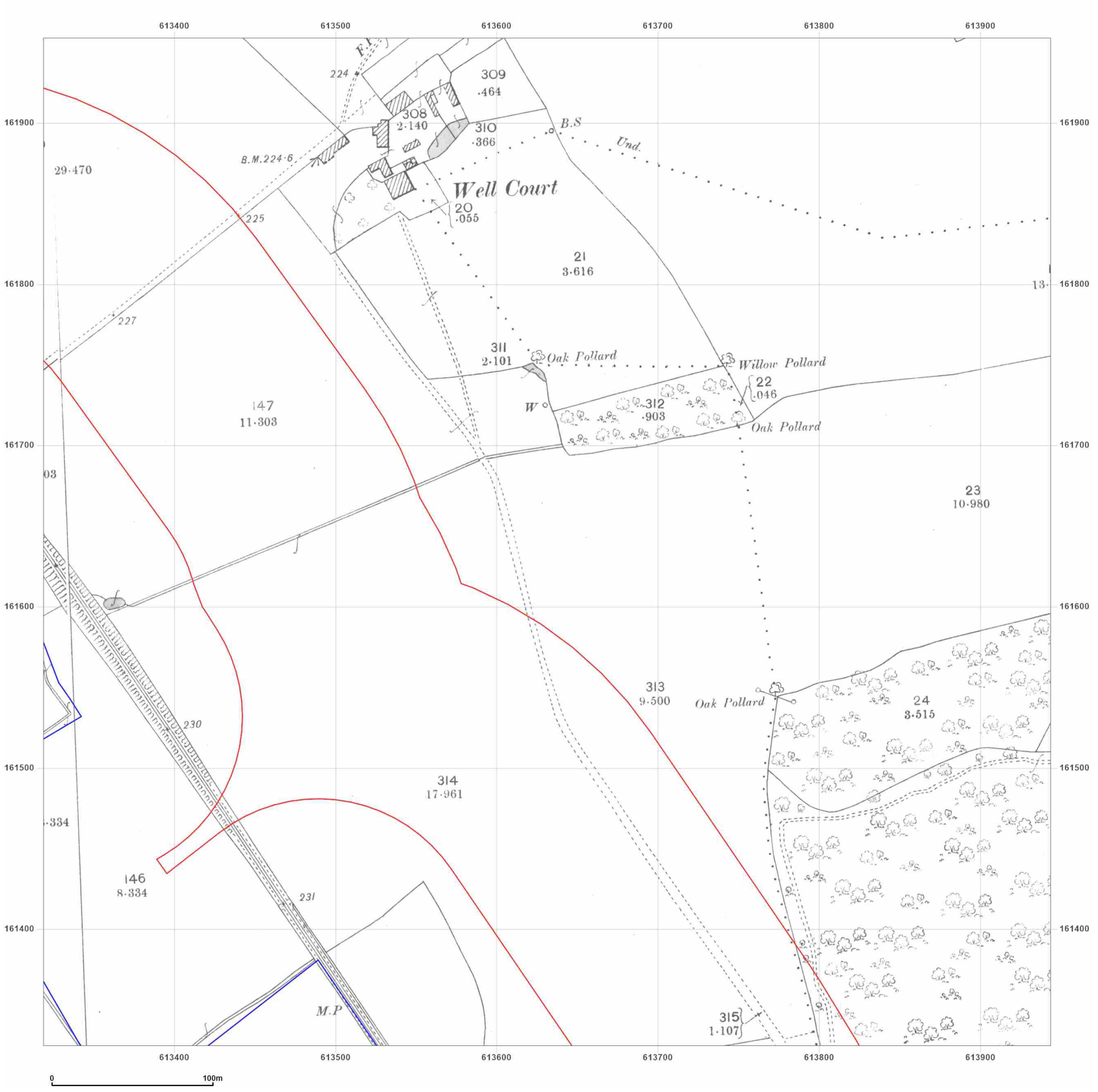
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_2
Grid Ref: 613631, 161640

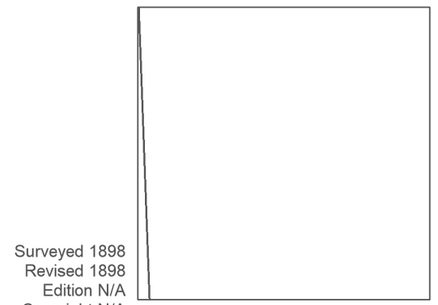
Map Name: County Series

Map date: **1898**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

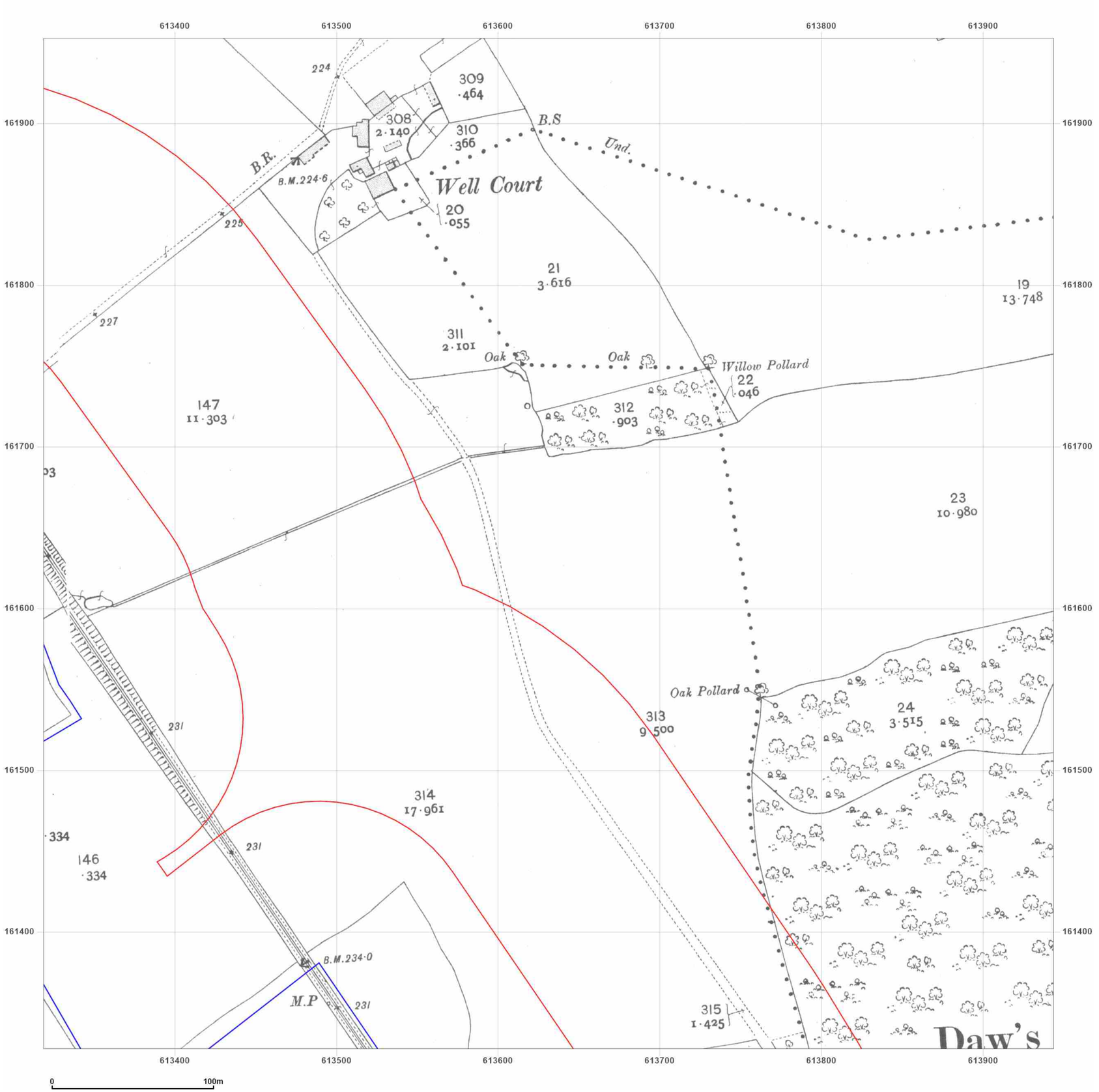
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_2
Grid Ref: 613631, 161640

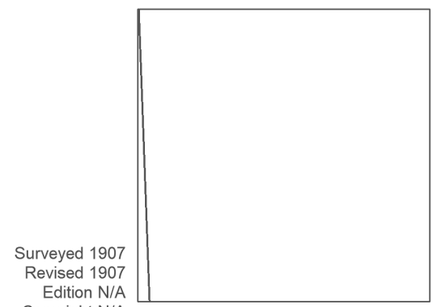
Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

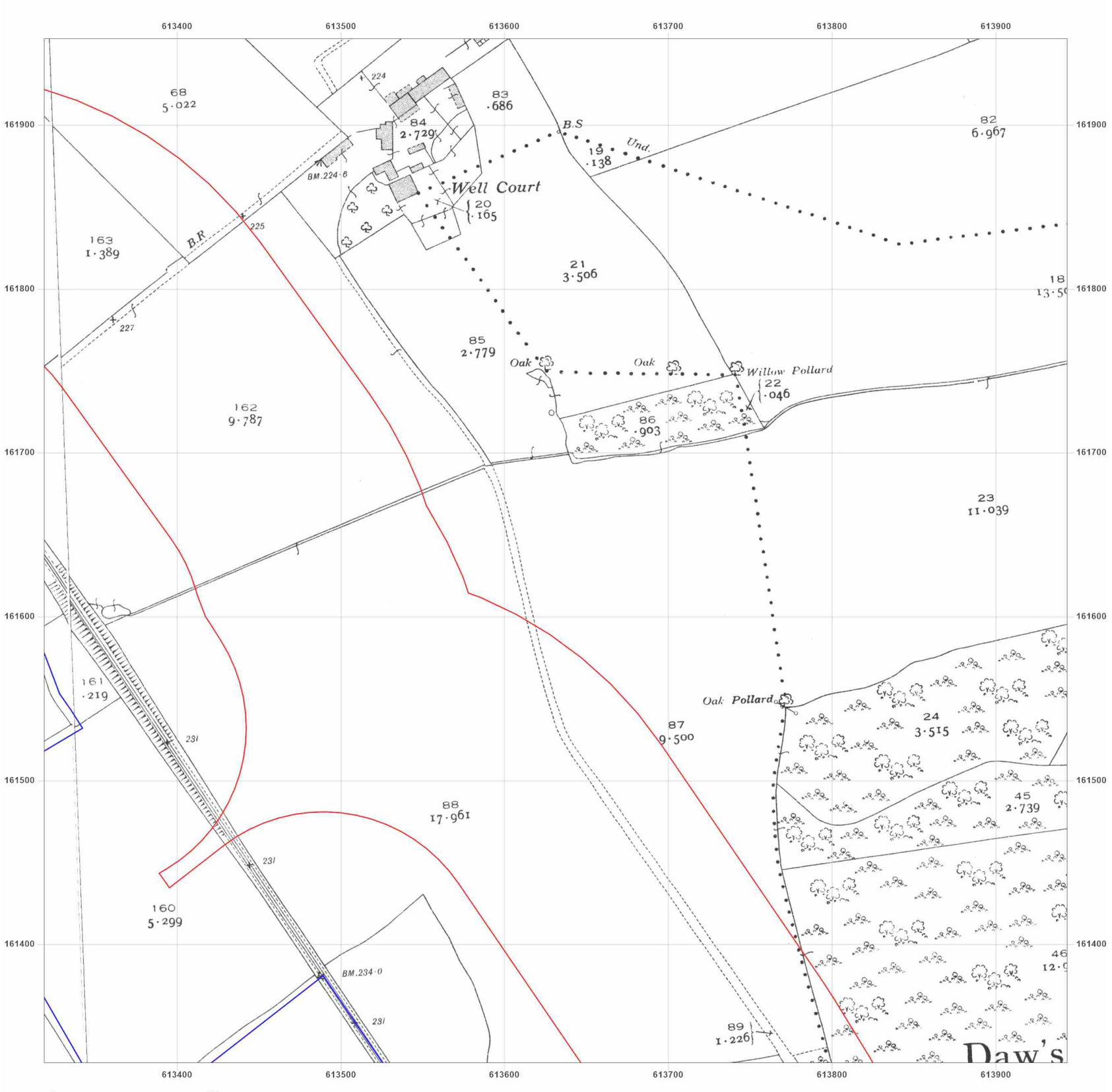
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

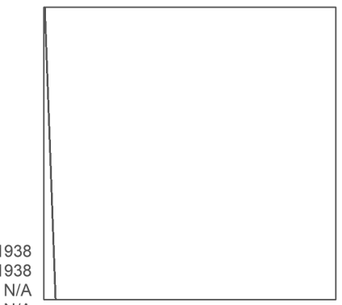
Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_2
Grid Ref: 613631, 161640

Map Name: County Series
Map date: **1938**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S



Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

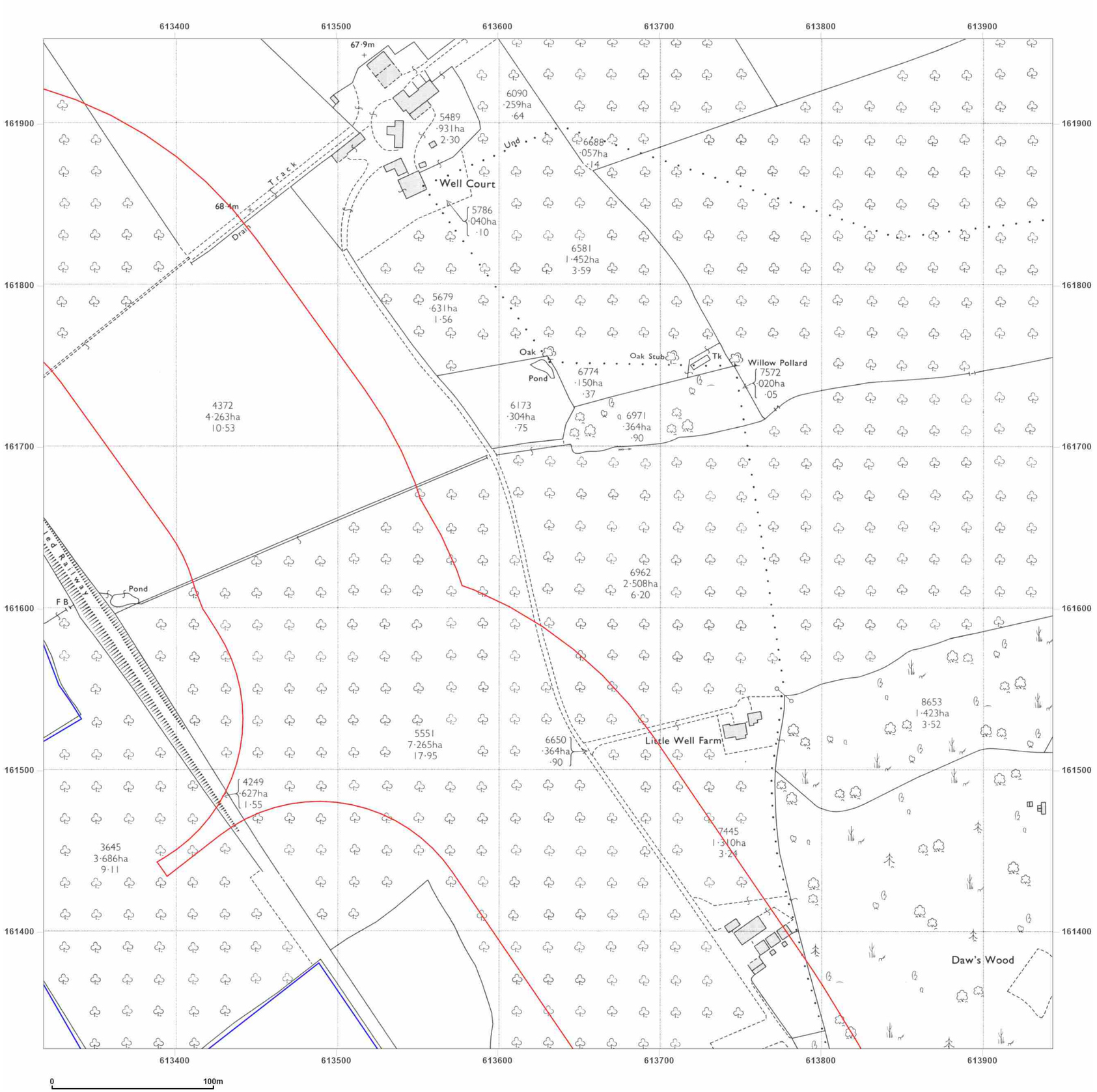
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_2
Grid Ref: 613631, 161640

Map Name: National Grid

Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

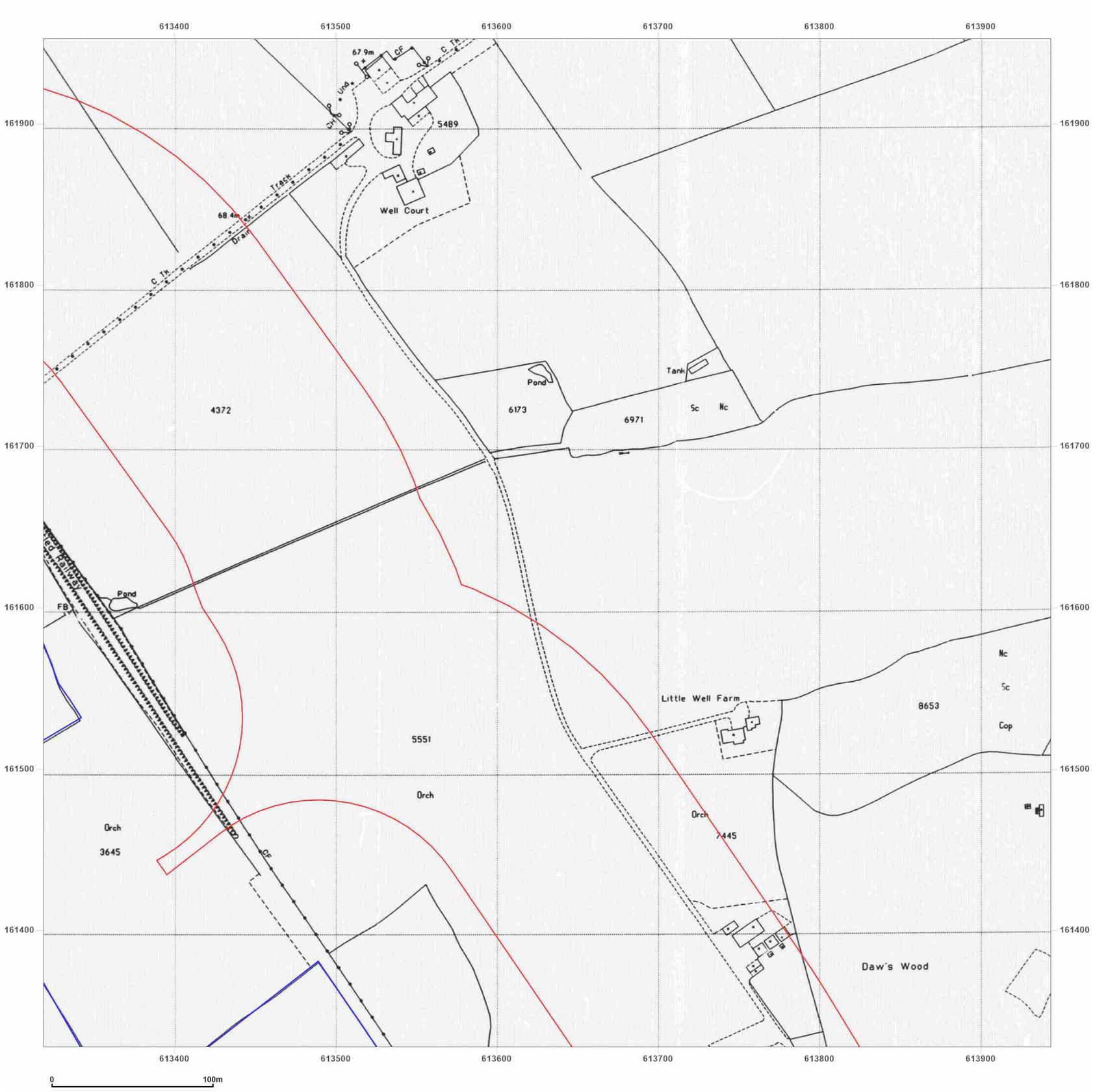
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_2
Grid Ref: 613631, 161640

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Groundsure INSIGHTS

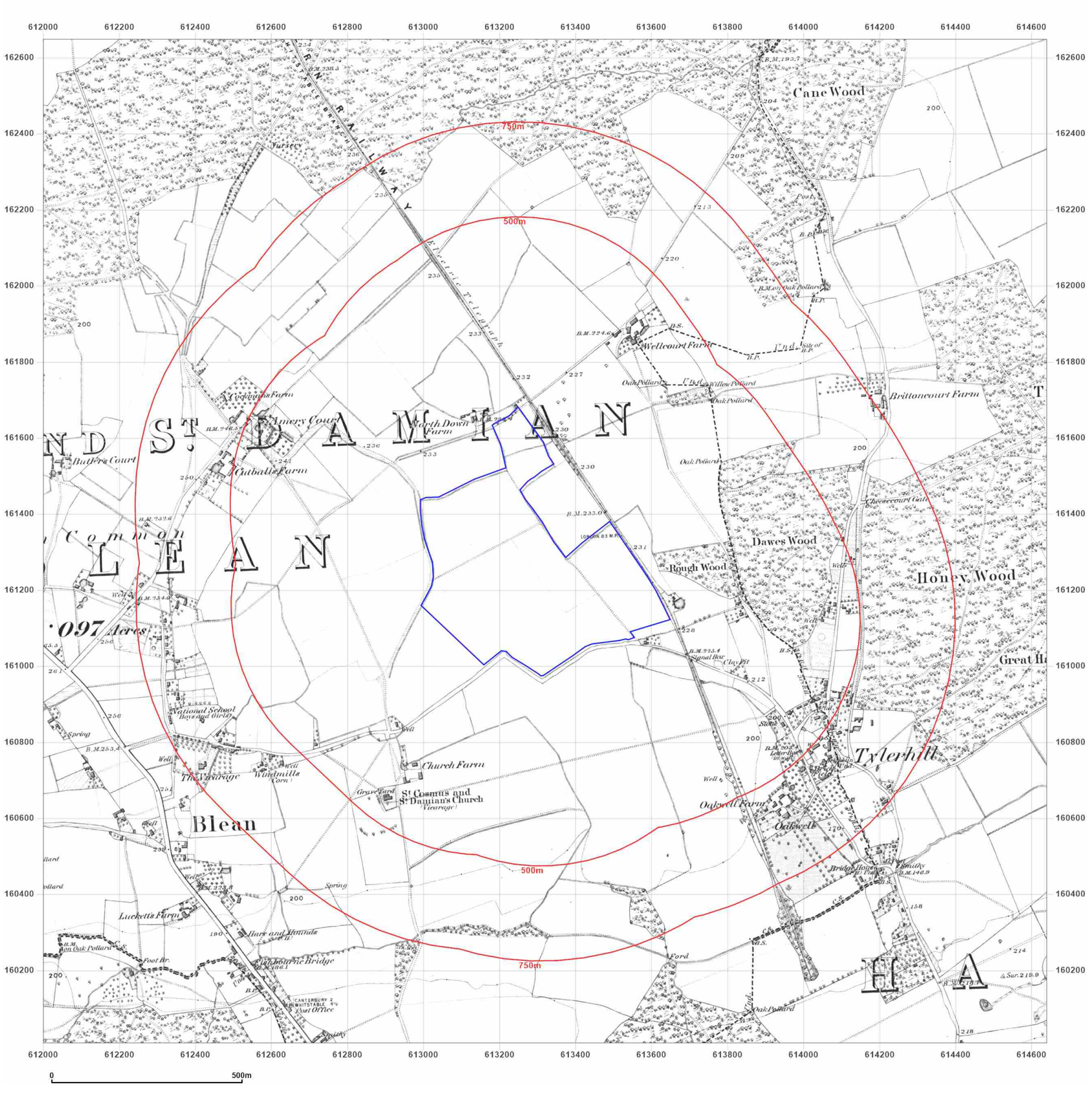
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: County Series

Map date: **1873**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

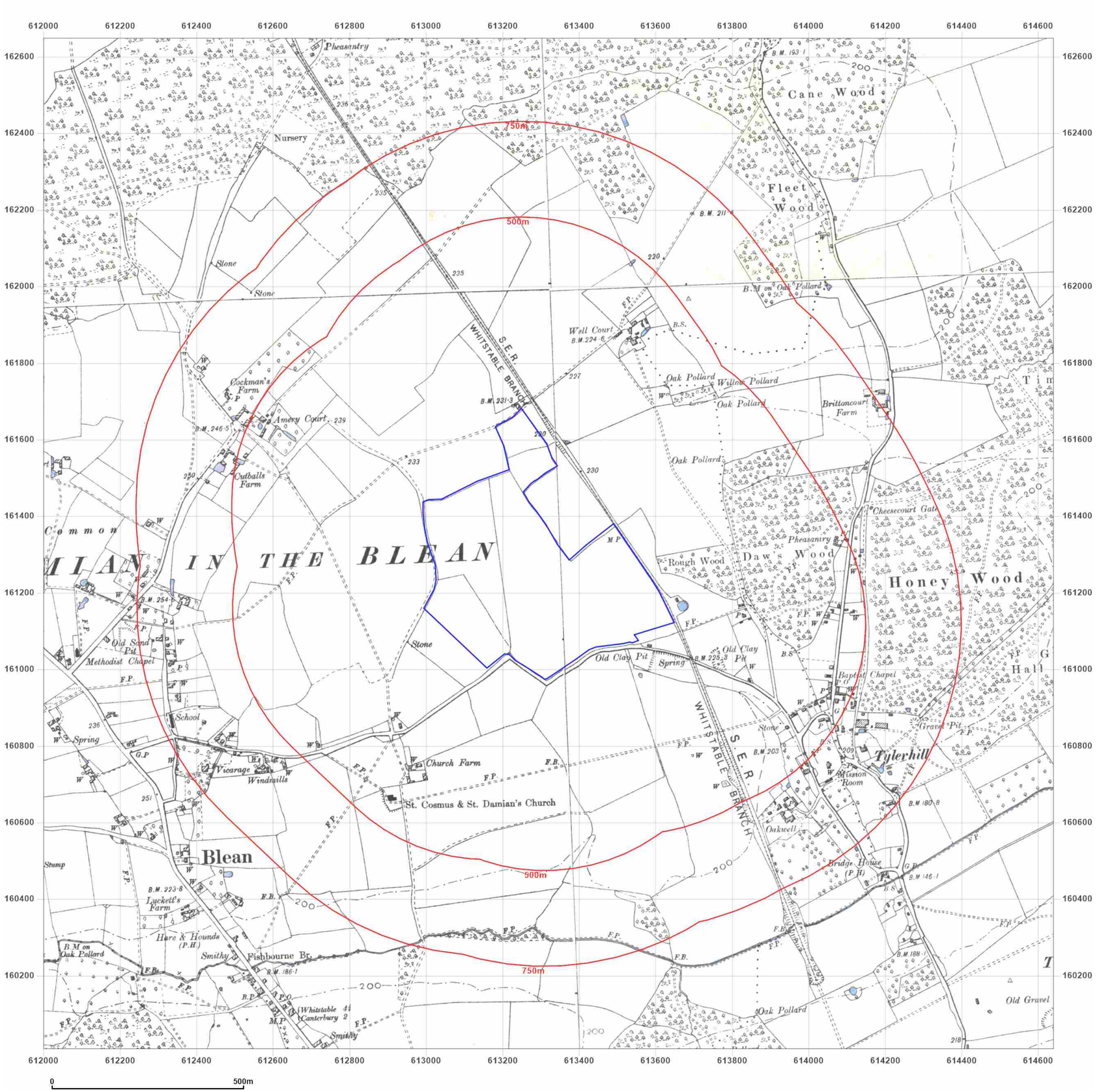
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: County Series

Map date: **1896**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1873
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

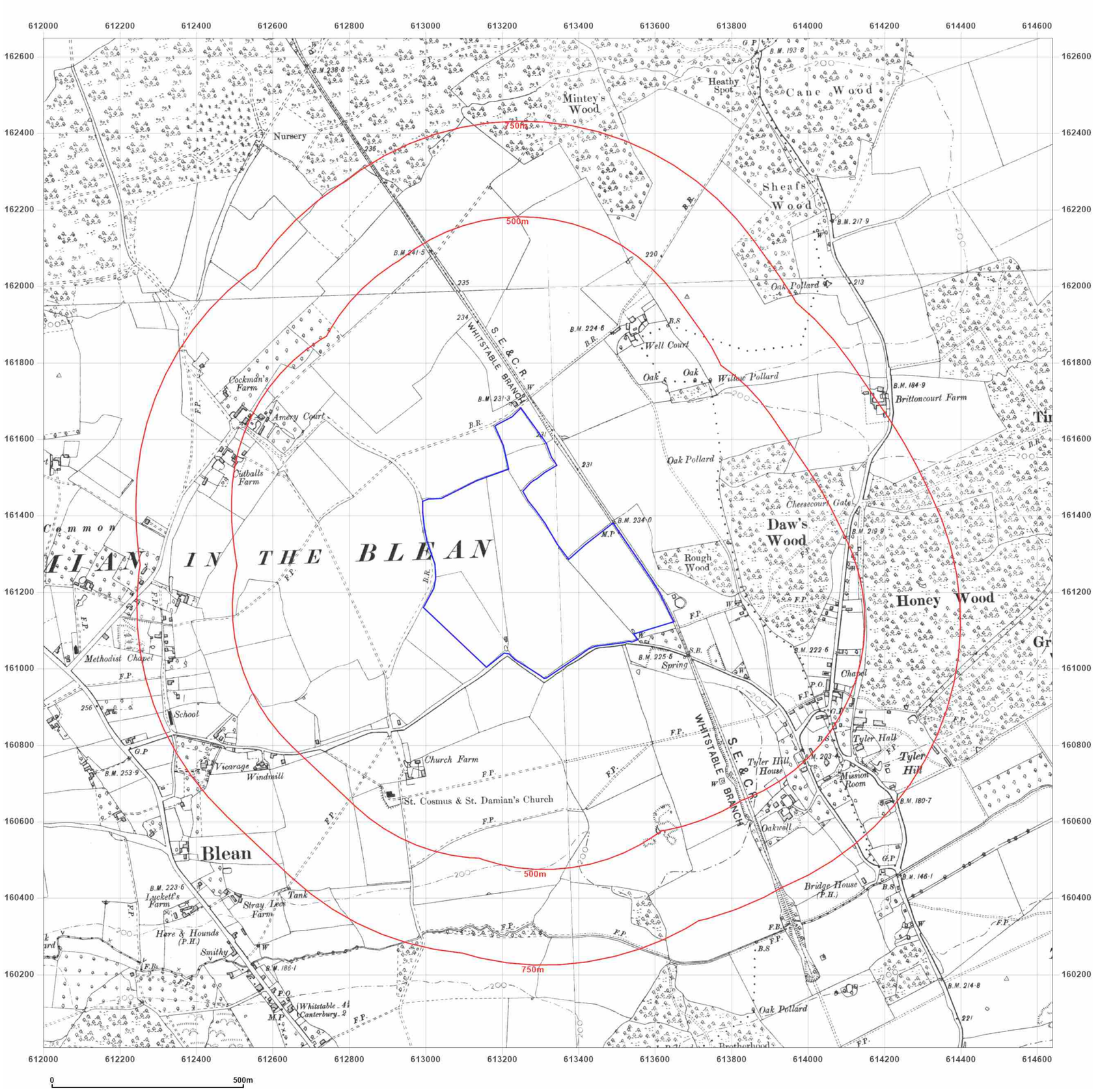
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: County Series

Map date: **1906**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

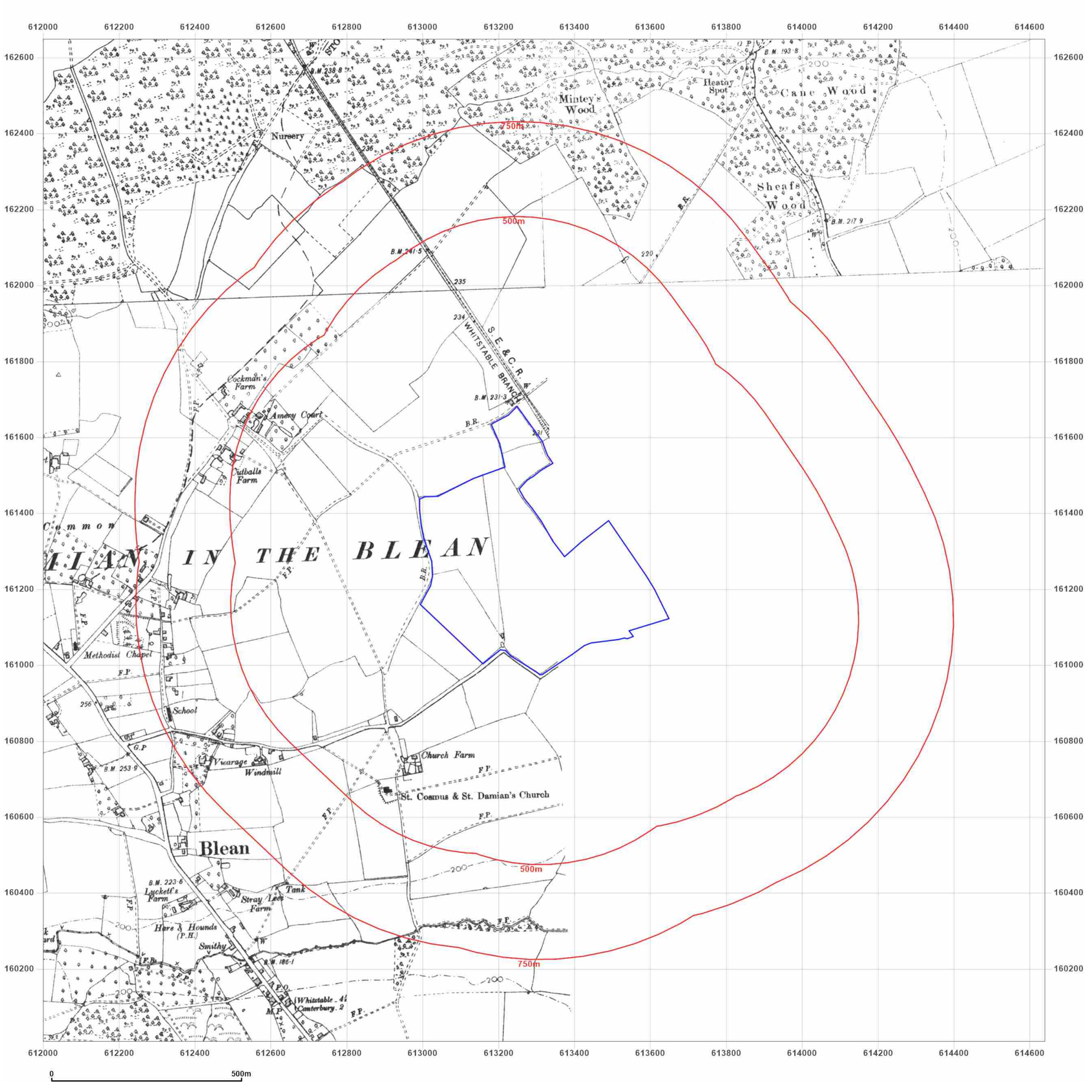
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: County Series

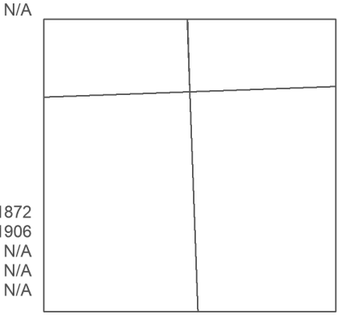
Map date: **1906**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

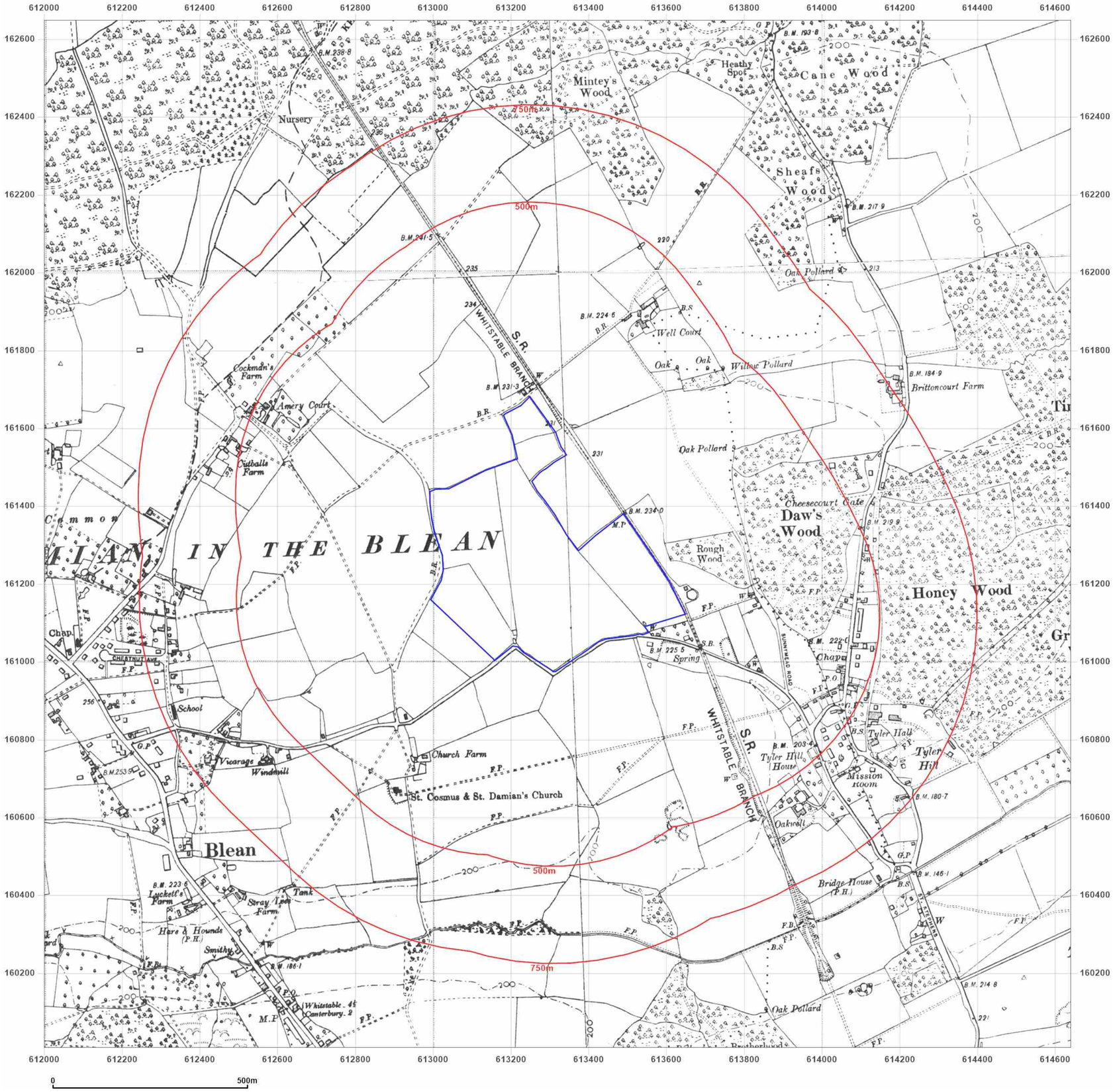
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

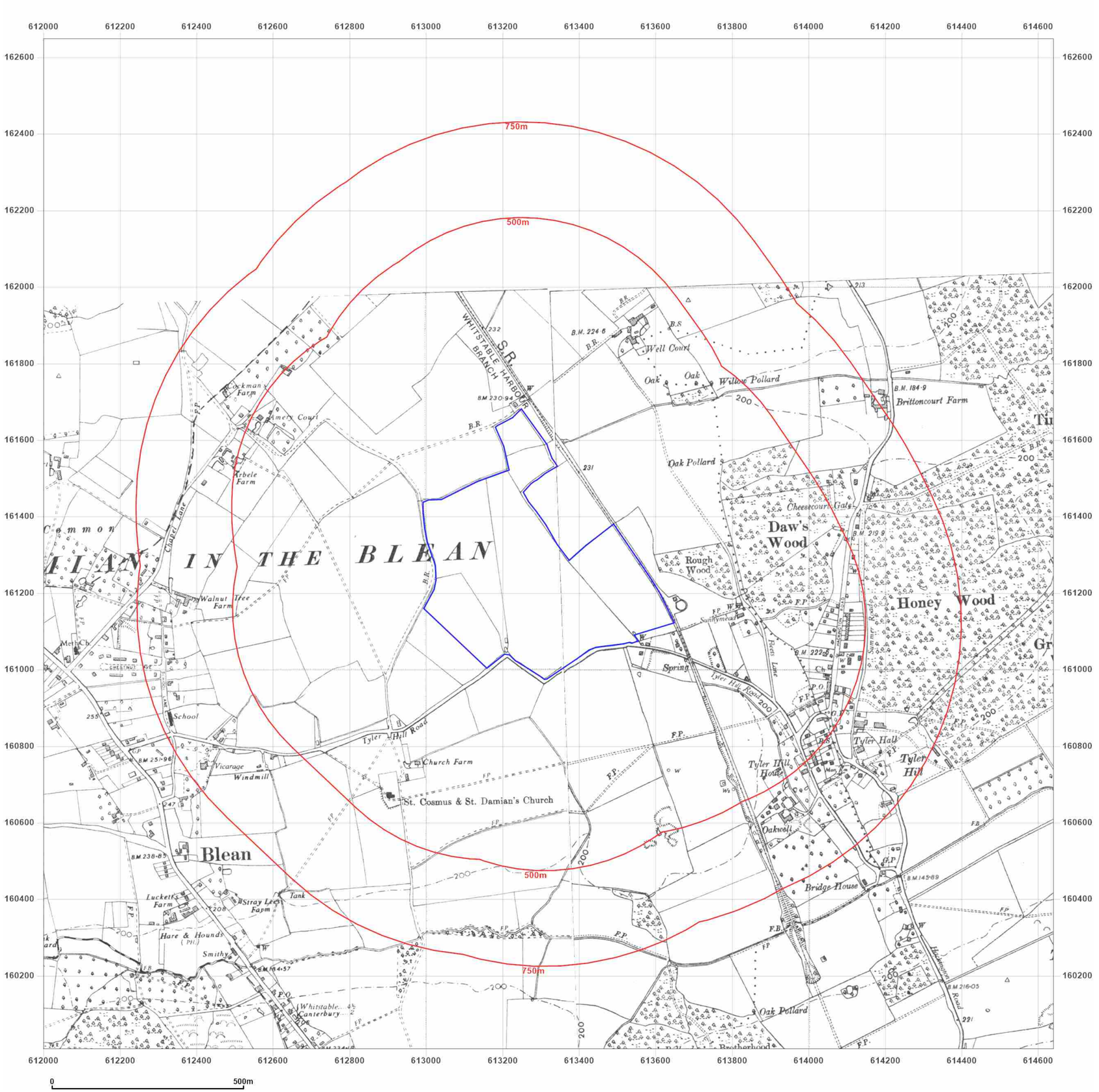
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

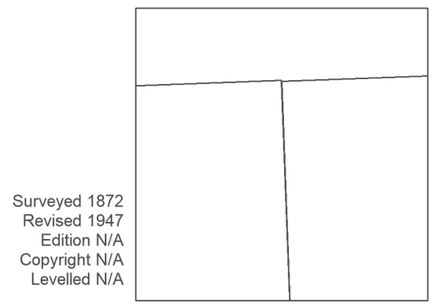
Map Name: County Series

Map date: **1947**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



Surveyed 1872
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

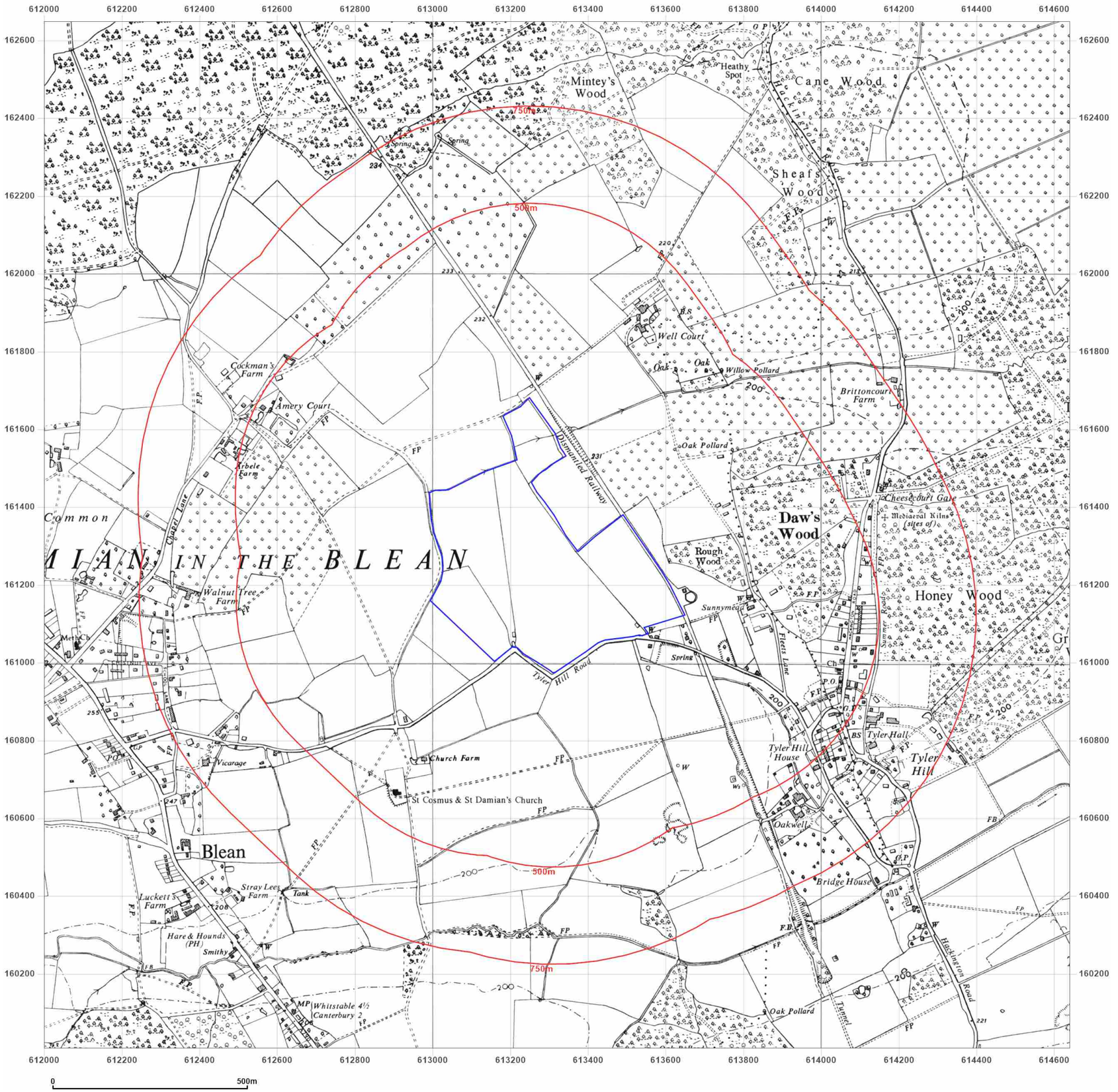
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: Provisional

Map date: **1957**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

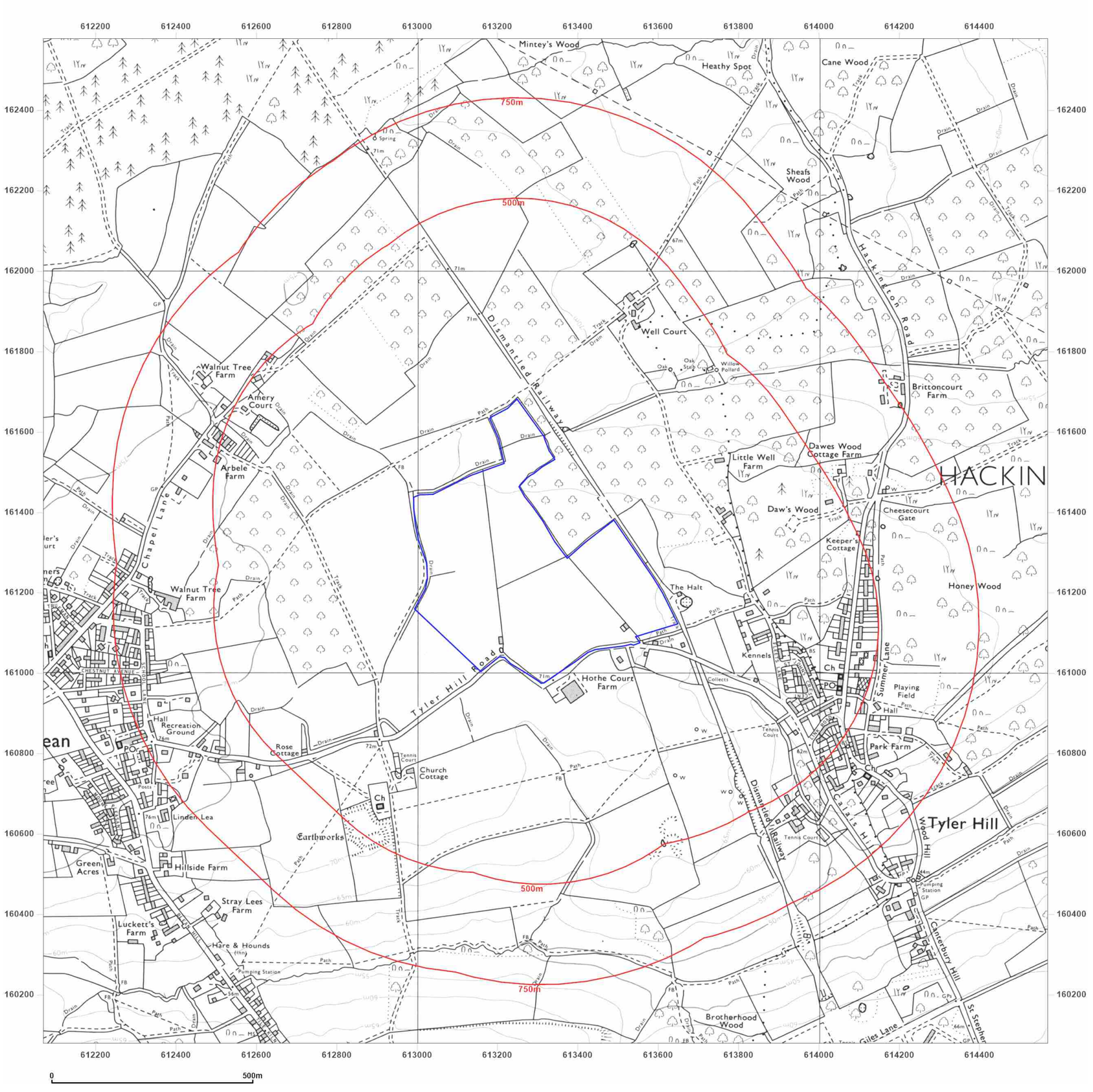
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: National Grid

Map date: **1974**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1972
Revised 1973
Edition N/A
~~Copyright 1974~~
Levelled N/A

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2001

Groundsure INSIGHTS

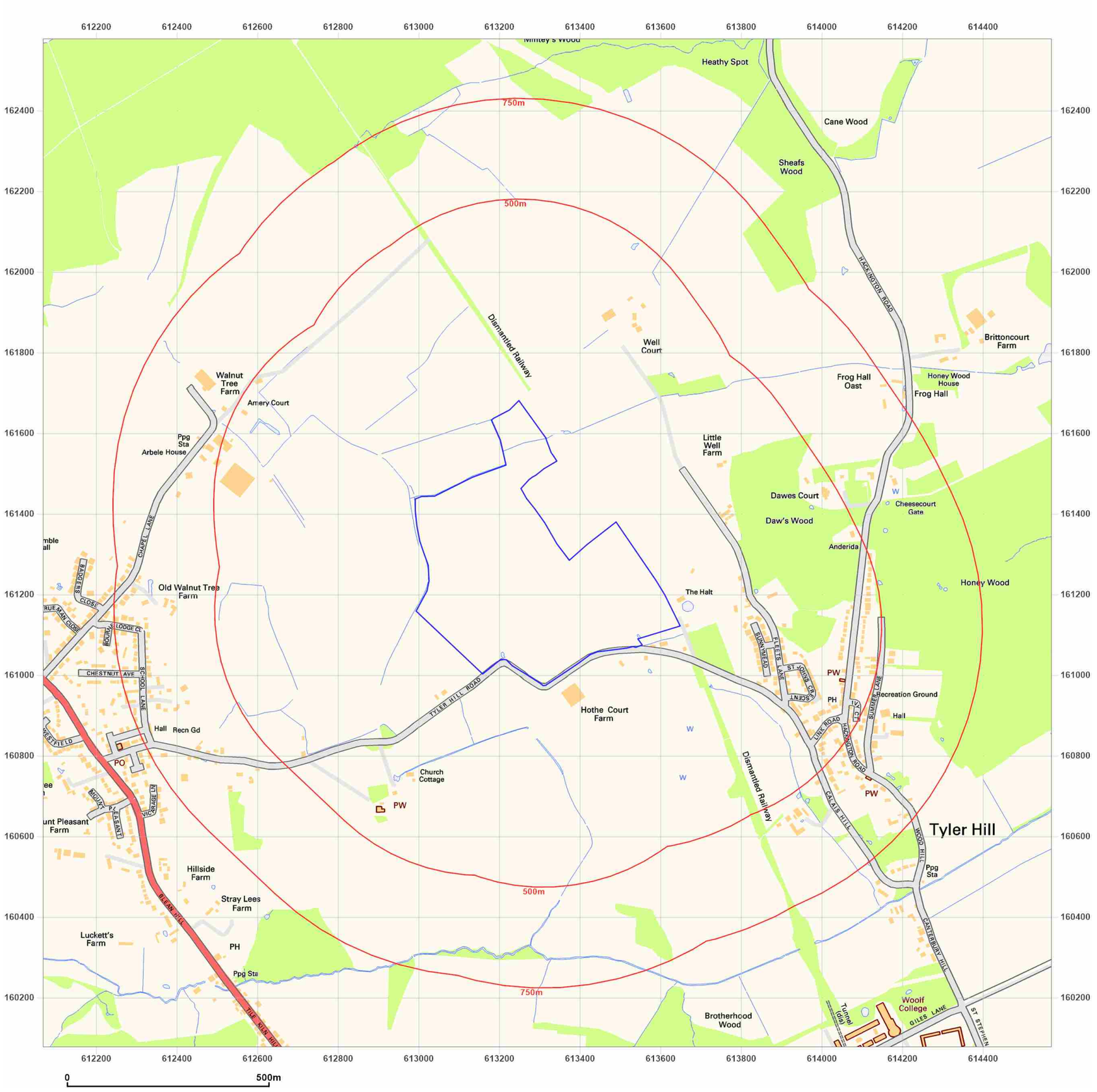
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2010

Groundsure INSIGHTS

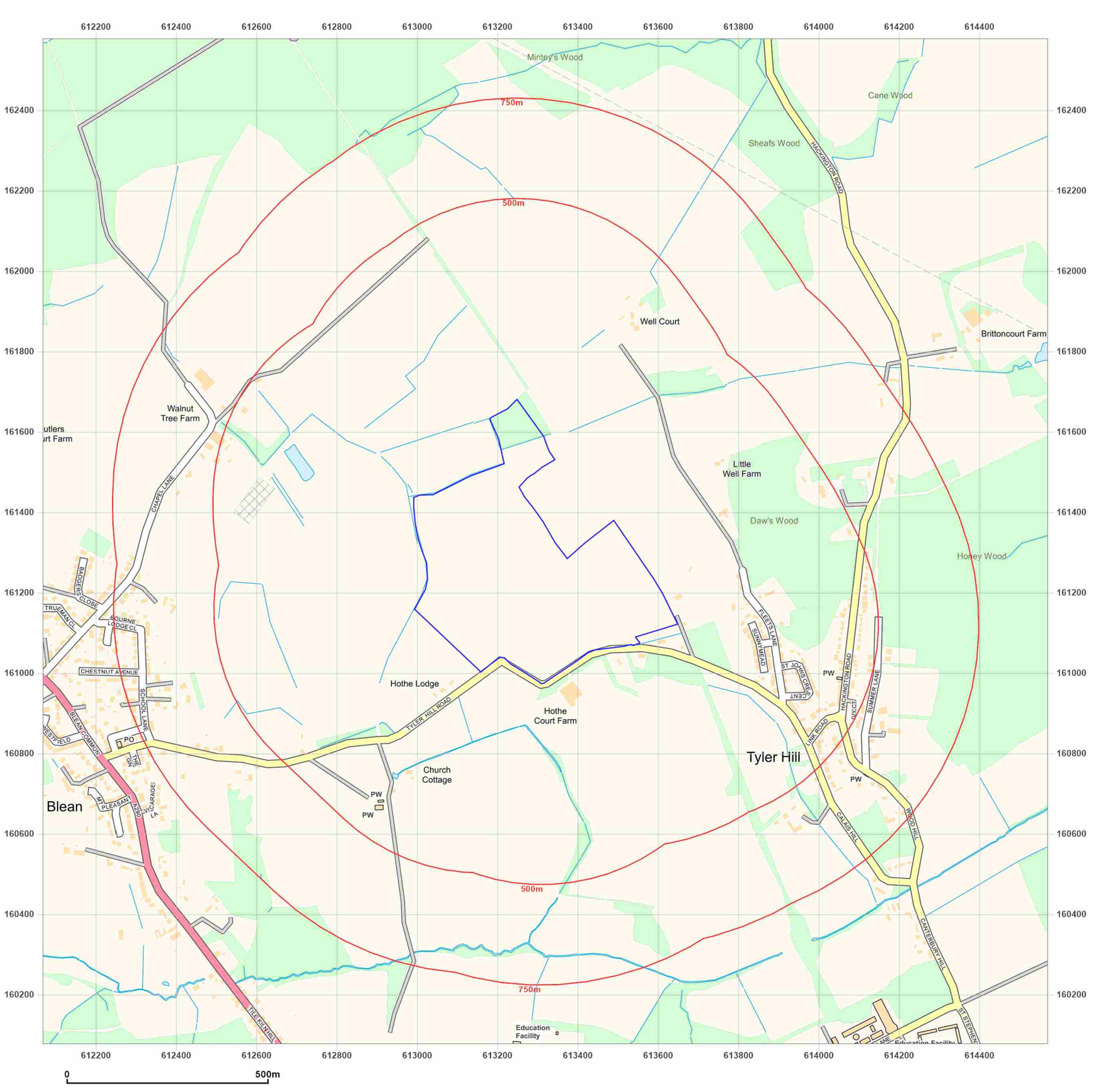
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: National Grid

Map date: **2021**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2021

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Appendix F

ENVIRONMENT AGENCY RESPONSE

CONFIDENTIAL

Harris, Callum

From:	KSL Enquiries <KSLE@environment-agency.gov.uk>
Sent:	03 June 2021 09:28
To:	Harris, Callum
Subject:	KSL 215292 CM - University of Kent
Attachments:	215292 CM D pollution incidents.xlsx; 215292 CM E pollution incidents.xlsx; 215292 CM F pollution incidents.xlsx; 215292 CM A pollution incidents.xlsx; 215292 CM B pollution incidents.xlsx; 215292 CM C pollution incidents.xlsx

Dear Callum Harris

Thank you for your request for information that was received on 13 April 2021.

I apologise for the delay in replying and for any inconvenience caused. Thank you for your patience at this time.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

Regarding the sites A-F located at: University of Kent, Canterbury and as shown on your plan, we hold the following information;

Are there any environmental issues associated with the above named site?

Please find attached 6 summaries of pollution incidents within approximately 500m of each site A-F. With respect to incident 38382 found near site F, the Environment Agency visited the address and gave advice and guidance to the Landowner as to the cause of the pollution to their private water supply. As far as we are aware the Landowner acted upon our advice. We have received no further reports from the Landowner as to the private water supply being continually affected to date. As the water supply was private we had no statutory or regulatory concerns at the time and the incident was closed.

We are specifically interested in anything that could have led to contamination of soil or groundwater either beneath the site or within a 500m radius?

Land that may be affected by contamination is dealt with by Local Authorities, you should contact the Contaminated Land officer in the Environmental health Department in the first instance. The Environment Agency has no record of any sites being determined as Contaminated Land under **S78** of the Environmental protection act in this vicinity and is not dealing with any designated Special Sites under that Regime at this location.

Do you hold any records of water quality within 1km of the site?

Water quality data is available online, in the first instance please visit https://data.gov.uk/dataset/water-quality-archive

Are you aware of the presence of above ground storage tanks/gas meters on adjacent sites

We hold no record

and are you aware of any spills or leaks associated with these?

Please refer to the 6 summaries of pollution incidents within approximately 500m of each site A-F.

Are there any records of landfill ……. Within (approximately) **500m of the site**

A - no authorised or historic landfills
B - no authorised or historic landfills
C - no authorised or historic landfills
D - no authorised or historic landfills

E - no authorised or historic landfills
F - Authorised landfill site (PAS Active IPPC Authorisation) - Shelford Landfill Site - EPR/XP3434HX (WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE) Permission status: Effective. Current PAS no: DP3536DC.
Historic landfill sites - Shelford Quarry and Shelford Sandpit

Historic landfill site information can be obtained from the following links
https://data.gov.uk/dataset/17edf94f-6de3-4034-b66b-004ebd0dd010/historic-landfill-sites (for individuals and consultants)
https://environment.data.gov.uk/DefraDataDownload/?mapService=EA/HistoricLandfill&Mode=spatial (for consultants Arcgis users only)
Any available further information can be obtained from the local authority who hold records for historic landfill sites.

or waste transfer activities within 500m of the site?
For information on permitted waste activities and exemptions please visit https://www.gov.uk/guidance/access-the-public-register-for-environmental-information where you can conduct a distant search

Have there been any soil or groundwater remedial works carried out at the site or within 500m of the site?
Any available information about site investigations carried out at your site of interest may be held on the public register related to planning and development at the Local Authority Planning Department.

Please refer to the Open Government Licence which explains the permitted use of this information.

If you have any further queries or if you'd like us to review the information we have provided under the Freedom of Information Act 2000 and Environmental Information Regulations 2004 please contact us within two months and we will happily do this for you.

Kind Regards,

Claire McConchie
Customers & Engagement Officer
Kent, South London & East Sussex

Environment Agency | 0208 4746848 | Orchard House | Endeavour Park | London Road | West Malling | Kent | ME19 5SH

From: Harris, Callum [mailto:callum.harris@wsp.com]
Sent: 30 April 2021 09:41
To: KSL Enquiries <KSLE@environment-agency.gov.uk>
Subject: RE: KSL 215292 CM - University of Kent - Environment Agency - Request for information

Hi Claire,

Apologies for the ambiguous map, the attached should be a better guide. If we can have searches covering Sites A through to F that would be great,

Kind regards,

Callum Harris

Callum Harris Msci FGS
Assistant Geo-environmental Consultant

Mobile: +447385463185

wsp.com

Confidential
This message, including any document or file attached, is intended only for the addressee and may contain privileged and/or confidential information. Any other person is strictly prohibited from reading, using, disclosing or copying this message. If you have received this message in error, please notify the sender and delete the message. Thank you.

WSP UK Limited, a limited company registered in England & Wales with registered number 01383511. Registered office: WSP House, 70 Chancery Lane, London, WC2A 1AF.

From: KSL Enquiries <KSLE@environment-agency.gov.uk>
Sent: 30 April 2021 09:38
To: Harris, Callum <callum.harris@wsp.com>
Subject: KSL 215292 CM - University of Kent - Environment Agency - Request for information

Dear Callum Harris,

Re: KSL 215292 CM - University of Kent - Environment Agency - Request for information

Thank you for your enquiry of 13 April 2021.

We have received your site map, however please could you clarify which is the site that you require information.
(i.e. Which is the relevant boundary for us to use in our search?)

Until we receive this your request will be placed on hold.

Kind regards,

Claire McConchie
Customers & Engagement Officer
Kent, South London & East Sussex

Environment Agency | Orchard House | Endeavour Park | London Road | West Malling | Kent | ME19 5SH

From: Enquiries, Unit
Sent: 21 April 2021 11:52
To: 'callum.harris@wsp.com' <callum.harris@wsp.com>
Subject: FW: 210421/SSR27 - University of Kent - Environment Agency - Request for information

Dear Callum,

I have passed your e-mail to the local customer team who will deal with your request.

The Freedom of Information Act and Environmental Information Regulations state that a public authority must respond to requests for information within 20 working days.

However due to the ongoing COVID-19 pandemic affecting staff and resources we may take longer than the 20 working days to reply. We will aim to provide an answer as soon as we can.

You can find more information about our service commitment by clicking on the link below:

https://www.gov.uk/government/publications/environment-agency-customer-service-commitment

You can contact our customer team directly on the contact details below, or call the National Customer Contact Centre on 03708 506506 who will transfer you to the area team.

Please quote your enquiry reference 210421/SSR27 in any correspondence with us regarding this matter.

Customers & engagement team
Environment Agency - Kent,South London & East Sussex Area - KSLE@environment-agency.gov.uk

Kind Regards

Simone Roberts
National Customer Contact Centre
Environment Agency

☎ Tel: 03708 506 506
💻 Web Site: www.gov.uk/environment-agency

Click an icon to keep in touch with us:-

From: Harris, Callum [mailto:callum.harris@wsp.com]
Sent: 13 April 2021 13:52
To: Enquiries, Unit <enquiries@environment-agency.gov.uk>
Subject: 210421/SSR27 - University of Kent - Environment Agency - Request for information

Dear Enquiries Team,

I am currently undertaking environmental consultancy work on a site located at the below address and would like to ask if you have any information relevant to this site in your database.

The site is located at: University of Kent, Canterbury, CT2 7NZ. A map showing the location of the site is attached.

I would like to ask if you hold any pertinent records on your database regarding the site including:

- Are there any environmental issues associated with the above named site? We are specifically interested in anything that could have led to contamination of soil or groundwater either beneath the site or within a 500m radius?
- Do you hold any records of water quality within 1km of the site?
- Are you aware of the presence of above ground storage tanks/gas meters on adjacent sites and are you aware of any spills or leaks associated with these?
- Are there any records of landfill or waste transfer activities within 500m of the site?
- Have there been any soil or groundwater remedial works carried out at the site or within 500m of the site?

I understand that there may be a charge for an information search, if this is the case please advise me and I will arrange for a purchase order to be issued.

Any advice or information you can provide on this site will be most gratefully received. If you need any further information or have any queries regarding this request please do not hesitate to contact me.

Kind regards

Mr. Callum Harris Msci FGS
Assistant Geo-environmental Consultant

Mobile: +447385463185

wsp.com

Confidential
This message, including any document or file attached, is intended only for the addressee and may contain privileged and/or confidential information. Any other person is strictly prohibited from reading, using, disclosing or copying this message. If you have received this message in error, please notify the sender and delete the message. Thank you.

WSP UK Limited, a limited company registered in England & Wales with registered number 01383511. Registered office: WSP House, 70 Chancery Lane, London, WC2A 1AF.

NOTICE: This communication and any attachments ("this message") may contain information which is privileged, confidential, proprietary or otherwise subject to restricted disclosure under applicable law. This message is for the sole use of the intended recipient(s). Any unauthorized use, disclosure, viewing, copying, alteration, dissemination or distribution of, or reliance on, this message is strictly prohibited. If you have received this message in error, or you are not an authorized or intended recipient, please notify the sender immediately by replying to this message, delete this message and all copies from your e-mail system and destroy any printed copies.

-LAEmHhHzdJzBlTWfa4Hgs7pbKl

Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.
Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.

2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

wsp.com

CONFIDENTIAL

University of Kent

CANTERBURY CAMPUS - SITE D

Phase 1 Preliminary Risk Assessment

70080896-008
JUNE 2021

CONFIDENTIAL

University of Kent

CANTERBURY CAMPUS - SITE D

Phase 1 Preliminary Risk Assessment

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70080896

OUR REF. NO. 70080896-008

DATE: JUNE 2021

WSP

2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

Phone: +44 148 352 8400

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1
Remarks		
Date	24 June 2021	
Prepared by	Callum Harris	
Signature		
Prepared by		
Signature		
Checked by	Lydia Evans	
Signature		
Authorised by	Rob Hares	
Signature		
Project number	70080896	
Report number	70080896-008	
File reference	\\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\GW Ground & Water\(6) Reporting\02 Preliminary Risk Assessment\Site D	

CONTENTS

1	**INTRODUCTION AND OBJECTIVES**	**1**
1.1	**TERMS OF REFERENCE**	**1**
1.2	**PROPOSED DEVELOPMENT**	**1**
1.3	**AIMS AND OBJECTIVES**	**1**
1.4	**SCOPE OF WORKS**	**1**
1.5	**LEGISITLATIVE CONTEXT AND GUIDANCE**	**1**
1.6	**SOURCES OF INFORMATION**	**2**
1.7	**LIMITATIONS**	**2**
1.8	**UNDERSTANDING THE RISK**	**2**
2	**SUMMARY OF THE SITE AND SURROUNDING AREA**	**4**
2.1	**SITE LOCATION AND DESCRIPTION**	**4**
3	**SITE AND REGIONAL HISTORY**	**5**
3.1	**HISTORICAL MAPS AND PHOTOS**	**5**
3.2	**HISTORICAL SITE OCCUPANTS AND OWNERSHIP**	**6**
3.3	**PREVIOUS REPORTS**	**6**
4	**ENVIRONMENTAL SETTING**	**7**
4.1	**GEOLOGY**	**7**
4.2	**GROUND STABILITY HAZARDS**	**7**
4.3	**HYDROLOGY**	**8**
4.4	**HYDROGEOLOGY**	**8**
4.4.1	NITRATE VULNERABILITY ZONE	9
4.4.2	SOURCE PROTECTION ZONES (SPZ)	9

4.5 DESIGNATED SITES AND SENSITIVE LAND USES 9
4.6 RADON 10
4.7 PRELIMINARY HYDROGEOLOGICAL MODEL 10
5 REGULATORY INFORMATION AND CONSULTATION 11
5.1 LOCAL AUTHORITY 11
5.2 ENVIRONMENT AGENCY 11
5.3 PLANNING HISTORY 12
5.4 UNEXPLODED ORDNANCE 12
6 RISK ASSESSMENT 13
6.1 PRELIMINARY CONCEPTUAL SITE MODEL 13
6.2 POTENTIAL SOURCES OF CONTAMINATION 14
6.3 POTENTIAL RECEPTORS 14
6.4 PRELIMINARY CONCEPTUAL SITE MODEL (CSM) 15
7 CONCLUSIONS AND RECOMMENDATIONS 18
7.1 CONCLUSIONS 18
7.2 RECOMMENDATIONS 19

TABLES

Table 2-1 – Summary of Site Details 4
Table 3-1 – Site History 5
Table 5-1 – Summary of Database Information 11
Table 6-1 – Potential Sources of Contamination 14
Table 6-2 – Plausible Contaminant Linkages 15

APPENDICES

APPENDIX A

FIGURES & DRAWINGS

APPENDIX B

LIMITATIONS

APPENDIX C

CIRIA RISK DEFINITIONS

APPENDIX D

SITE PHOTOGRAPHS

APPENDIX E

GROUNDSURE REPORT / HISTORICAL MAPS

APPENDIX F

ENVIRONMENT AGENCY RESPONSE

1 INTRODUCTION AND OBJECTIVES

1.1 TERMS OF REFERENCE

WSP UK Ltd has been instructed by The University of Kent (UoK) (“The Client”) to undertake a Phase 1 Preliminary Risk Assessment to support the delivery of a planning and disposal strategy associated with surplus land within UoK’s ownership. There are six subject Sites associated with the strategy and this report is focussed on Site D (”The Site”).

1.2 PROPOSED DEVELOPMENT

The exact redevelopment proposal of the Site is currently unknown. However, at this stage it is considered likely that the development will be for residential use that incorporates soft landscaping.

1.3 AIMS AND OBJECTIVES

The key objectives of this assessment are as follows:

- Develop a preliminary Conceptual Site Model in order to identify potential ground contamination associated with the Site; and,
- Evaluate the likely exposure and its potential significance on identified receptors and provide recommendations to support the proposed development.

1.4 SCOPE OF WORKS

In order to meet the above aims and objectives the following tasks are to be carried out:

- Completion of a Site walkover;
- A review of publicly available historical maps and plans (where available) to identify former land uses and potential contaminative activities on and surrounding the Site;
- A review of relevant databases (e.g. Groundsure, BGS Data, PBA non-coal mining and natural cavities database);
- Contact with relevant regulators (Environment Agency and Canterbury City Council);
- A review of relevant publicly available information relating to hydrological features, hydrogeology, neighbouring land use, ecologically sensitive uses and geology in order to establish the environmental setting of the Site and ground conditions in the area;
- Development of a preliminary Conceptual Site Model via the source-pathway-receptor contaminant linkage approach;
- An outline of the environmental risks and / or opportunities, with respect to ground, groundwater and ground gas conditions, which may potentially arise as liabilities or constraints associated with future use of the Site; and,
- Preparation of a Phase 1 Preliminary Risk Assessment Report.

1.5 LEGISITLATIVE CONTEXT AND GUIDANCE

The assessment was undertaken in the legislative context of:

- Part 2A of The Environmental Protection Act (1990); and,
- The National Planning Policy Framework (2019).

The following good practice and statutory guidance was considered, and the assessment was undertaken in general accordance with:

- Environment Agency 'Land contamination: risk management guidance (October 2020)
- BS 10175:2011+A2:2017 Investigation of potentially contaminated Sites. Code of practice; and,
- CIRA C552 'Contaminated Land Risk Assessment. A guide to good practice' (2001).

1.6 SOURCES OF INFORMATION

The following relevant sources of information were used in the production of this report:

- Groundsure report, dated April 2021, Order Ref: WSP-7710140;
- British Geological Survey (BGS) Online Viewer (http://mapapps.bgs.ac.uk/geologyofbritain/home.html) accessed on 21 April 2021;
- BGS map – South London, England and Wales Sheet 273, Solid and Drift Geology, 1:50,000 Series (1982), accessed 21 April 2021;
- British Geological Survey (BGS) Online Viewer (http://mapapps2.bgs.ac.uk/geoindex/home.html?layer=BGSHydroMap&_ga=2.134221169.1060074440.1618391808-586268598.1617716937) – Hydrogeological Map of the UK, 1: 625,000, accessed 21 April 2021;
- Coal Authority, (https://mapapps2.bgs.ac.uk/coalauthority/home.html), accessed 21 April 2021;
- Flood Maps for Planning Service (incorporated into the Groundsure report) accessed 21 April 2021;
- Multi Agency Geographic Information for the Countryside (MAGIC) (https://magic.defra.gov.uk/) accessed 21 April 2021;
- Public Health England, UK Maps of Radon (https://www.ukradon.org/information/ukmaps) accessed 21 April 2021;
- Canterbury City Council Planning Applications (https://pa.canterbury.gov.uk/online-applications/search.do?action=simple accessed 22 April 2021;
- Zetica UXO Risk Maps (https://zeticauxo.com/downloads-and-resources/risk-maps/) accessed 21 April 2021; and,

The report contains British Geological Survey materials ©NERC 2019 and Environment Agency information ©Environment Agency and database right.

1.7 LIMITATIONS

This report is addressed to and may be relied upon by The University of Kent and may not be relied upon or transferred to any other parties without the express written agreement of WSP.

This report should be read and used in full. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party. WSP cannot be held liable for third party information. Full details of the limitations are provided as **Appendix B**.

1.8 UNDERSTANDING THE RISK

It is important to recognise that any risks identified during a preliminary assessment such as that presented below are perceived risks based on the recorded information reviewed. A more detailed

assessment of the actual risks can only be assessed following intrusive investigations. The preliminary assessments presented herein are qualitative based on professional judgements following review of the available data and within the context of the existing/proposed use. Those risk categories presented (Very Low, Low, Low to Moderate, Moderate, High, Very High) follow guidance presented in CIRIA Publication C552, Contaminated Land Risk Assessment – A Guide to Good Practice. CIRIA states that risk levels should be based both on an understanding of both the probability (likelihood) of a risk occurring and the magnitude of the potential consequence (severity) of a risk.

CIRIA defines four levels of probability and four levels of severity with relation to contaminated land, as presented in **Appendix C**.

2 SUMMARY OF THE SITE AND SURROUNDING AREA

2.1 SITE LOCATION AND DESCRIPTION

Table 2-1 provides a detailed summary of the Site and information obtained from a Site walkover which was completed by a WSP representative on 20 April 2021. All external areas of the Site were accessed. Selected photographs from the walkover are presented in **Appendix D**.

A review of Ordnance Survey (OS) mapping, online aerial photography and relevant regulatory information obtained from the Ground report is also summarised below, where applicable. The Groundsure report is included in **Appendix E**. The Site Location plans are enclosed in **Appendix A**.

Table 2-1 – Summary of Site Details

Detail	Comment
Name and Address of Site	Land north of Tyler Hill Road, Canterbury, CT2 7NZ
Current Site Use	The Site is situated in countryside and is currently used as arable farmland, which is crossed by public footpaths and inland rivers. The Site is entirely bordered by a fenced treeline with further farmland located beyond. Tyler Hill Road borders the southern boundary of the Site. There are no buildings on the Site except for a small corrugated metal shed located by the eastern boundary. No invasive species were encountered during the walkover. No infrastructure or fly tipped waste was encountered during the walkover. The inland rivers on Site were dry at the time of the walkover.
National Grid Reference	613235 161227
Area	22.86 Ha (approx.)
Topography	A topographical map is contained within the "University of Kent Framework Masterplan: Supporting Documents" and indicates that the majority of the Site is situated 70 – 75 m above sea level with small areas to the north-east and south-east that are situated 65 – 70 m above sea level.

3 SITE AND REGIONAL HISTORY

3.1 HISTORICAL MAPS AND PHOTOS

Historical maps were obtained via a Groundsure Report (enclosed in **Appendix D**) and were assessed to identify potentially significant contaminative activities at the Site, and within 500 m of the Site boundary that may pose a risk to current or future Site users and the wider environment. **Table 3-1** below presents a summary of the historical maps.

Table 3-1 – Site History

Map date	On Site	Off Site
1873 (1:10,560 scale)	The Site encompasses five fields with several footpaths.	The surrounding land comprises countryside. A railway line and electric telegraph line run parallel to the eastern boundary of the Site. A pond is situated adjacent to the south-east corner of the Site. A clay pit is located 250 m south-east of the Site.
1896 – 1906 (1:10,560 scale)	The footpaths on Site have been removed. A small pond is located at the south-eastern boundary and there is another s located at the central southern boundary. A small structure is located to its north.	A second clay pit and a spring are mapped approximately 50 to 100m to the south-east of the Site. There are unmarked excavations 500 m south of the Site.
1938 (1:10,560 scale) **1947 (1:10,560 scale)** **1957 (1:10,560 scale)**	A small structure has been constructed on the eastern boundary of Site.	The South Eastern Railway Whitstable Branch has now been dismantled. Orchards are labelled to the north-east and north-west of the Site.
1972 - 1974 (1:10,000, 1:2,500 scale)	There are several drains marked along the north and west boundaries of the Site. Two small structures have appeared towards the south-eastern boundary	The building located next to the pond situated just off the south-eastern boundary of the Site is marked as “The Halt”. There has been residential expansion in Tyler Hill Village 175 m south-east. The two clay pits to the south-east have been infilled and small residential properties have been built on the land. Hothe Court Farm has been built near to the southern boundary. Earthworks are situated 500 m south-west.
2001 (1:10,000 scale) **2010 (1:10,000 scale)**	No significant change noted	The earthworks and excavations have been infilled.

Map date	On Site	Off Site
2021 (1:10,000 scale)	The ponds at the southern boundary of the Site have been removed / backfilled.	No significant change noted

The historical map review indicates that little development has occurred on the Site with only minor structures being built and removed. Two small ponds were located within the southern area of the Site but appear to have been backfilled in more recent years.

The Sites use as agricultural land may have led to the shallow soils being impacted with herbicides and pesticides and residues of these contaminants may still be present on Site today.

The presence of small structures and the ponds on Site may have resulted in infilled Made Ground. Depending upon its source, Made Ground has the potential to be impacted by heavy metals and metalloids, total petroleum hydrocarbons, polycyclic aromatic hydrocarbons and asbestos containing materials.

The historical maps show that the Site and surrounding land has remained predominantly rural / farmland with some excavations and mineral extraction (clay pits) occurring offsite.

Some areas of potentially infilled land within the surrounding area may be present associated with the clay pits, the excavations to the south and the earthworks. Infilled land can be a source of ground gas contamination that could potentially impact the Site.

Data from the Groundsure report indicates the two clay pits are named the Tyler Hill clay pits and they were excavated for clay and shale.

Farming activity within the surrounding land, such as orchards and growing of crops, may have additionally led to shallow soils being impacted with herbicides and pesticides, residues of which may still be present today.

Made Ground could potentially be present along the eastern Site boundary associated with the construction and demolition of the South Eastern Railway line.

3.2 HISTORICAL SITE OCCUPANTS AND OWNERSHIP

Data provided by the Client (Masterplan Supporting Documents Volume 2, page 156) indicates that the majority of the Site was owned in the 19th Century by Exors of Thomas Fleet with a small area to the west owned by Eastbridge Hospital prior to being purchased by the UoK.

3.3 PREVIOUS REPORTS

Several Masterplan supporting documents have been provided to WSP in regard to the wider Canterbury Development. These documents include information pertaining to Site D, and that data has been used to supplement this report.

4 ENVIRONMENTAL SETTING

4.1 GEOLOGY

Published BGS mapping indicates that the Site and surrounding area are underlain by the geological sequence summarised in **Table 4-1**.

Table 4-1 – Summary of Anticipated Geological Strata

Group	Unit	Description
Superficial Deposits	Head	Head deposits comprise poorly sorted and poorly stratified, angular rock debris and / or clayey hillwash and soil creep. Can occur locally with lenses of silt, clay or peat and organic material.
Bedrock	London Clay Formation	The London Clay Formation comprises bioturbated bluish grey slightly sandy clays.

There are no relevant historical borehole logs located within 250 m of the Site.

4.2 GROUND STABILITY HAZARDS

Information on potential ground hazards assessed by the BGS are summarised in **Table 4-2.**

Table 4-2 - Ground Stability Hazards on Site (Groundsure, 2021)

Feature	Hazard
Collapsible ground stability	Very low potential risk where the Site is underlain by the London Clay Formation and where no superficial deposits are present. A very low risk indicates it is unlikely for deposits with potential to collapse when loaded and saturated to be present. Moderate risk where the Site is underlain by Head Deposits. A moderate risk indicates there is a probable potential for collapsible deposits when deposits are loaded and saturated.
Compressible ground stability	Negligible risk across the Site. Therefore, compressible deposits are unlikely to cause potential hazards to receptors.
Ground Dissolution stability	Negligible risk for ground dissolution stability hazards to occur. Therefore, ground dissolution is unlikely to cause potential hazards to receptors.
Landslide ground stability	Very low risk for landslide ground stability hazards. Therefore, slope instability is unlikely to cause potential hazards to receptors.
Running sand ground stability	Negligible risk across the Site.

Feature	Hazard
	Therefore, running sands are unlikely to cause potential hazards to receptors.
Shrinking or swelling clay	Moderate risk where the Site is underlain by the London Clay Formation. A moderate risk indicates ground conditions that are predominantly of high plasticity. Following this, risk consideration should be given for shrink / swell clays, in woodland areas that are underlain by the London Clay Bedrock to affect receptors.

The Coal Authority data indicates that the Site is not located within a Coal Authority designated mining area.

Data from the Groundsure report indicates that there are no natural cavities or small scale non-coal related mining in or around the Site.

4.3 HYDROLOGY

Surface water features within 250 m of the Site are identified by the Groundsure report as:

- An underground inland river located at the Site's western boundary;
- A network of inland rivers at the northern and western boundaries of the Site that extend into the surrounding land;
- A minor inland river that crosses the wooded area in the north of the Site; and,
- A minor pond 30 m east of the Site.

The rivers onsite and within the surrounding land are part of a water body catchment known as Sarre Penn and the River Wantsum. They fall under the Stour management catchment and the Stour Marshes operational catchment.

No major surface water body has been identified within 250 m of the Site.

No licensed surface water abstraction record has been reported within 1000 m of the Site.

The Groundsure report indicates that the Site is not at a risk of flooding from rivers and sea.

Localised surface water flooding has been identified on Site associated with the river that crosses the northern wooded area. The highest risk recorded is a 1 in 30-year rainfall event with flood water reaching between 0.3m to 1.0 m above ground level.

4.4 HYDROGEOLOGY

The underlying Head Deposits and the London Clay Formation are both classified by the Environment Agency as unproductive strata, which are described as rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

No licensed groundwater abstraction has been reported within 500 m of the Site.

Reference to the Flood Map for Planning webpage notes that the Site is located entirely within Flood Zone 1 and thus has a low probability of flooding.

The risk from groundwater flooding is noted to be negligible.

4.4.1 NITRATE VULNERABILITY ZONE

The Site is not located within a surface water nitrate vulnerability zone.

4.4.2 SOURCE PROTECTION ZONES (SPZ)

The Site does not lie in or within 500 m of an SPZ.

4.5 DESIGNATED SITES AND SENSITIVE LAND USES

Data from the Groundsure report and MAGIC website has been assessed to identify designated sites and sensitive land uses within 500 m of the Site. **Table 4-4** provides a summary of these land uses.

Table 4-4 – Designated sites and sensitive land uses

Data type	Quantity	Comments
Sensitive Habitats / Species	1	Low confidence potential for sensitive deciduous broadleaved woodland to be on Site associated with the wooded area located in the northern section of the Site
Conservation Areas	3	The Canterbury and Whitstable railway, Hackington and Blean is located immediately east of the Site and Amery Court, Blean is located off the western Site boundary. Tyler Hill is located 7 m north-east of the Site.
SSSI Impact Risk Zones	1	Onsite – SSSI impact risk zones were developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.
Site of Special Scientific Interest (SSSI)	1	191 – 498 m north-east, West Blean and Thornden Woods.
Local Nature Reserve	1	25 m south-east, Tyler Hill Meadow.
Designated Ancient Woodland	4	193 – 299 m east, unknown; 204 – 492 m east, Daws Wood; 342 m north-east, Ozier Ground; and, 491 m east, Childs Forstal

The majority of the Site has an agricultural designation of Grade 2: very good quality. A strip of land located at the southern boundary is listed as Grade 3: good to moderate. A small triangular piece of land at the eastern boundary is non-agricultural land.

The Site does not lie within 500 m of any of the following sensitive land uses:

- Conserved Wetland Sites;
- Special Protection Areas;
- Areas of Outstanding National Beauty; and,
- National Nature Reserves.

4.6 RADON

According to Public Health England, the Site is not at risk from Radon (less than 1 % of homes are at risk).

4.7 PRELIMINARY HYDROGEOLOGICAL MODEL

The Site is underlain by Head Deposits and the London Clay Formation which are both unproductive strata and no significant groundwater body is expected to be present beneath the Site. There is a potential for pockets of perched water in the shallow soils and a localised water table around the inland rivers.

A network of inland rivers is located around the boundaries of the Site and one river crosses the wooded area in the north of the Site

5 REGULATORY INFORMATION AND CONSULTATION

The Groundsure report includes information and data collected from several organisations including the Environment Agency (EA), the Local Authority, the British Geological Survey (BGS, Department of Environment, Food and Rural Affairs (DEFRA) and Health & Safety Executive (HSE).

It is considered that the information listed in **Table 5-1** represents those of potential concern in relation of contamination of the Site. The full Groundsure report is provided in **Appendix E.**

Table 5-1 – Summary of Database Information

Data Type	OnSite	Within 250 m	Comments
Historical Railway and Tunnel Features	**0**	**1**	Railway sidings were mapped 28 m north-east of the Site in 1938.
BGS Recorded Mineral Sites	0	2	Tyler Hill Clay Pit (60 m and 163 m south-east). Excavated clay and shale. Currently ceased and infilled.
Surface Ground Workings	0	12	The closest recorded is an unspecified pit / old clay pit / ground workings identified 30 to 50 m south-east of the Site.
Waste Exemptions	0	35	Hothe Court Farm (38 m south) associated with storage of waste in a secure place. 34 records for Amery Court (474 m north-west) associated with use of waste in construction, spreading of waste on agricultural land, storage and burning of agricultural waste.

The Site is not situated within 500 m of the following:

- Pollution incidents to controlled waters;
- Historical landfill sites;
- Licensed waste management facilities; and,
- Radioactive substance authorisations.

5.1 LOCAL AUTHORITY

Canterbury City Council was contacted by WSP via email on 8 April 2021 to provide a land use enquiry. A response was received on 16 April 2021 stated that Canterbury City Council hold no information with regards to contamination or possible contamination pertaining to the Site or land within 250 m of the Site.

5.2 ENVIRONMENT AGENCY

WSP requested information from the Environment Agency on the 13 April 2021 to obtain any record that they may hold considered pertinent to the Site. Their response was received on the 3 June 2021. The Environment Agency has no record of any sites being determined as Contaminated Land under S78 of the Environmental protection act in the Site's vicinity and is not dealing with any designated

Special Sites under that Regime at this location. No pertinent data was provided for the Site. A copy of the Agency's response is presented in **Appendix F**.

5.3 PLANNING HISTORY

Canterbury City Council's public planning portal was accessed on 22 April 2021. One planning application (reference CA//17/00759) was associated with the Site and this was in reference to a planning application to expand the footprint of Wells Court Farm, which is located 60 m south-west of the Site.

Following a review of the planning application, it is not considered likely to have caused contamination to the Site and is not considered pertinent to this report.

5.4 UNEXPLODED ORDNANCE

The Zetica Bomb Risk Maps (available from the Zetica Limited website) have been reviewed to provide a preliminary assessment of potential Unexploded Ordnance (UXO) risks. The maps indicated that the Site is within a '**moderate**' risk area from UXO.

It is recommended that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate UXB risk area.

6 RISK ASSESSMENT

6.1 PRELIMINARY CONCEPTUAL SITE MODEL

The Preliminary Conceptual Site Model (CSM) is based upon the environmental conditions of the Site as described in previous sections. As the proposed development for the Site is unknown but understood to likely be residential the CSM has been developed following the most conservative criteria available, for residential development with private gardens.

The assessment follows a risk-based approach; with the potential environmental risk assessed qualitatively using the 'source-pathway-receptor' contaminant linkage concept introduced in the guidance documents (principally the LCRM 2021) on the practical implementation of the Environmental Protection Act 1990.

Environmental risk can be defined as the combination of the consequence of a harmful effect and the probability of its occurrence. The existence of a contaminant linkage is primarily dependant on site usage and environmental conditions. Any risks identified during a preliminary assessment, such as the ones presented in this document, are perceived risks based on the information reviewed. The risk categories presented follow guidance presented in CIRIA Publication C552, Contaminated Land Risk Assessment – A Guide to Good Practice. CIRIA defines four levels of probability and four levels of severity with relation to contaminated land, as presented in **Appendix C.**

The environmental risk assessment has been carried out by identifying and evaluating the significance of the following:

- **Potential sources of contamination:** these include any actual or potentially contaminating materials and activities, located either on or in the vicinity of the Site;
- **Potential receptors of contamination:** these can include Site users, adjacent users, controlled waters; and,
- **Potential pathways for contamination migration**: these are the routes or mechanisms by which contaminants may migrate from the source to the receptor.

6.2 POTENTIAL SOURCES OF CONTAMINATION

Table 6-1 provides a summary of the potential sources of contamination that may be present at the Site, as well as the likely nature of such sources.

Table 6-1 – Potential Sources of Contamination

Potential Source	Potential Contaminants of Concern	Likely/Anticipated Distribution
ON-SITE		
Agricultural land use (1873 to present)	▪ Agrochemicals containing heavy metals ▪ Fertilisers, herbicides and pesticides; ▪ Total Petroleum Hydrocarbons (PAH); and, ▪ Polycyclic Aromatic Hydrocarbons (PAHs).	Agrochemicals – site wide Hydrocarbons – localised drips / leaks from farm vehicles using the Site.
Made Ground due to small structures and pond infill	▪ Asbestos Containing Materials; ▪ Total Petroleum Hydrocarbons (PAH); and, ▪ Polycyclic Aromatic Hydrocarbons (PAHs).	Localised around the footprint of the small structures and the pond in the south of the Site.
OFF-SITE		
Nearby Infilled land	▪ Ground gases (carbon dioxide and methane); ▪ Ammoniacal nitrogen ▪ Heavy metals; ▪ Total Petroleum Hydrocarbons; ▪ Polycyclic Aromatic Hydrocarbon; and, ▪ ACMs.	Tyler Hill clay pits 60 m south-east, excavations 500 m south-east and earthworks 500 m south.
Nurseries and orchards within 250 m of the Site.	▪ Total Petroleum Hydrocarbons (TPH); ▪ Polycyclic Aromatic Hydrocarbons (PAHs); ▪ heavy metals and metalloids; ▪ asbestos containing materials; ▪ ground gas (carbon dioxide and methane); and, ▪ fertilisers, herbicides and pesticides.	Localised to source within the surrounding land.

6.3 POTENTIAL RECEPTORS

In the context of the potential residential development of the Site, the following are considered to be potential receptors:

Human Health

- Current and future Site users;
- Construction and maintenance workers; and,

- Third party neighbours.

Controlled Waters

- The inland rivers identified on Site; and,
- The pond adjacent to the south-east corner of Site.

Services and Building Fabric

- Future below ground services (e.g. potable water supply pipes); and,
- Future building structures.

Flora

- Plant life in future landscaped areas.

6.4 PRELIMINARY CONCEPTUAL SITE MODEL (CSM)

Table 6-2 provides an evaluation of the potential contaminant linkages that are considered to be plausible on the basis of the information currently available for the site and the proposed end use

Table 6-2 – Plausible Contaminant Linkages

Potential Contaminant Sources	Pathways	Receptor	Comments / Risk
ON-SITE			

▪ Made Ground associated with historical development in localised areas ▪ Agricultural Practices	▪ Dermal contact; ▪ Ingestion of impacted soil particles on Site, and windblown to adjacent land-uses; ▪ Inhalation of dust and asbestos fibres, and windblown to adjacent land-uses; and, ▪ Migration of volatile vapours into buildings or below ground structures.	**Human Health** Future Site users and visitors; Construction workers and future maintenance workers; and, Third party neighbours	The Site has had very limited historical development, therefore there will be limited Made Ground deposits and assumed less impacted soils. Exposure to potential contaminants will be restricted in areas where hardstanding is present in the future development. The greatest risk of exposure to future site users is where private gardens and soft landscaping will be located assuming a residential end use. Site wide contamination would be associated with historical use of agrochemicals. Therefore, the risk to future site users and visitors is thought to be **Low.** Construction workers and future maintenance workers are at a greater risk of direct exposure to contaminated soils/groundwater during ground works (e.g. dermal exposure or inhalation of particles, vapours or ground gases). However, no significant source of contamination has been identified onsite and, therefore the risk to construction and future maintenance workers is considered to be **Low**. However, these risks should be managed with the adherence to Health and Safety protocols during the works. There is a risk that windblown impacted soil, dust could migrate off-Site causing a risk to third party neighbours. The risk to these areas is considered to be **Low**. A Construction Environmental Management Plan (CEMP) would mitigate against the creation of potential pollution pathways during the project's construction such as mud being transported on to local roads from construction plant / vehicles. No significant ground gas source has been identified on-site. Therefore, the risk from on-site sources is thought to be **Low**.

Potential Contaminant Sources	Pathways	Receptor	Comments / Risk
	▪ Vertical and lateral leaching from impacted soil.	**Controlled waters** Inland rivers (on-site)	Site-wide agrochemical use is likely to have occurred while used for growing crops. The Site is situated over Head Deposits and the London Clay Formation, both of which are classified as non-productive strata. The risk to local ground water bodies is considered to be **Low**. The risk to surface waters is also considered **Low** based on that mitigation measures against surface runoff will be implemented during construction work. A Construction Environmental Management Plan (CEMP) would mitigate against the creation of potential pollution pathways during the project's construction such as surface water run-off.
OFF-SITE			
▪ Areas of infilled land	▪ Migration of ground gas.	**Human Health** ▪ Future Site users and visitors; and, ▪ Construction workers and future maintenance workers.	Ground gas generated by Made Ground in areas surrounding the Site may migrate laterally within the subsurface and accumulate in enclosed areas; therefore, posing a risk of explosion or asphyxiation. However, the cohesive and low permeability soils of the Head Deposits and the London Clay Formation will prevent lateral migration of ground gas. Following this, the risk from migration of ground gases is considered to be **Low.**
	▪ Lateral migration of contaminants within groundwater.	**Controlled Waters** ▪ Surrounding inland rivers	No significant groundwater body is expected on the Site. The Site is underlain by Head Deposits over the London Clay Formation. Both of these soil types are unproductive strata. In addition, no significant off-site contaminant source has been identified. Following this, the risk is considered to be **Low.**

7 CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the Site walkover and the desk-based assessment, WSP makes the following conclusions and recommendations in the context of a proposed residential development including private gardens to provide the most conservative assessment.

7.1 CONCLUSIONS

The Site is currently arable farmland with a small wooded section in the north-east. Several inland rivers border the north-west and north of the Site and an underground river crosses the north of the Site.

The historical map review indicates that the Site has largely remained undeveloped but was used for agricultural purposes between the 1900's and present day. Small temporary structures and a pond were historically present on Site however these covered a very small footprint and timeframe.

The surrounding land to the south underwent typical residential development in the later part of the 20th Century (Tyler Hill village to the south-east) and there have been several excavations around the Site which were subsequently infilled.

The superficial geology consists of Head Deposits and the underlying solid geology is the London Clay Formation, both of which are identified as unproductive strata thus, a significant groundwater body is not expected on Site. However, local controlled waters (the network of inland rivers bordering the Site) will still require protection from construction activity during the project's development.

The risk from ground gas is considered to be **Low**. The desk based search has not identified any significant source of ground gas that is considered likely to impact on the site pre or post site redevelopment i.e. no landfill has been identified within an influencing distance and the underlying soils are not considered to be likely to contain significant levels of organic matter.

The risk from asbestos is considered to be **Low** however unknown contamination could be present in near surface soils from past historical activities.

Future residents of the site are considered to be at the greatest risk of coming into direct contact with potential ground contamination. The greatest risk of exposure is likely to occur within private gardens, due to gardening activities and especially where fruit and/or vegetables are to be grown for personal consumption. The most sensitive receptor is a young child who is at a greater risk of ingesting contaminated soil and/or contaminated soil getting on to their skin through playing in the garden. Contaminated soil can be tracked into the house via muddy footwear from the garden, thus creating a potential inhalation risk of contaminated soil/dust. The risk is considered to be **Low.**

Construction workers and future maintenance workers may encounter asbestos or contaminated soils/groundwater during ground works (e.g. dermal exposure or inhalation of particles, vapours or ground gases), therefore the risk to construction and future maintenance workers is considered to be **Low-Moderate.** However, these risks should be managed with the adherence to Health and Safety protocols during the works.

Contaminants within the soil that remain as areas of soft landscaping post redevelopment could theoretically present a long-term water pollution risk to surface waters from surface run-off. New service corridors and drainage systems could create preferential migration pathways for contaminants.

Depending upon if the underlying soils have been affected by contamination, sub-surface construction materials could potentially be at risk from aggressive chemical attack. The London Clay Formation can be naturally high in sulphur / sulphites leading to aggressive chemical attack of concrete structures. Sampling and analysis of soils for an aggressive ground suite will indicate if the underlying soils are likely to pose aggressive ground conditions for concrete based structures. Contamination can permeate plastic and consequently taint a drinking water supply. Any new services to be laid within parts of the site where contamination of the soils is observed will need to be considered further to protect future site users and maintenance workers.

There is a risk that windblown impacted soil, dust and asbestos fibres could migrate off-Site causing a risk to third party neighbours. However, the surrounding land is not heavily developed and with the adherence to a Construction Environmental Management Plan (CEMP), the risk to these areas is considered to be **Low**.

The Site is situated within an area at a **Moderate** risk from UXO.

7.2 RECOMMENDATIONS

Should the Site be re-developed then it is recommended an intrusive ground investigation is undertaken to assess the underlying ground conditions. The ground investigation should be compliant with current UK guidance e.g. BS10175 and include a Generic Quantitative Risk Assessment (GQRA) to allow the assessment of identified plausible contaminant linkages and if remedial measures may be required. Geotechnical testing could also be undertaken to inform foundation design for potential future redevelopment. It is recommended that the ground investigation is designed based on the following technical objectives:

- Characterisation of the ground and groundwater conditions underlying the Site;
- Soil and groundwater sampling for contamination and geotechnical testing;
- Groundwater and ground gas monitoring;
- Provision of a GQRA to assess risks to human health and controlled waters;

An assessment of potential foundation design and geotechnical constraints.

A Detailed UXO Threat Assessment report will be required prior to any intrusive ground works being undertaken to confirm if any UXO mitigation is required during the ground investigation.

Appendix A

FIGURES & DRAWINGS

Confidential

DO NOT SCALE

Information Classification:

INTERNAL

Information that is only intended for internal distribution among WSP employees, independent consultants, contractors, sub-contractors, clients and authorised third parties.

Legend :

Title : 70080896-008 D

Author : Callum Harris

Scale : 1:9,028

Layout : WSP A3 Landscape

Current Time : 19/04/2021 15:27

© WSP UK Ltd

Appendix B

LIMITATIONS

Confidential

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

GENERAL

1. WSP UK Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

2. Unless explicitly agreed otherwise, in writing, this report has been prepared under WSP UK Limited standard Terms and Conditions as included within our proposal to the Client.

3. Project specific appointment documents may be agreed at our discretion and a charge may be levied for both the time to review and finalise appointments documents and also for associated changes to the appointment terms. WSP UK Limited reserves the right to amend the fee should any changes to the appointment terms create an increase risk to WSP UK Limited.

4. The report needs to be considered in the light of the WSP UK Limited proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEO ENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: *This section covers reports with the following titles or combination of titles: phase 1; desk top study; geo environmental assessment; development appraisal; preliminary environmental risk assessment; constraints report; due diligence report; geotechnical development review; environmental statement; environmental chapter; project scope summary report (PSSR), program environmental impact report (PEIR), geotechnical development risk register; and, baseline environmental assessment.*

5. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. WSP UK Limited cannot be held responsible for any disclosures that are provided post production of our report and will not automatically update our report.

6. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP UK Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.

7. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.

8. WSP UK Limited does not warrant work / data undertaken / provided by others.

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

INTRUSIVE INVESTIGATION REPORTS

Coverage: *The following report titles (or combination) may cover this category of work: geo environmental site investigation; geotechnical assessment; GIR (Ground Investigation reports); preliminary environmental and geotechnical risk assessment; and, geotechnical risk register.*

9. The investigation has been undertaken to provide information concerning either:

- **i.** The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
- **ii.** Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.

10. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.

11. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.

12. For geotechnical investigations the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.

13. The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.

14. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

15. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, WSP UK Limited has used reasonable skill and care to extrapolate conditions between these points based upon assumptions to develop our interpretation and conclusions. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation. Conditions can change between investigation points and these interpretations should be considered indicative.

16. The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective

effects of any future changes or amendments to these values. Specific assumptions associated with the WSP UK Limited risk assessment process have been outlined within the body or associated appendix of the report.

17. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.

18. Where soil contamination concentrations recorded as part of this investigation are used for commentary on potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed.

19. The results of the asbestos testing are factually reported and interpretation given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and / or trace loose asbestos fibres within the soil matrix at the site.

20. If costs have been included in relation to additional site works, and / or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

21. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.

22. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIAL STRATEGY REPORTS

23. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected on the basis of the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

24. The outputs of the Detailed Quantitative Risk Assessments are based upon WSP UK Limited manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.

25. Prior to adoption on site they will need discussing and agreeing with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of WSP UK Limited. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

GEOTECHNICAL DESIGN REPORT (GDR)

26. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS)

27. These reports are factual in nature and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of an earthworks or remedial works.

28. The data is presented and will be compared with assessment criteria.

Appendix C

CIRIA RISK DEFINITIONS

Confidential

CIRIA RISK DEFINITIONS

Table A1 - Classifications of Probability

Classification	Definition
High Likelihood	There is a pollution linkage / identified geotechnical hazard and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term

Table A2 - Classifications of Consequence

Classification	Definition
Severe	Short-term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resource. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem.
Medium	Chronic damage to Human Health ("significant harm" as defined in DETR, 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem, or organism forming part of such ecosystem.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services (significant harm as defined m the Draft Circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings/structures/services or the environment.
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve, Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc.). Easily repairable effects of damage to buildings, structures and services

The risk categories presented in this report, taking into account both probability and severity, are based on the matrix presented in **Table A3** below, following CIRIA C552.

Table A3 - Adopted Risk Categories / Comparison of Consequence Against Probability

Probability	Consequence			
	Severe	**Medium**	**Mild**	**Minor**
High Likelihood	Very High Risk	High Risk	Moderate Risk	Low to Moderate Risk
Likely	High Risk	Moderate Risk	Low to Moderate Risk	Low Risk
Low Likelihood	Moderate Risk	Low to Moderate Risk	Low Risk	Very Low Risk
Unlikely	Low to Moderate Risk	Low Risk	Very Low Risk	Very Low Risk

Appendix D

SITE PHOTOGRAPHS

Confidential

Photographic Report

Photo 1: View from the north boundary of Site

Photo 2: View from western boundary of Site

Appendix E

GROUNDSURE REPORT / HISTORICAL MAPS

Confidential

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Order Details

Date: 01/04/2021

Your ref: Uni_of_Kent_D

Our Ref: WSP-7710188

Client: WSP

Site Details

Location: 613235 161227

Area: 22.86 ha

Authority: Canterbury City Council

Summary of findings p. 2

OS MasterMap site plan N/A: >10ha

Aerial image p. 8

groundsure.com/insightuserguide

Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	Historical industrial land uses	0	6	4	11	-
14	1.2	Historical tanks	0	0	0	2	-
15	1.3	Historical energy features	0	0	0	2	-
15	1.4	Historical petrol stations	0	0	0	0	-
15	1.5	Historical garages	0	0	0	0	-
16	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
17	2.1	Historical industrial land uses	0	6	6	15	-
19	2.2	Historical tanks	0	0	0	2	-
19	2.3	Historical energy features	0	0	0	2	-
19	2.4	Historical petrol stations	0	0	0	0	-
20	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
21	3.1	Active or recent landfill	0	0	0	0	-
21	3.2	Historical landfill (BGS records)	0	0	0	0	-
22	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
22	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
22	3.5	Historical waste sites	0	0	0	0	-
22	3.6	Licensed waste sites	0	0	0	0	-
22	3.7	Waste exemptions	0	1	0	34	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
26	4.1	Recent industrial land uses	0	0	1	-	-
27	4.2	Current or recent petrol stations	0	0	0	0	-
27	4.3	Electricity cables	0	0	0	0	-
27	4.4	Gas pipelines	0	0	0	0	-
27	4.5	Sites determined as Contaminated Land	0	0	0	0	-

27	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
28	4.7	Regulated explosive sites	0	0	0	0	-
28	4.8	Hazardous substance storage/usage	0	0	0	0	-
28	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
28	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
28	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
29	4.12	Radioactive Substance Authorisations	0	0	0	0	-
29	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
29	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
29	4.15	Pollutant release to public sewer	0	0	0	0	-
29	4.16	List 1 Dangerous Substances	0	0	0	0	-
30	4.17	List 2 Dangerous Substances	0	0	0	0	-
30	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
30	4.19	Pollution inventory substances	0	0	0	0	-
30	4.20	Pollution inventory waste transfers	0	0	0	0	-
30	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
31	**5.1**	**Superficial aquifer**	Identified (within 500m)				
33	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
34	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
36	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
36	5.5	Groundwater vulnerability- local information	None (within 0m)				
37	**5.6**	**Groundwater abstractions**	0	0	0	0	2
38	5.7	Surface water abstractions	0	0	0	0	0
38	5.8	Potable abstractions	0	0	0	0	0
39	5.9	Source Protection Zones	0	0	0	0	-
39	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
40	**6.1**	**Water Network (OS MasterMap)**	3	10	14	-	-

43	6.2	Surface water features	1	9	11	-	-
43	6.3	WFD Surface water body catchments	1	-	-	-	-
43	6.4	WFD Surface water bodies	0	0	0	-	-
44	6.5	WFD Groundwater bodies	0	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
45	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
45	7.2	Historical Flood Events	0	0	0	-	-
45	7.3	Flood Defences	0	0	0	-	-
45	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
46	7.5	Flood Storage Areas	0	0	0	-	-
47	7.6	Flood Zone 2	None (within 50m)				
47	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
48	8.1	Surface water flooding	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
50	9.1	Groundwater flooding	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
51	10.1	Sites of Special Scientific Interest (SSSI)	0	0	1	1	8
52	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
52	10.3	Special Areas of Conservation (SAC)	0	0	0	0	1
53	10.4	Special Protection Areas (SPA)	0	0	0	0	0
53	10.5	National Nature Reserves (NNR)	0	0	0	0	1
53	10.6	Local Nature Reserves (LNR)	0	1	0	0	0
54	10.7	Designated Ancient Woodland	0	0	2	9	54
56	10.8	Biosphere Reserves	0	0	0	0	0
56	10.9	Forest Parks	0	0	0	0	0
57	10.10	Marine Conservation Zones	0	0	0	0	0
57	10.11	Green Belt	0	0	0	0	0
57	10.12	Proposed Ramsar sites	0	0	0	0	0

57	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
57	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
58	10.15	Nitrate Sensitive Areas	0	0	0	0	0
58	**10.16**	**Nitrate Vulnerable Zones**	0	0	0	0	2
59	**10.17**	**SSSI Impact Risk Zones**	3	-	-	-	-
61	**10.18**	**SSSI Units**	0	0	2	1	26
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
74	11.1	World Heritage Sites	0	0	0	-	-
75	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
75	11.3	National Parks	0	0	0	-	-
75	11.4	Listed Buildings	0	0	0	-	-
75	**11.5**	**Conservation Areas**	2	1	0	-	-
76	11.6	Scheduled Ancient Monuments	0	0	0	-	-
76	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
77	**12.1**	**Agricultural Land Classification**	Non Agricultural (within 250m)				
78	12.2	Open Access Land	0	0	0	-	-
78	12.3	Tree Felling Licences	0	0	0	-	-
78	12.4	Environmental Stewardship Schemes	0	0	0	-	-
79	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
80	**13.1**	**Priority Habitat Inventory**	0	4	8	-	-
81	13.2	Habitat Networks	0	0	0	-	-
81	13.3	Open Mosaic Habitat	0	0	0	-	-
81	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
83	**14.1**	**10k Availability**	Identified (within 500m)				
84	14.2	Artificial and made ground (10k)	0	0	0	0	-
85	14.3	Superficial geology (10k)	0	0	0	0	-

85	14.4	Landslip (10k)	0	0	0	0	-
86	14.5	Bedrock geology (10k)	0	0	0	0	-
86	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
87	**15.1**	**50k Availability**	Identified (within 500m)				
88	15.2	Artificial and made ground (50k)	0	0	0	0	-
88	15.3	Artificial ground permeability (50k)	0	0	-	-	-
89	**15.4**	**Superficial geology (50k)**	1	1	0	1	-
90	**15.5**	**Superficial permeability (50k)**	Identified (within 50m)				
90	15.6	Landslip (50k)	0	0	0	0	-
90	15.7	Landslip permeability (50k)	None (within 50m)				
91	**15.8**	**Bedrock geology (50k)**	1	0	0	0	-
92	**15.9**	**Bedrock permeability (50k)**	Identified (within 50m)				
92	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
93	**16.1**	**BGS Boreholes**	0	0	1	-	-
Page	Section	Natural ground subsidence					
94	**17.1**	**Shrink swell clays**	Moderate (within 50m)				
95	**17.2**	**Running sands**	Very low (within 50m)				
97	**17.3**	**Compressible deposits**	Negligible (within 50m)				
98	**17.4**	**Collapsible deposits**	Moderate (within 50m)				
99	**17.5**	**Landslides**	Very low (within 50m)				
100	**17.6**	**Ground dissolution of soluble rocks**	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
102	18.1	Natural cavities	0	0	0	0	-
103	**18.2**	**BritPits**	0	0	2	0	-
103	**18.3**	**Surface ground workings**	0	6	6	-	-
104	**18.4**	**Underground workings**	0	0	0	0	2
104	18.5	Historical Mineral Planning Areas	0	0	0	0	-

105	18.6	Non-coal mining	0	0	0	0	0
105	18.7	Mining cavities	0	0	0	0	0
105	18.8	JPB mining areas	None (within 0m)				
105	18.9	Coal mining	None (within 0m)				
105	18.10	Brine areas	None (within 0m)				
106	18.11	Gypsum areas	None (within 0m)				
106	18.12	Tin mining	None (within 0m)				
106	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
107	**19.1**	**Radon**	Less than 1% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
108	**20.1**	**BGS Estimated Background Soil Chemistry**	12	6	-	-	-
109	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
109	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
110	21.1	Underground railways (London)	0	0	0	-	-
110	21.2	Underground railways (Non-London)	0	0	0	-	-
111	21.3	Railway tunnels	0	0	0	-	-
111	**21.4**	**Historical railway and tunnel features**	0	1	0	-	-
111	21.5	Royal Mail tunnels	0	0	0	-	-
111	**21.6**	**Historical railways**	0	1	0	-	-
112	21.7	Railways	0	0	0	-	-
112	21.8	Crossrail 1	0	0	0	0	-
112	21.9	Crossrail 2	0	0	0	0	-
112	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 21/10/2018

Site Area: 22.86ha

Recent site history - 2015 aerial photograph

Capture Date: 14/04/2015

Site Area: 22.86ha

Recent site history - 2012 aerial photograph

Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2021. All Rights Reserved.

Capture Date: 25/05/2012

Site Area: 22.86ha

Recent site history - 2008 aerial photograph

Capture Date: 20/09/2008

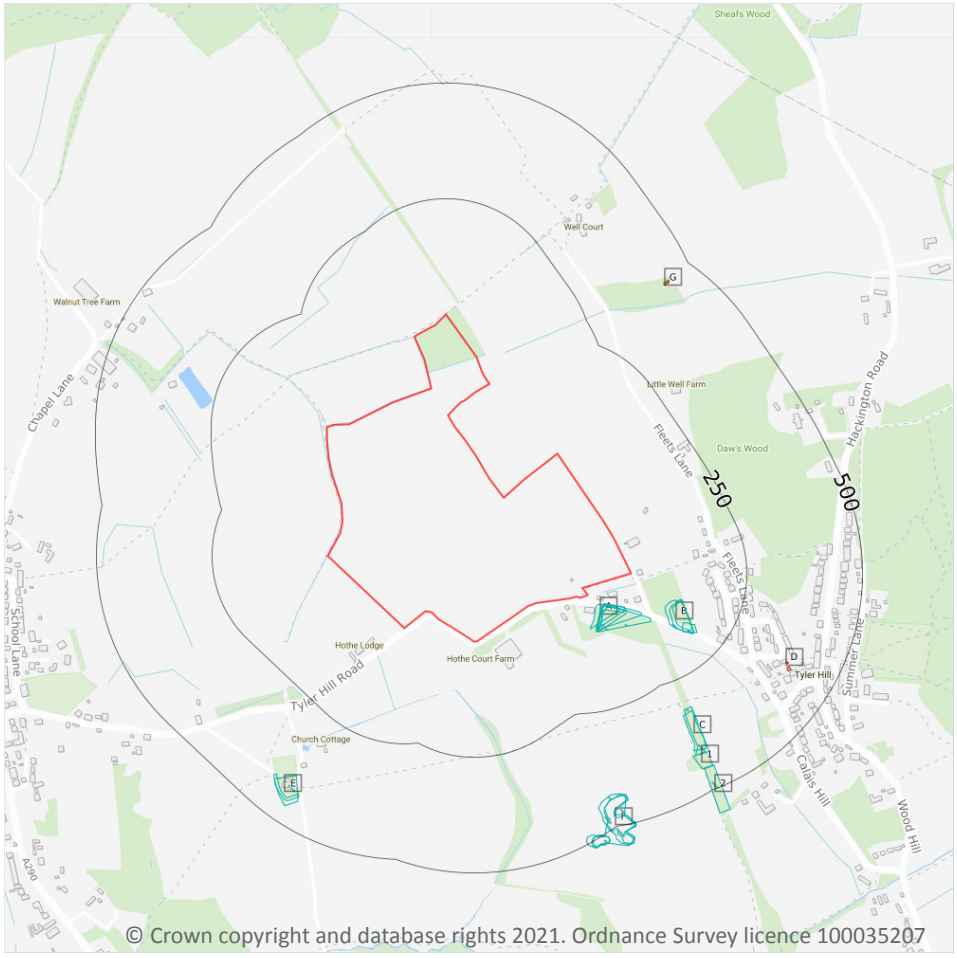
Site Area: 22.86ha

Recent site history - 1999 aerial photograph

Capture Date: 28/08/1999

Site Area: 22.86ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

1.1 Historical industrial land uses

Records within 500m	21

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
A	31m SE	Unspecified Pit	1938	2360176

ID	Location	Land use	Dates present	Group ID
A	39m SE	Unspecified Ground Workings	1957	2346997
A	40m SE	Unspecified Pit	1906	2360519
A	41m SE	Old Clay Pit	1896	2348727
A	43m SE	Unspecified Pit	1947	2365450
A	50m SE	Unspecified Pit	1873	2362664
B	103m SE	Unspecified Pit	1906 - 1938	2362069
B	112m SE	Unspecified Pit	1947 - 1957	2360081
B	116m SE	Old Clay Pit	1896	2348729
B	155m SE	Clay Pit	1873	2348703
C	316m SE	Cuttings	1974	2359269
C	324m SE	Cuttings	1896	2361746
E	395m SW	Grave Yard	1873	2346604
1	416m SE	Cuttings	1896	2361270
E	419m SW	Unspecified Ground Workings	1906	2357475
F	431m S	Unspecified Pit	1906 - 1938	2358900
F	434m S	Unspecified Pit	1947	2354199
F	437m S	Unspecified Pits	1957 - 1974	2358730
2	450m S	Cuttings	1974	2360148
F	486m SE	Unspecified Pit	1906 - 1938	2355681
F	493m SE	Unspecified Pit	1947	2362676

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**2**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
G	431m NE	Unspecified Tank	1993	424990
G	433m NE	Unspecified Tank	1971	425350

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	2

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
D	388m SE	Electricity Substation	1993	300359
D	393m SE	Electricity Substation	1971	300358

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-

grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

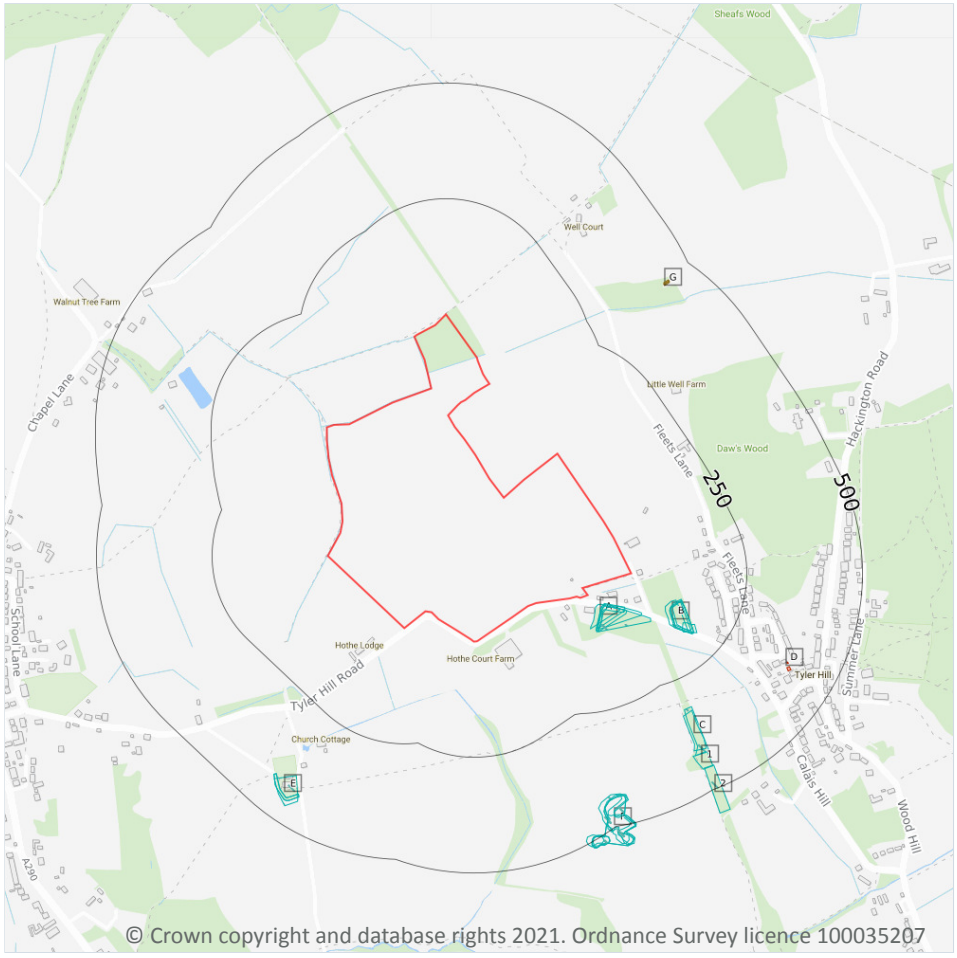
1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

2.1 Historical industrial land uses

Records within 500m	27

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
A	31m SE	Unspecified Pit	1938	2360176
A	39m SE	Unspecified Ground Workings	1957	2346997
A	40m SE	Unspecified Pit	1906	2360519

ID	Location	Land Use	Date	Group ID
A	41m SE	Old Clay Pit	1896	2348727
A	43m SE	Unspecified Pit	1947	2365450
A	50m SE	Unspecified Pit	1873	2362664
B	103m SE	Unspecified Pit	1938	2362069
B	112m SE	Unspecified Pit	1957	2360081
B	112m SE	Unspecified Pit	1906	2362069
B	114m SE	Unspecified Pit	1947	2360081
B	116m SE	Old Clay Pit	1896	2348729
B	155m SE	Clay Pit	1873	2348703
C	316m SE	Cuttings	1974	2359269
C	324m SE	Cuttings	1896	2361746
E	395m SW	Grave Yard	1873	2346604
1	416m SE	Cuttings	1896	2361270
E	419m SW	Unspecified Ground Workings	1906	2357475
E	419m SW	Unspecified Ground Workings	1906	2357475
F	431m S	Unspecified Pit	1938	2358900
F	433m S	Unspecified Pit	1906	2358900
F	434m S	Unspecified Pit	1947	2354199
F	437m S	Unspecified Pits	1974	2358730
F	437m S	Unspecified Pits	1957	2358730
2	450m S	Cuttings	1974	2360148
F	486m SE	Unspecified Pit	1938	2355681
F	493m SE	Unspecified Pit	1906	2355681
F	493m SE	Unspecified Pit	1947	2362676

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	2

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
G	431m NE	Unspecified Tank	1993	424990
G	433m NE	Unspecified Tank	1971	425350

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	2

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
D	388m SE	Electricity Substation	1993	300359
D	393m SE	Electricity Substation	1971	300358

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

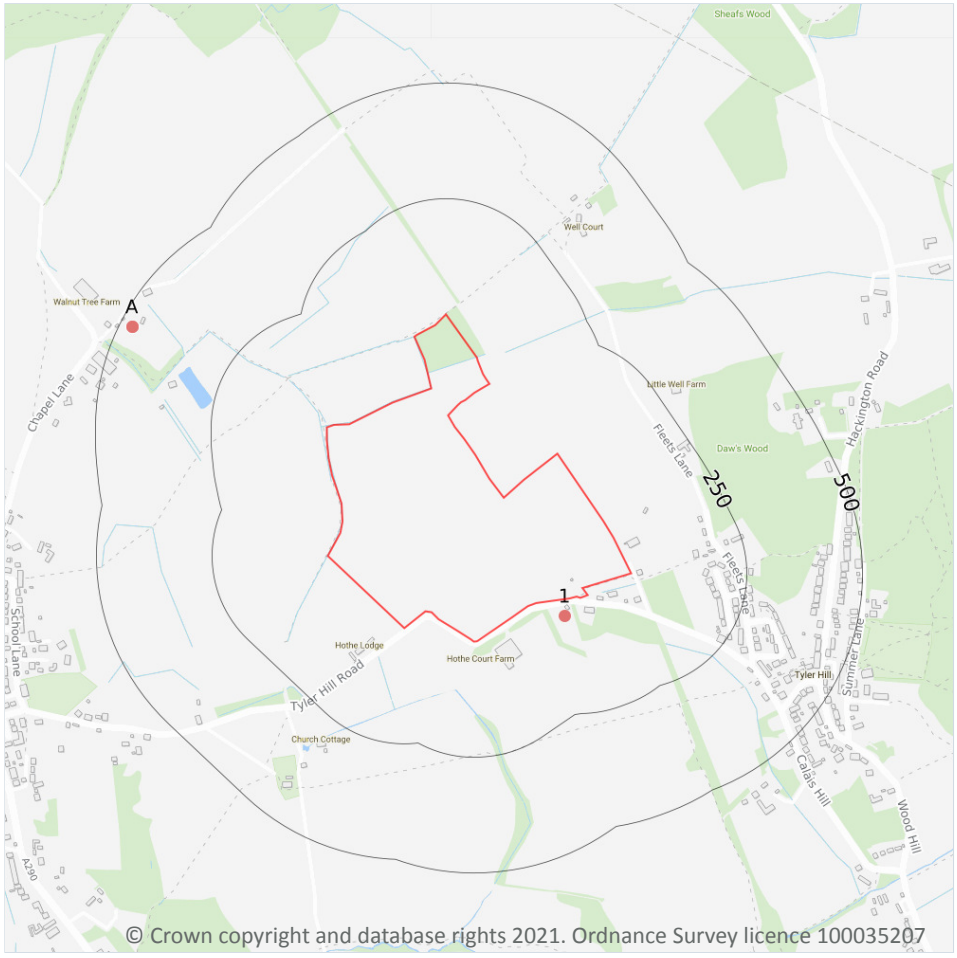
2.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline

Search buffers in metres (m)

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	0

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	0

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m	35

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 21**

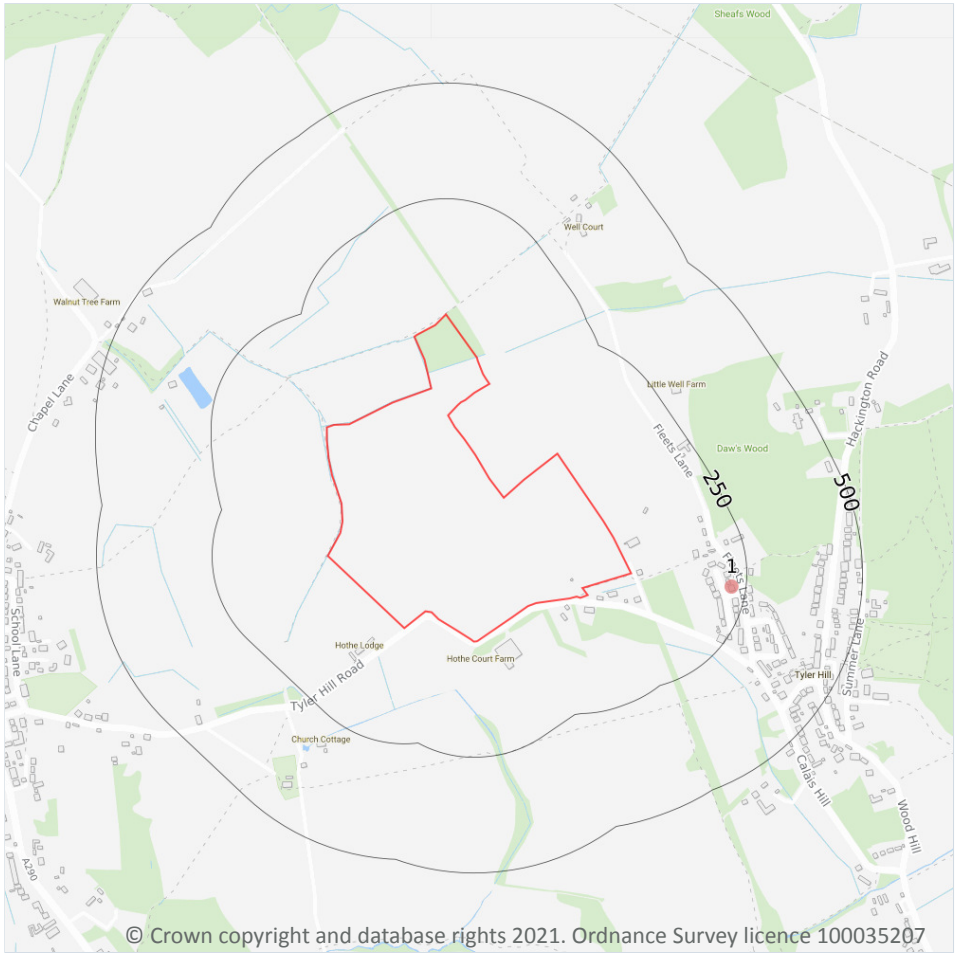
ID	Location	Site	Reference	Category	Sub-Category	Description
1	38m S	Hothe Court Farm Tyler Hill Road CANTERBURY Kent CT2 9LU	EPR/FE5581BF/A001	Storing waste exemption	Agricultural Waste Only	Storage of waste in a secure place
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Using waste exemption	On a farm	Use of waste in construction
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Disposing of waste exemption	On a farm	Disposal by incineration
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Disposing of waste exemption	On a farm	Burning waste in the open
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Storing waste exemption	On a farm	Storage of waste in secure containers
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX235218	Storing waste exemption	On a farm	Storage of waste in a secure place
A	474m NW	EWELL FARM, GRAVENEY ROAD, GOODNESTONE, FAVERSHAM, ME13 8UP	WEX092157	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
A	474m NW	EWELL FARM, GRAVENEY ROAD, GOODNESTONE, FAVERSHAM, ME13 8UP	WEX092157	Disposing of waste exemption	On a farm	Burning waste in the open
A	474m NW	EWELL FARM, GRAVENEY ROAD, GOODNESTONE, FAVERSHAM, ME13 8UP	WEX092157	Storing waste exemption	On a farm	Storage of waste in a secure place
A	474m NW	EWELL FARM, GRAVENEY ROAD, GOODNESTONE, FAVERSHAM, ME13 8UP	WEX092157	Disposing of waste exemption	On a farm	Disposal by incineration
A	474m NW	EWELL FARM, GRAVENEY ROAD, GOODNESTONE, FAVERSHAM, ME13 8UP	WEX092157	Storing waste exemption	On a farm	Storage of waste in secure containers

ID	Location	Site	Reference	Category	Sub-Category	Description
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Disposing of waste exemption	On a farm	Burning waste in the open
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Storing waste exemption	On a farm	Storage of waste in secure containers
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Storing waste exemption	On a farm	Storage of waste in a secure place
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Sorting mixed waste
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Manual treatment of waste
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Recovery of textiles
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Treatment of non-hazardous pesticide washings by carbon filtration for disposal
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Treatment of waste in a biobed or biofilter
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Preparatory treatments (baling, sorting, shredding etc)
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Treating waste exemption	On a farm	Recovery of scrap metal

ID	Location	Site	Reference	Category	Sub-Category	Description
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Use of waste in construction
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Use of mulch
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Incorporation of ash into soil
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Use of depolluted end-of-life vehicles for vehicle parts
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Use of baled end-of-life tyres in construction
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
A	474m NW	AMERY COURT, CHAPEL LANE, BLEAN, CANTERBURY, CT2 9HF	WEX033863	Using waste exemption	On a farm	Use of waste for a specified purpose

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



Site Outline

Search buffers in metres (m)

Recent industrial land uses

4.1 Recent industrial land uses

Records within 250m	1

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 26**

ID	Location	Company	Address	Activity	Category
1	220m E	Millen Corporation	21, Sunnymead, Tyler Hill, Canterbury, Kent, CT2 9NW	Electronic Equipment	Industrial Products

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m	0

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	0

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	0

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	0

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	0

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

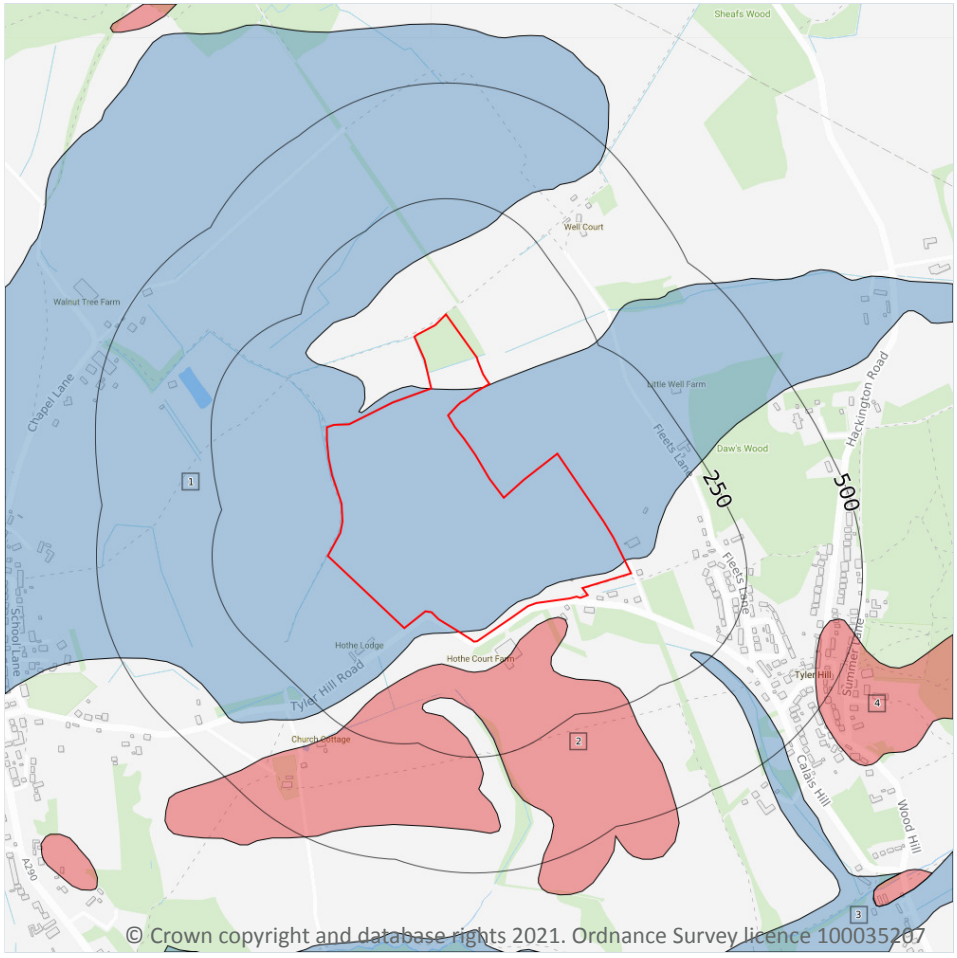
4.21 Pollution inventory radioactive waste

Records within 500m	0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	4

Aquifer status of groundwater held within superficial geology.

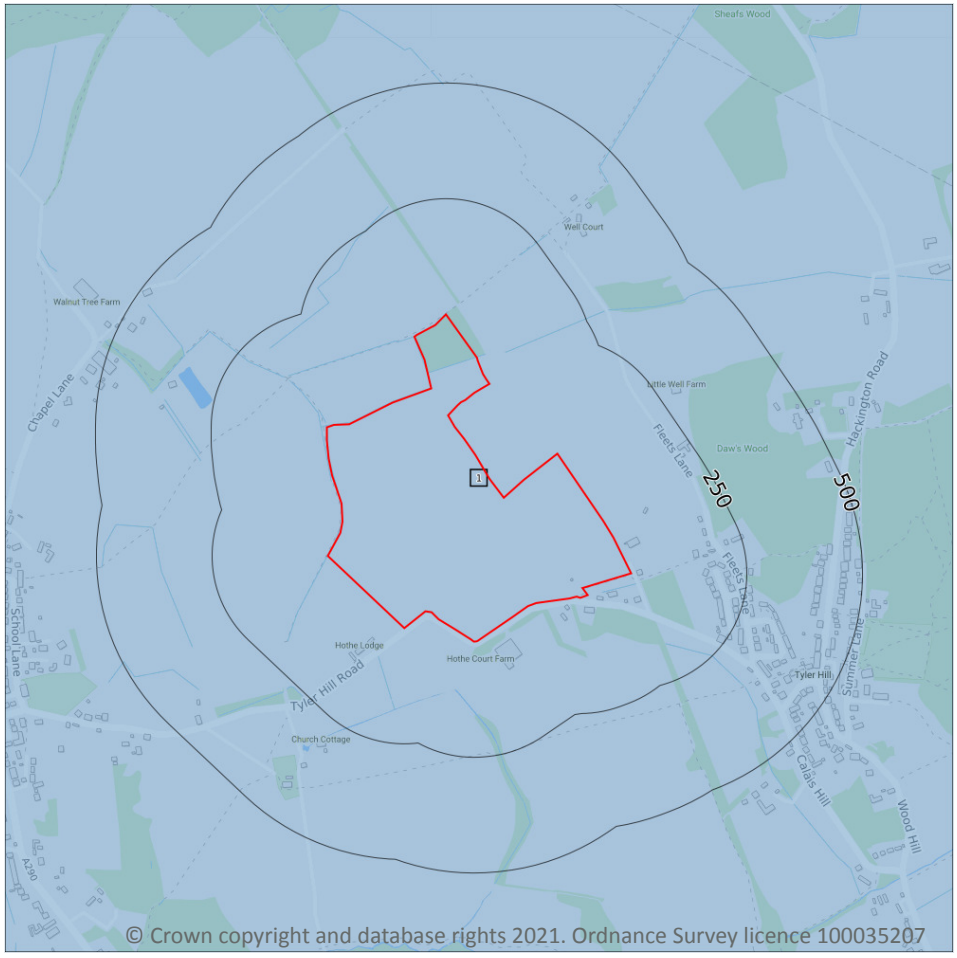
Features are displayed on the Hydrogeology map on **page 31**

ID	Location	Designation	Description
1	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**
2	37m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	217m SE	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
4	430m E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	1

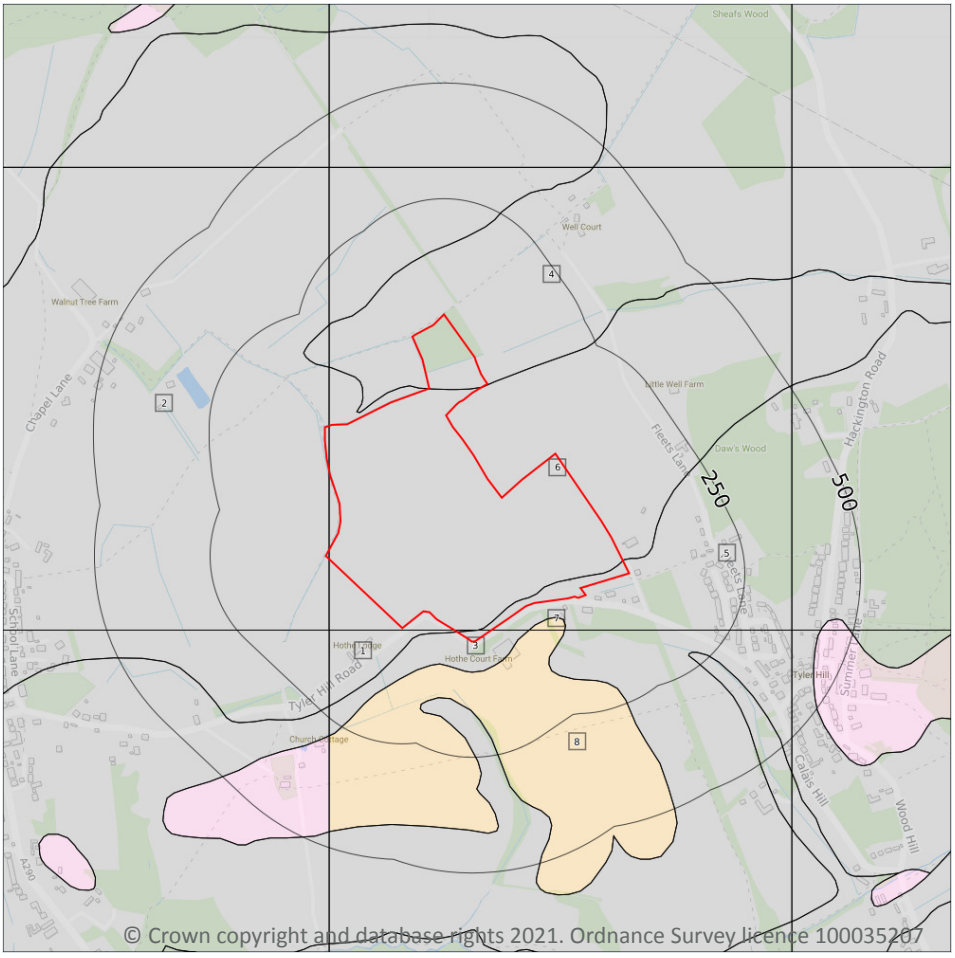
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 33**

ID	Location	Designation	Description
1	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

Superficial vulnerability
- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability
- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information
- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	8

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 34**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
2	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
3	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
4	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
5	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
6	**On site**	**Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer**	**Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year**	**Vulnerability: Unproductive Aquifer type: Unproductive Thickness: <3m Patchiness value: <90% Recharge potential: High**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed**
7	36m S	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
8	46m SE	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	**0**

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

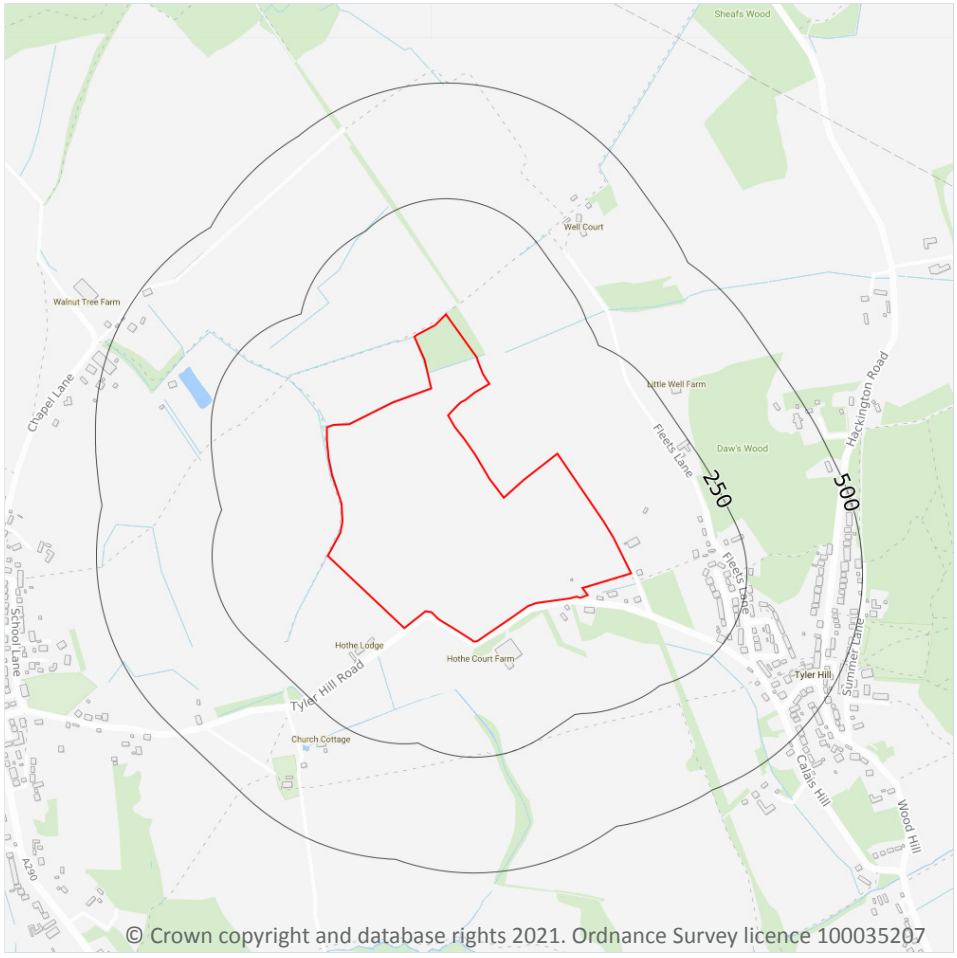
5.5 Groundwater vulnerability- local information

Records on site	**0**

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	2

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 37**

ID	Location	Details	
-	1260m S	Status: Historical Licence No: 9/40/04/0221/GR Details: General Farming & Domestic Direct Source: Southern Region Groundwater Point: WELL AT THE UNIVERSITY OF KENT, BLEAN Data Type: Point Name: The University of Kent at Canterbury Easting: 613110 Northing: 159730	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 01/11/1973 Version End Date: -
-	1727m NW	Status: Historical Licence No: 9/40/02/0077/GR Details: General Farming & Domestic Direct Source: Southern Region Groundwater Point: POINT 4, CLOWES FARM, ST.COSMUS & ST. DAMIAN IN THE BLEAN. Data Type: Point Name: Strand Easting: 612110 Northing: 162990	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 15/11/1983 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	**0**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	**0**

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

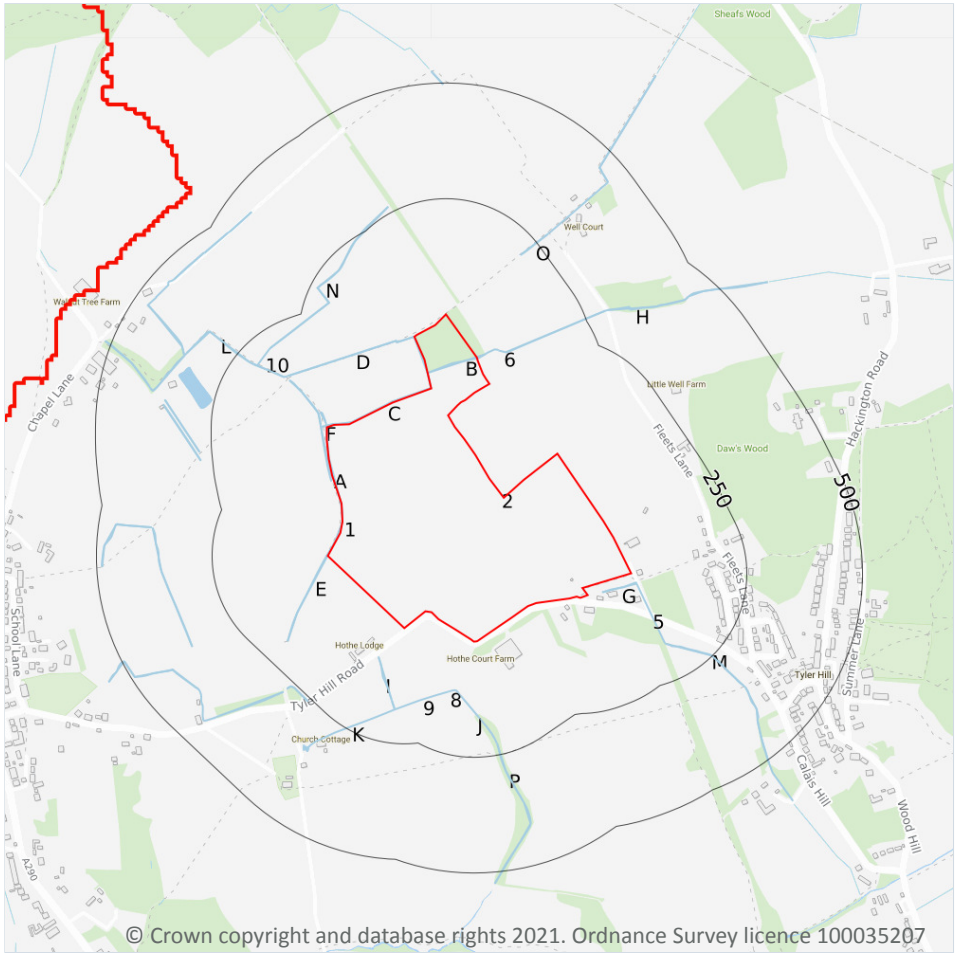
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



6.1 Water Network (OS MasterMap)

Records within 250m	27

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 40**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
B	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
C	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
D	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
E	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
F	3m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	3m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	4m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	12m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	20m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
5	25m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
6	48m E	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	63m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
I	83m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	112m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
8	120m SW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
9	122m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	156m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
I	159m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
M	167m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
K	176m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
N	198m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
10	201m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
L	201m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
O	206m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	225m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	21

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 40**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 40**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
2	**On site**	**River WB catchment**	**Sarre Penn and River Wantsum**	**GB107040019620**	**Stour Marshes**	**Stour**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	1

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 40**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	3369m E	River	Sarre Penn and River Wantsum	GB107040019620	Moderate	Good	Moderate	2016

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	0

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

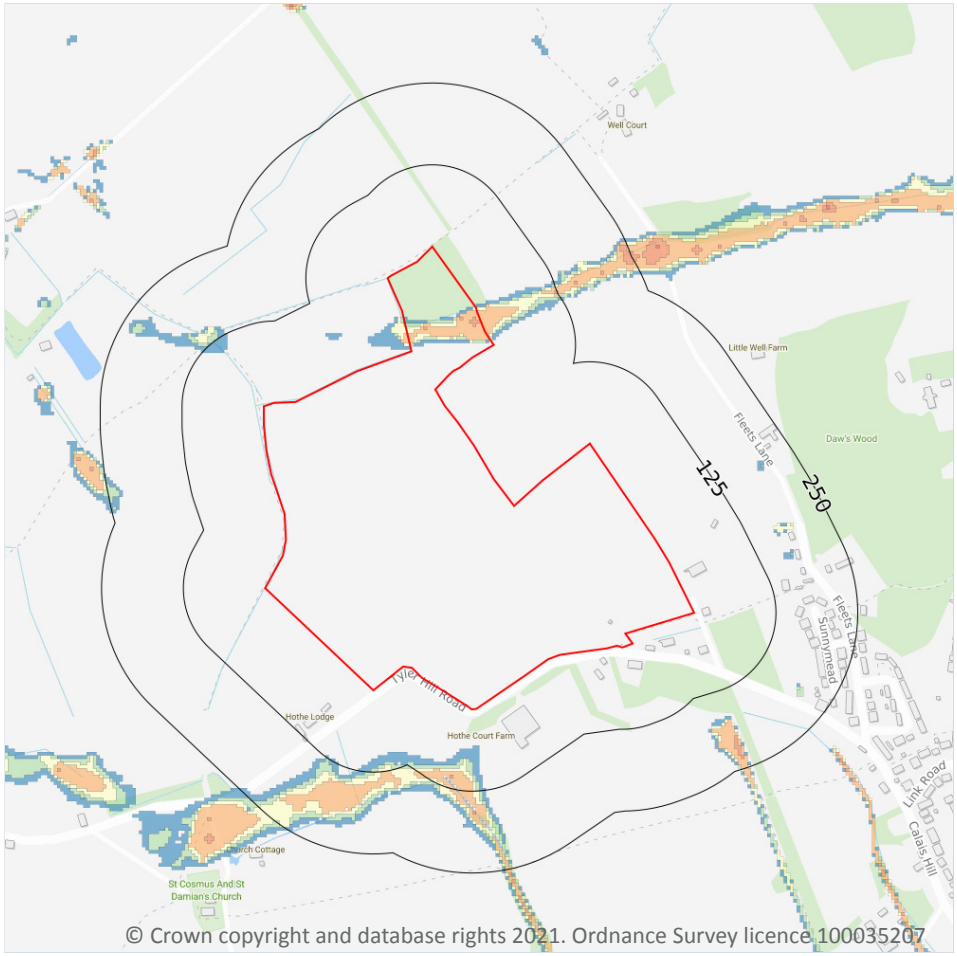
7.7 Flood Zone 3

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 0.3m - 1.0m**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 48**

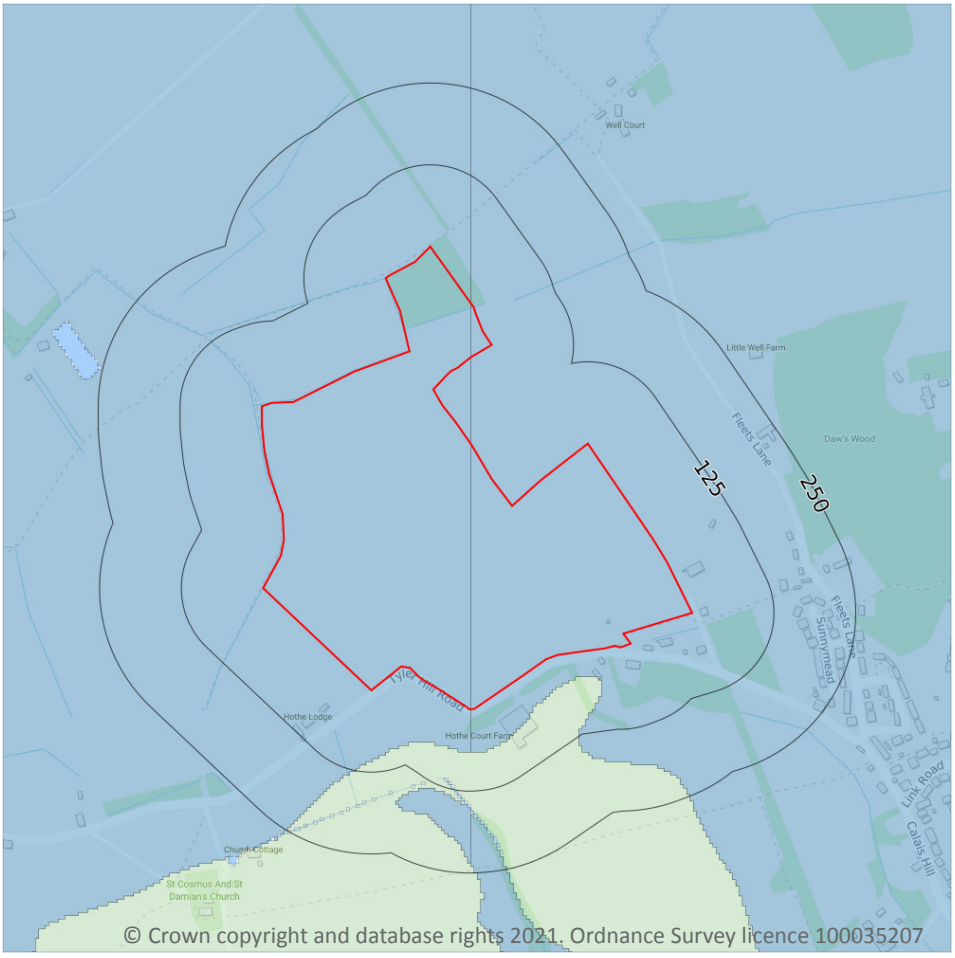
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 1.0m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

9.1 Groundwater flooding

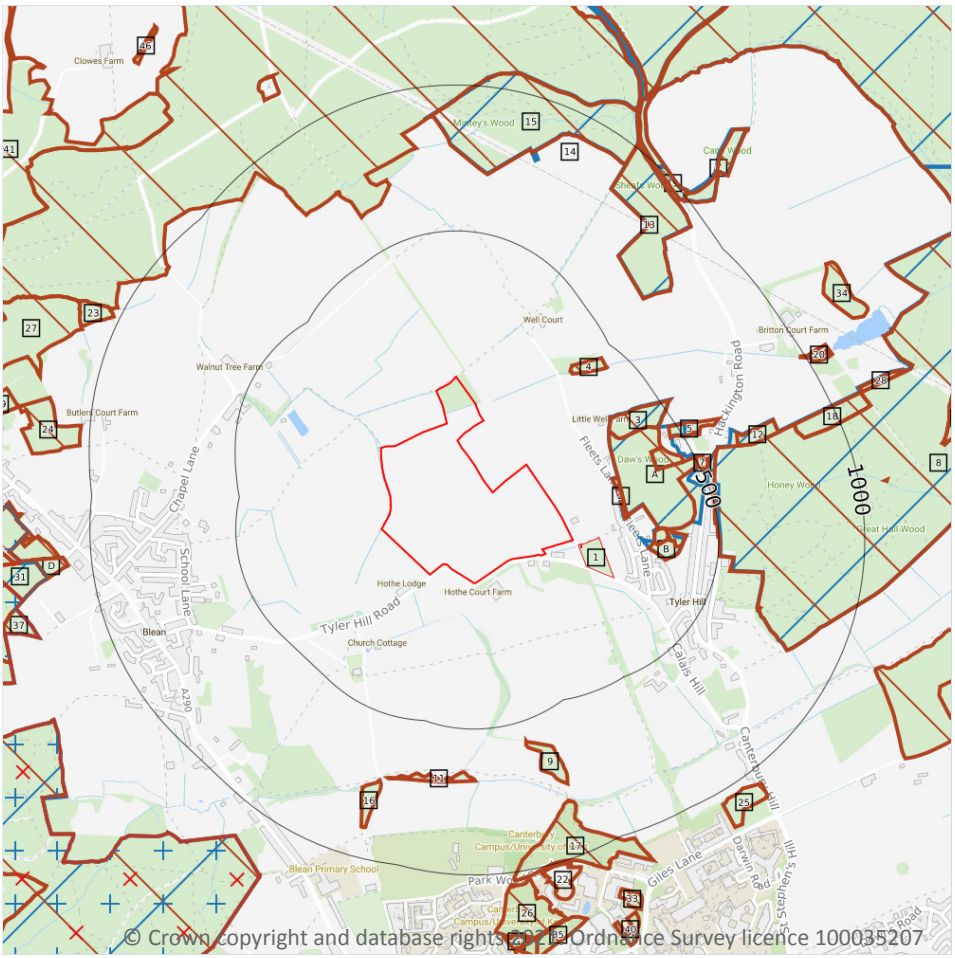
Highest risk on site	**Negligible**
Highest risk within 50m	**Low**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 50**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

Special Areas of Conservation (SAC)

National Nature Reserves (NNR)

Local Nature Reserves (LNR)

Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	10

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on **page 51**

ID	Location	Name	Data source
A	191m NE	West Blean and Thornden Woods	Natural England

ID	Location	Name	Data source
8	498m NE	West Blean and Thornden Woods	Natural England
14	680m NE	West Blean and Thornden Woods	Natural England
19	978m NE	West Blean and Thornden Woods	Natural England
C	988m NE	West Blean and Thornden Woods	Natural England
21	993m NE	West Blean and Thornden Woods	Natural England
E	1116m SW	Church Woods, Blean	Natural England
F	1154m NE	West Blean and Thornden Woods	Natural England
-	1498m N	West Blean and Thornden Woods	Natural England
-	1936m N	West Blean and Thornden Woods	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	**0**

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	**1**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

Features are displayed on the Environmental designations map on **page 51**

ID	Location	Name	Features of interest	Habitat description	Data source
E	1116m SW	Blean Complex	Beech forests on acid soils; Oak-hornbeam forests; Great crested newt.	Broad-leaved deciduous woodland	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	1

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

Features are displayed on the Environmental designations map on **page 51**

ID	Location	Name	Data source
E	1116m SW	Blean Woods	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	1

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

Features are displayed on the Environmental designations map on **page 51**

ID	Location	Name	Data source
1	25m SE	Tyler Hill Meadow	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	**65**

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 51**

ID	Location	Name	Woodland Type
2	193m E	Unknown	Ancient & Semi-Natural Woodland
A	204m NE	Daws Wood	Ancient & Semi-Natural Woodland
B	262m E	Daws Wood	Ancient & Semi-Natural Woodland
B	280m E	Dawes Wood	Ancient & Semi-Natural Woodland
3	299m NE	Unknown	Ancient & Semi-Natural Woodland
B	321m E	Daws Wood	Ancient & Semi-Natural Woodland
4	342m NE	Ozier Ground	Ancient & Semi-Natural Woodland
A	365m NE	Dawes Wood	Ancient & Semi-Natural Woodland
5	460m NE	Daws Wood	Ancient & Semi-Natural Woodland
6	491m E	Childs Forstal	Ancient & Semi-Natural Woodland
7	492m NE	Dawes Wood	Ancient & Semi-Natural Woodland
9	569m S	Unknown	Ancient & Semi-Natural Woodland
10	635m NW	Childs Forstal	Ancient Replanted Woodland
11	649m S	Unknown	Ancient & Semi-Natural Woodland
12	650m NE	Unknown	Ancient & Semi-Natural Woodland
13	679m NE	Childs Forstal	Ancient & Semi-Natural Woodland
15	702m N	Childs Forstal	Ancient & Semi-Natural Woodland
16	724m S	Unknown	Ancient & Semi-Natural Woodland
17	811m SE	Park Wood	Ancient & Semi-Natural Woodland
18	853m NE	Unknown	Ancient & Semi-Natural Woodland
20	984m NE	Honeywood, Ratscastle And Hickslees Woods	Ancient & Semi-Natural Woodland
C	988m NE	Childs Forstal	Ancient & Semi-Natural Woodland

ID	Location	Name	Woodland Type
22	1008m S	Park Wood	Ancient & Semi-Natural Woodland
23	1020m NW	Butlers Court	Ancient & Semi-Natural Woodland
24	1030m W	Upper Wood	Ancient & Semi-Natural Woodland
25	1031m SE	Unknown	Ancient & Semi-Natural Woodland
26	1033m S	Park Wood	Ancient & Semi-Natural Woodland
D	1081m W	Mincing Wood	Ancient & Semi-Natural Woodland
27	1102m W	Childs Forstal	Ancient & Semi-Natural Woodland
D	1109m W	Church/bossenden Woods	Ancient Replanted Woodland
28	1112m NE	Unknown	Ancient & Semi-Natural Woodland
29	1116m SW	Church/bossenden Woods	Ancient & Semi-Natural Woodland
30	1128m SE	Childs Forstal	Ancient & Semi-Natural Woodland
31	1157m W	Church/bossenden Woods	Ancient & Semi-Natural Woodland
32	1159m NE	Childs Forstal	Ancient & Semi-Natural Woodland
33	1163m SE	Brethren Wood	Ancient & Semi-Natural Woodland
34	1172m NE	Honeywood, Ratscastle And Hickslees Woods	Ancient & Semi-Natural Woodland
35	1192m S	Park Wood	Ancient & Semi-Natural Woodland
36	1210m W	Church/bossenden Woods	Ancient & Semi-Natural Woodland
G	1213m S	Unknown	Ancient & Semi-Natural Woodland
37	1231m W	Crawfords Rough	Ancient & Semi-Natural Woodland
G	1237m S	Park Wood	Ancient & Semi-Natural Woodland
38	1245m W	Church/bossenden Woods	Ancient Replanted Woodland
39	1246m W	Willow Wood	Ancient & Semi-Natural Woodland
40	1254m SE	Brethren Wood	Ancient & Semi-Natural Woodland
G	1268m S	Unknown	Ancient & Semi-Natural Woodland
41	1296m NW	Childs Forstal	Ancient & Semi-Natural Woodland
-	1300m S	Unknown	Ancient & Semi-Natural Woodland
42	1309m E	Unknown	Ancient & Semi-Natural Woodland
-	1344m S	Unknown	Ancient & Semi-Natural Woodland

ID	Location	Name	Woodland Type
-	1402m E	Childs Forstal	Ancient Replanted Woodland
-	1489m SE	Unknown	Ancient & Semi-Natural Woodland
46	1516m NW	Round Wood	Ancient & Semi-Natural Woodland
-	1533m SW	Church/bossenden Woods	Ancient Replanted Woodland
-	1560m E	Pomfrett Hill Wood	Ancient & Semi-Natural Woodland
-	1669m N	Childs Forstal	Ancient Replanted Woodland
49	1678m SW	Church/bossenden Woods	Ancient Replanted Woodland
-	1692m NW	Round Wood	Ancient & Semi-Natural Woodland
51	1831m NW	Childs Forstal	Ancient & Semi-Natural Woodland
-	1852m SW	Church/bossenden Woods	Ancient & Semi-Natural Woodland
-	1862m E	Unknown	Ancient & Semi-Natural Woodland
-	1900m E	Unknown	Ancient & Semi-Natural Woodland
-	1924m N	Childs Forstal	Ancient & Semi-Natural Woodland
-	1939m N	Childs Forstal	Ancient & Semi-Natural Woodland
-	1970m NE	Childs Forstal	Ancient Replanted Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or ‘classified’) under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

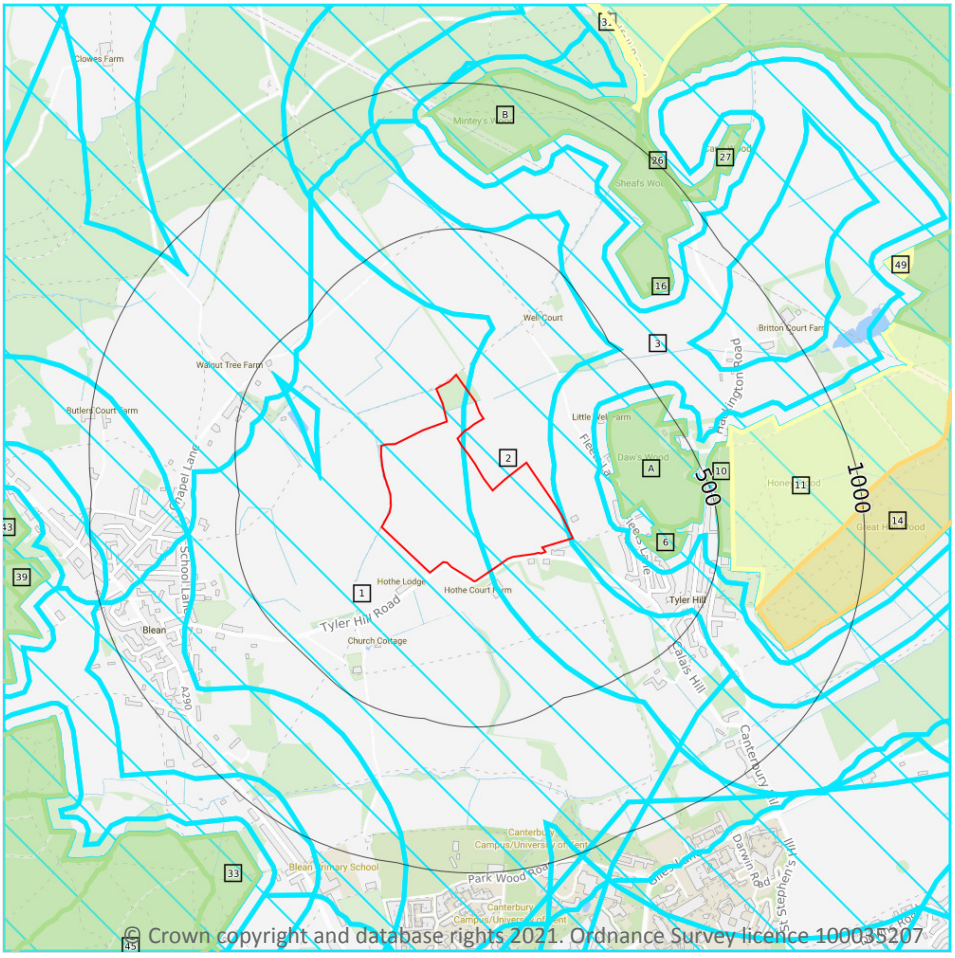
Records within 2000m	2

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
1240m SW	R. GREAT STOUR NVZ	Surface Water	S515	Existing
1251m SE	R. GREAT STOUR NVZ	Surface Water	S515	Existing

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site	3

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 59**

ID	Location	Type of developments requiring consultation
1	On site	**Infrastructure - Airports, helipads and other aviation proposals. Wind and Solar - Wind turbines. Residential - Residential development of 500 units or more. Rural residential - Any residential development of 500 or more houses outside existing settlements/urban areas. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons > 200m² & manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 500 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Notes: For new residential development in this area financial contributions are required to mitigate increased recreational disturbance on coastal SPAs and Ramsar Sites. Check with Local Planning Authority.**
2	On site	**Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines Minerals, Oil and Gas - Planning applications for quarries: new proposals or extensions, outside or extending outside existing settlements/urban areas affecting greenspace, farmland or semi natural habitats. Oil & gas exploration/extraction Rural non-residential - Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha. Residential - Residential development of 500 units or more. Rural residential - Any residential development of 50 or more houses outside existing settlements/urban areas. Air pollution - Any development that could cause AIR POLLUTION (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons/manure stores). Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Notes: For new residential development in this area financial contributions are required to mitigate increased recreational disturbance on coastal SPAs and Ramsar Sites. Check with Local Planning Authority.**

ID	Location	Type of developments requiring consultation
3	**On site**	**All applications - All Planning Applications (Except Householder) Outside Or Extending Outside Existing Settlements/urban Areas Affecting Greenspace, Farmland, Semi Natural Habitats Or Landscape Features Such As Trees, Hedges, Streams, Rural Buildings/structures** **Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals** **Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines** **Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.** **Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha** **Residential - Residential development of 10 units or more.** **Rural residential - Any residential development of 10 or more houses outside existing settlements/urban areas.** **Air pollution - Any development that could cause AIR POLLUTION or DUST either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons/manure stores).** **Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.** **Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management** **Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.** **Notes: For new residential development in this area financial contributions are required to mitigate increased recreational disturbance on coastal SPAs and Ramsar Sites. Check with Local Planning Authority.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	**29**

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on **page 59**

ID:	A
Location:	191m NE
SSSI name:	West Blean and Thornden Woods
Unit name:	Daw's Wood - Main
Broad habitat:	Broadleaved, Mixed And Yew Woodland - Lowland
Condition:	Favourable
Reportable features:	

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900

ID: 6
Location: 236m E
SSSI name: West Blean and Thornden Woods
Unit name: Daw's Wood South
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 10
Location: 498m NE
SSSI name: West Blean and Thornden Woods
Unit name: Honey Wood - West
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Favourable	16/03/2013

ID: 11
Location: 549m E
SSSI name: West Blean and Thornden Woods
Unit name: S15 Honey Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 14
Location: 678m E
SSSI name: West Blean and Thornden Woods
Unit name: S15 Honey Wood 2
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Unfavourable - No change	12/07/2010
Invert. assemblage A1 arboreal canopy	Unfavourable - No change	12/07/2010
Lowland mixed deciduous woodland	Unfavourable - No change	12/07/2010
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Unfavourable - No change	12/07/2010

ID: B
Location: 680m NE
SSSI name: West Blean and Thornden Woods
Unit name: Mintey's Wood And Sheafs Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900

Feature name	Feature condition	Date of assessment
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 16
Location: 714m NE
SSSI name: West Blean and Thornden Woods
Unit name: Se Corner Of Sheafs Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Favourable	16/03/2013

ID: 26
Location: 978m NE
SSSI name: West Blean and Thornden Woods
Unit name: Mintey's Wood And Sheafs Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 27
Location: 988m NE
SSSI name: West Blean and Thornden Woods
Unit name: Mintey's Wood And Sheafs Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 31
Location: 1102m NE
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (West)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Unfavourable - Recovering	12/07/2010
Invert. assemblage A1 arboreal canopy	Unfavourable - Recovering	12/07/2010
Invert. assemblage F2 grassland & scrub matrix	Unfavourable - Recovering	12/07/2010
Lowland mixed deciduous woodland	Unfavourable - Recovering	12/07/2010
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Unfavourable - Recovering	12/07/2010

ID: 33
Location: 1116m SW
SSSI name: Church Woods, Blean
Unit name: East Of Church Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	05/08/2005

ID: 37
Location: 1146m NE
SSSI name: West Blean and Thornden Woods
Unit name: Cane Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 38
Location: 1154m NE
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (West)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Unfavourable - Recovering	12/07/2010
Invert. assemblage A1 arboreal canopy	Unfavourable - Recovering	12/07/2010
Invert. assemblage F2 grassland & scrub matrix	Unfavourable - Recovering	12/07/2010
Lowland mixed deciduous woodland	Unfavourable - Recovering	12/07/2010
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Unfavourable - Recovering	12/07/2010

ID: 39
Location: 1157m W
SSSI name: Church Woods, Blean
Unit name: East Of Nnr
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable

Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	21/01/2004

ID: 43
Location: 1210m W
SSSI name: Church Woods, Blean
Unit name: Adjacent To Caravan Site
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	12/06/2013
Lowland mixed deciduous woodland	Favourable	25/06/2013

ID: 44
Location: 1231m W
SSSI name: Church Woods, Blean
Unit name: English Nature - Grimshill (North) And Mincing Woo
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Woodland	Favourable	11/05/2011
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Favourable	11/05/2011
Lowland beech and yew woodland	Favourable	11/05/2011
Lowland mixed deciduous woodland	Favourable	11/05/2011
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 45
Location: 1250m SW
SSSI name: Church Woods, Blean
Unit name: Church Wood South
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	22/06/2011

ID: 46
Location: 1300m SW
SSSI name: Church Woods, Blean
Unit name: Woodland Trust
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Woodland	Favourable	15/06/2011
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	15/06/2011
Invert. assemblage A1 arboreal canopy	Favourable	15/06/2011
Lowland mixed deciduous woodland	Favourable	15/06/2011
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Favourable	15/06/2011

ID: 48
Location: 1326m NE
SSSI name: West Blean and Thornden Woods
Unit name: 9
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900

Feature name	Feature condition	Date of assessment
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 49
Location: 1405m NE
SSSI name: West Blean and Thornden Woods
Unit name: S15 Honey Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: 50
Location: 1453m SW
SSSI name: Church Woods, Blean
Unit name: Church Wood North
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	15/06/2011

ID: -
Location: 1494m E
SSSI name: West Blean and Thornden Woods
Unit name: Little Hall Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900

ID: -
Location: 1498m N
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (West)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Unfavourable - Recovering	12/07/2010
Invert. assemblage A1 arboreal canopy	Unfavourable - Recovering	12/07/2010
Invert. assemblage F2 grassland & scrub matrix	Unfavourable - Recovering	12/07/2010
Lowland mixed deciduous woodland	Unfavourable - Recovering	12/07/2010
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Unfavourable - Recovering	12/07/2010

ID: -
Location: 1747m W
SSSI name: Church Woods, Blean
Unit name: North Of Nnr 2 (Anderson)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests	Favourable	21/01/2004

ID: -
Location: 1828m N
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (North West)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: -
Location: 1919m E
SSSI name: West Blean and Thornden Woods
Unit name: Barton Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: -
Location: 1936m N
SSSI name: West Blean and Thornden Woods
Unit name: Lypeatt Wood
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Declining
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: -
Location: 1944m NE
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (South East)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

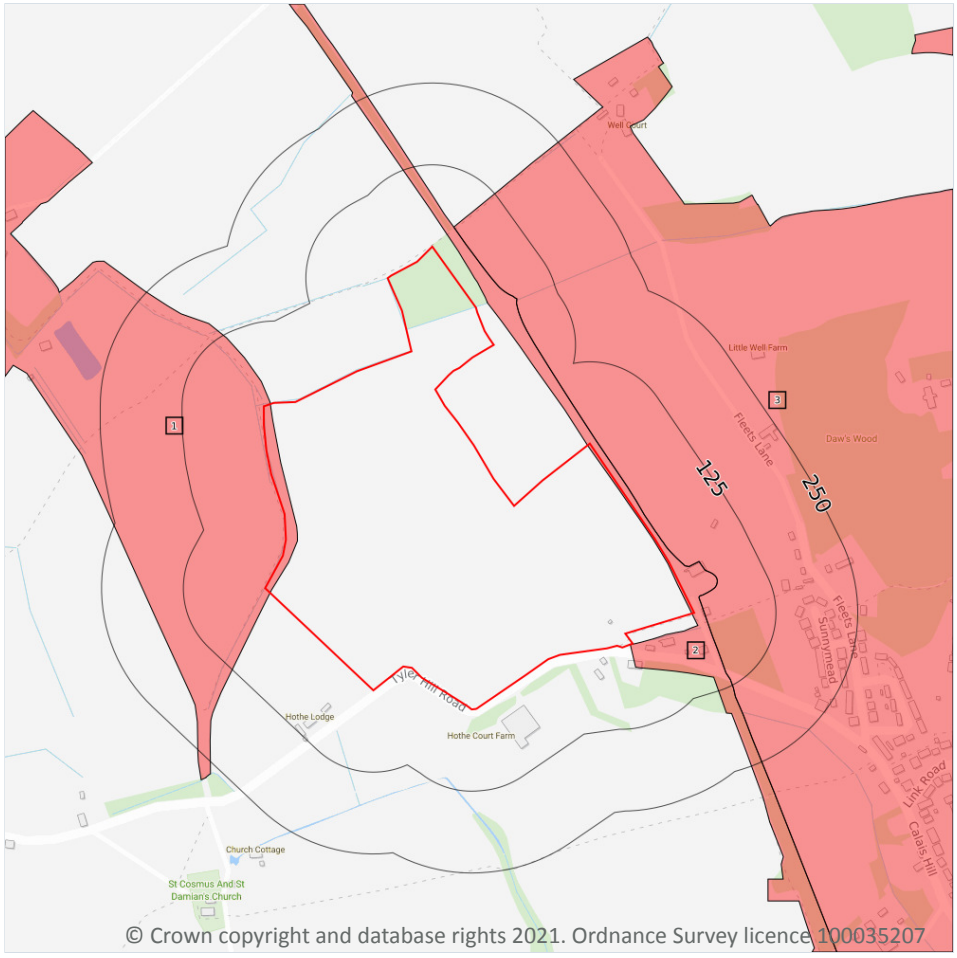
Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Invert. assemblage F2 grassland & scrub matrix	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

ID: -
Location: 1969m NE
SSSI name: West Blean and Thornden Woods
Unit name: Thornden Wood (North Central)
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Assemblages of breeding birds - Mixed: Scrub, Woodland	Not Recorded	01/01/1900
Invert. assemblage A1 arboreal canopy	Not Recorded	01/01/1900
Lowland mixed deciduous woodland	Not Recorded	01/01/1900
Population of nationally rare butterfly species - Mellicta athalia, Heath Fritillary	Not Recorded	01/01/1900

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	3

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 74**

ID	Location	Name	District	Date of designation
1	**On site**	**Amery Court, Blean**	**Canterbury**	**28/02/1995**
2	**On site**	**Canterbury and Whitstable Railway, Hackington and Blean**	**Canterbury**	**28/02/1995**
3	7m NE	Tyler Hill	Canterbury	28/02/1995

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	**0**

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

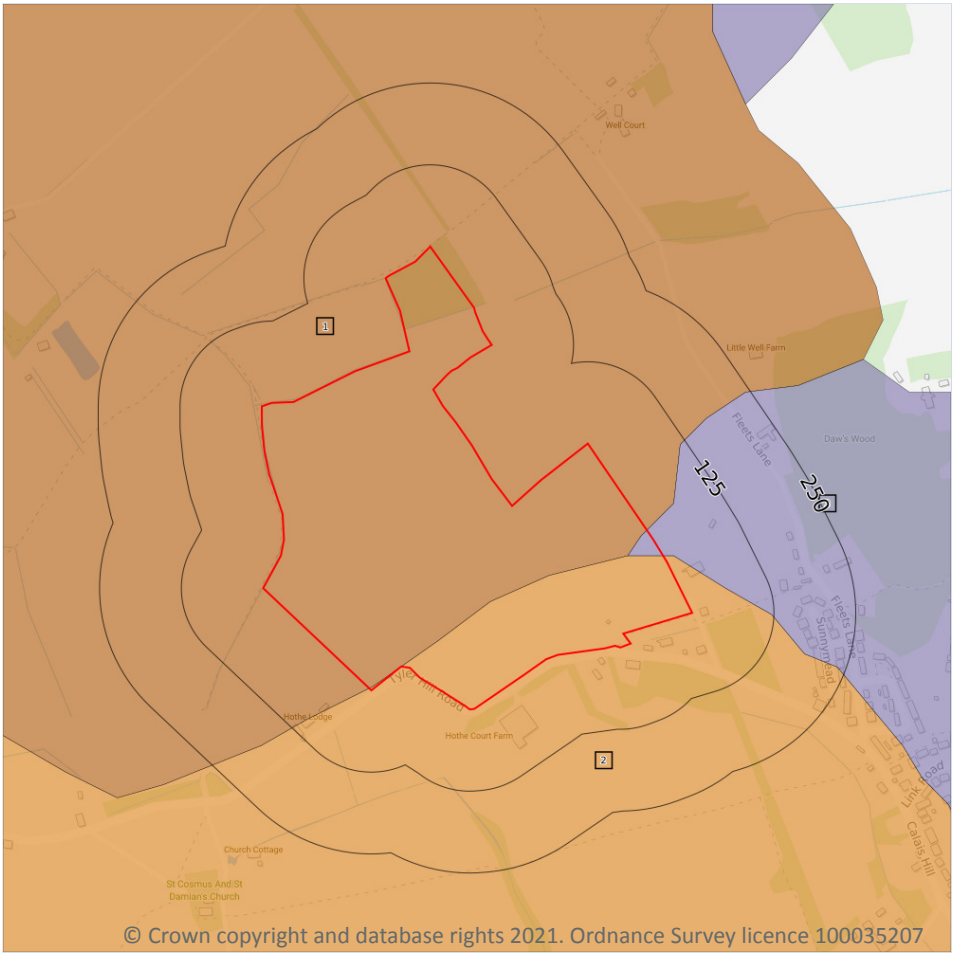
11.7 Registered Parks and Gardens

Records within 250m	**0**

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	3

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 77**

ID	Location	Classification	Description
1	On site	Grade 2	Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.
2	On site	Grade 3	Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.
3	On site	Non Agricultural	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations

Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks
Primary Habitat
Restorable Habitat
Associated Habitats
Habitat Restoration-Creation
Network Enhancement Zone 1
Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	12

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 80**

ID	Location	Main Habitat	Other habitats
1	0m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	24m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	25m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	29m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
A	59m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	63m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
5	92m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	193m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%, ENSIS L1)
7	204m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%, ENSIS L1)
8	209m NE	No main habitat but additional habitats present	Main habitat: DWOOD (INV > 50%)
9	232m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
10	237m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%, ENSIS L1)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	**0**

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	**0**

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

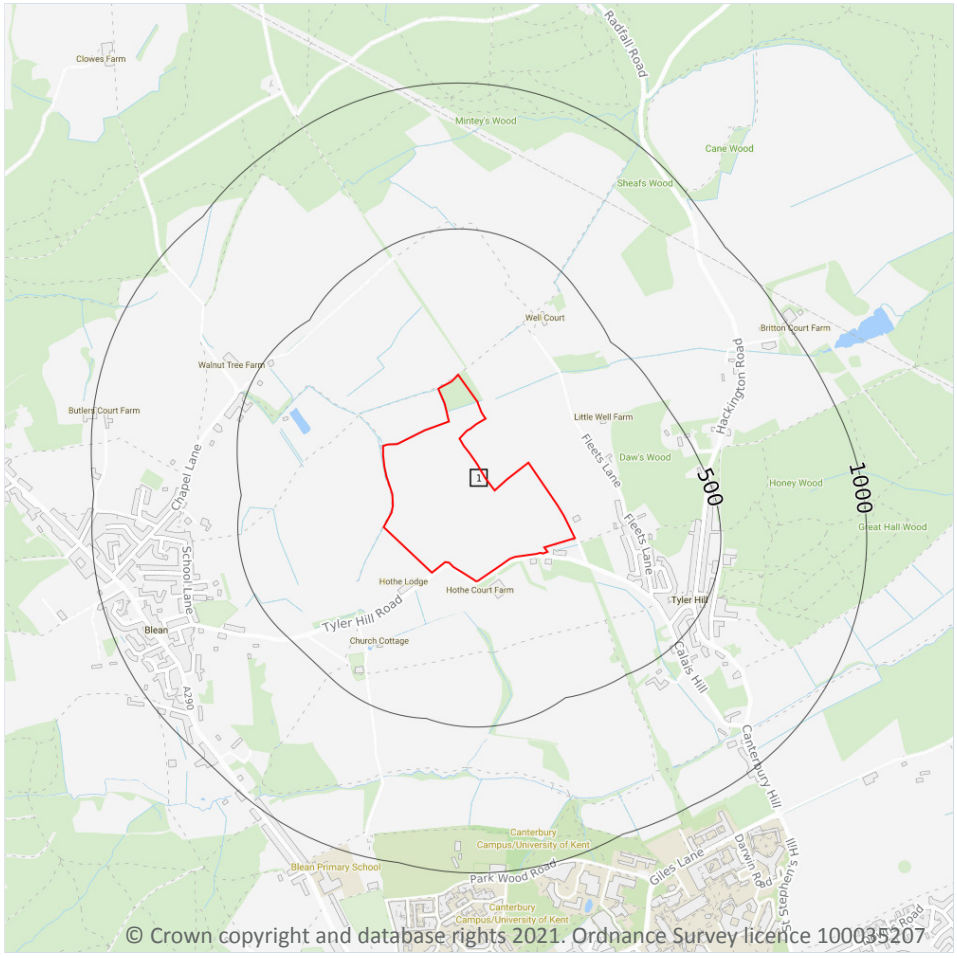
Records within 250m	**0**

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK

Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 83**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	No coverage	No coverage	No coverage	NoCov

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground

14.2 Artificial and made ground (10k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

This data is sourced from the British Geological Survey.

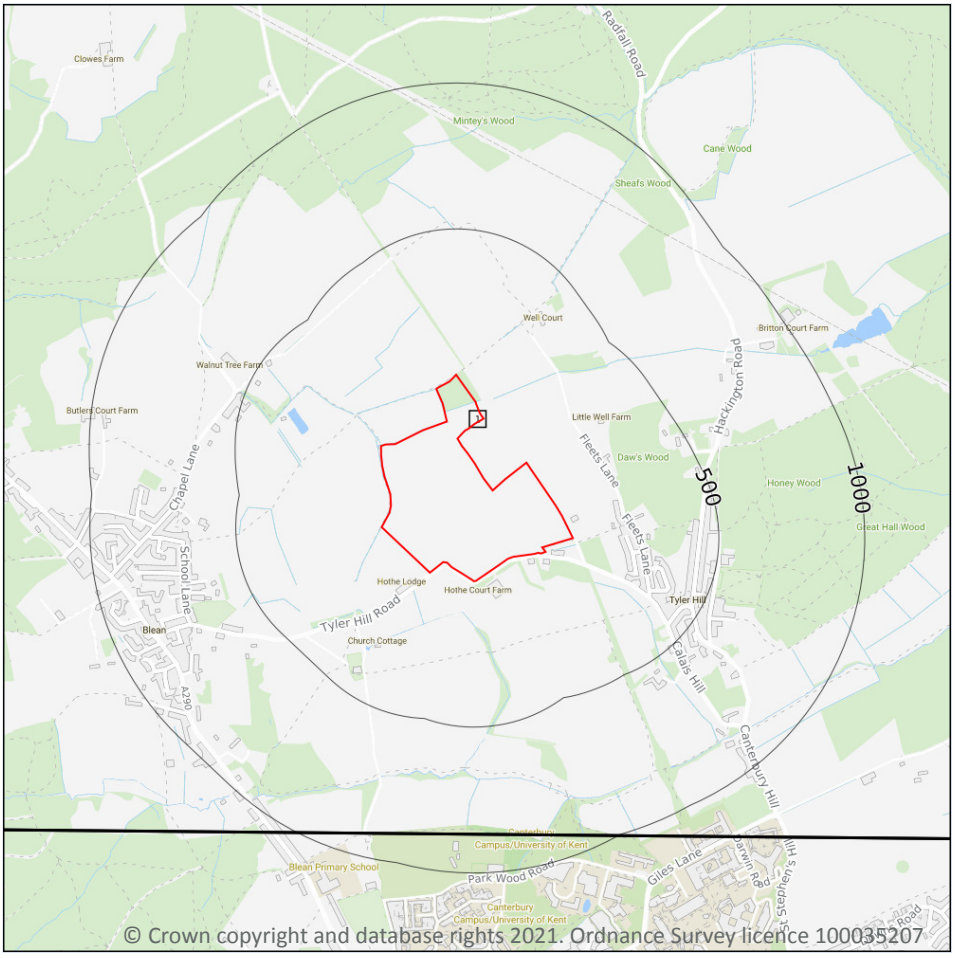
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 87**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**Full**	**EW273_faversham_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground

15.2 Artificial and made ground (50k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

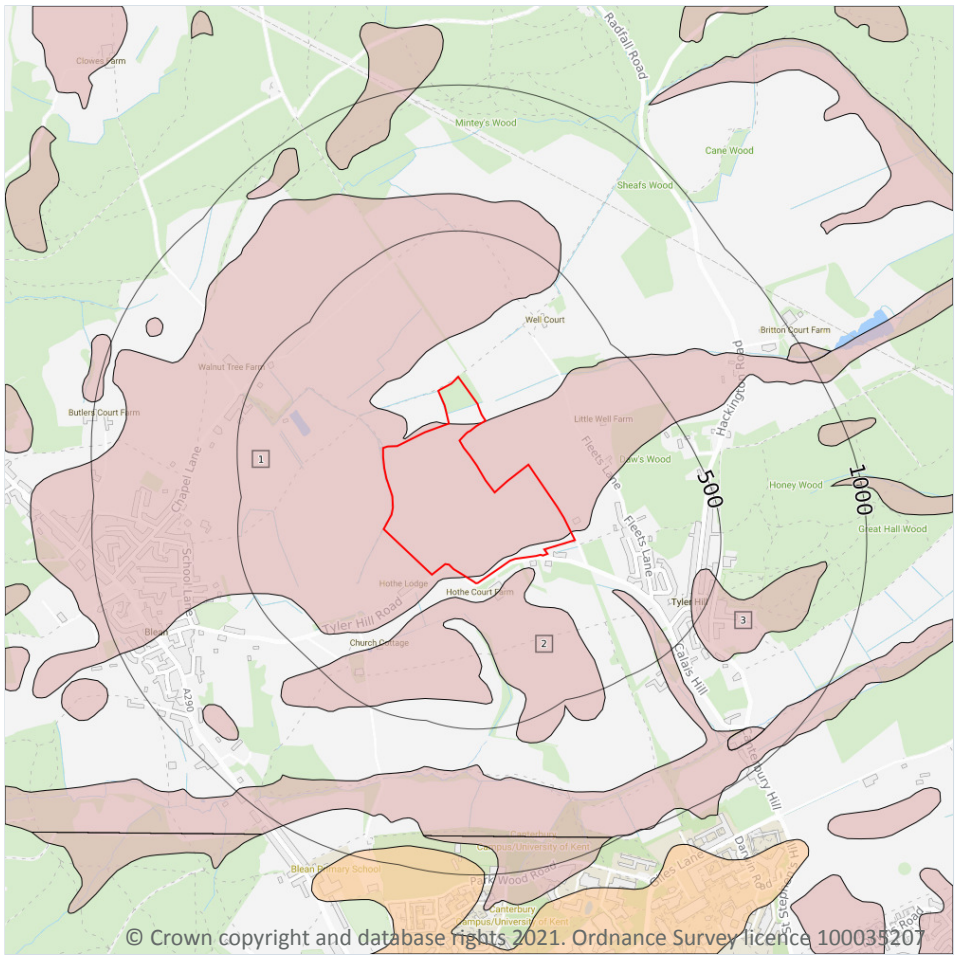
15.3 Artificial ground permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m **3**

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 89**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**HEAD-XCZ**	**HEAD**	**CLAY AND SILT**
2	37m S	HEAD-XVSZC	HEAD	GRAVEL, SAND, SILT AND CLAY
3	430m E	HEAD-XVSZC	HEAD	GRAVEL, SAND, SILT AND CLAY

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	2

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Low**	**Very Low**
37m S	Intergranular	Very High	Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

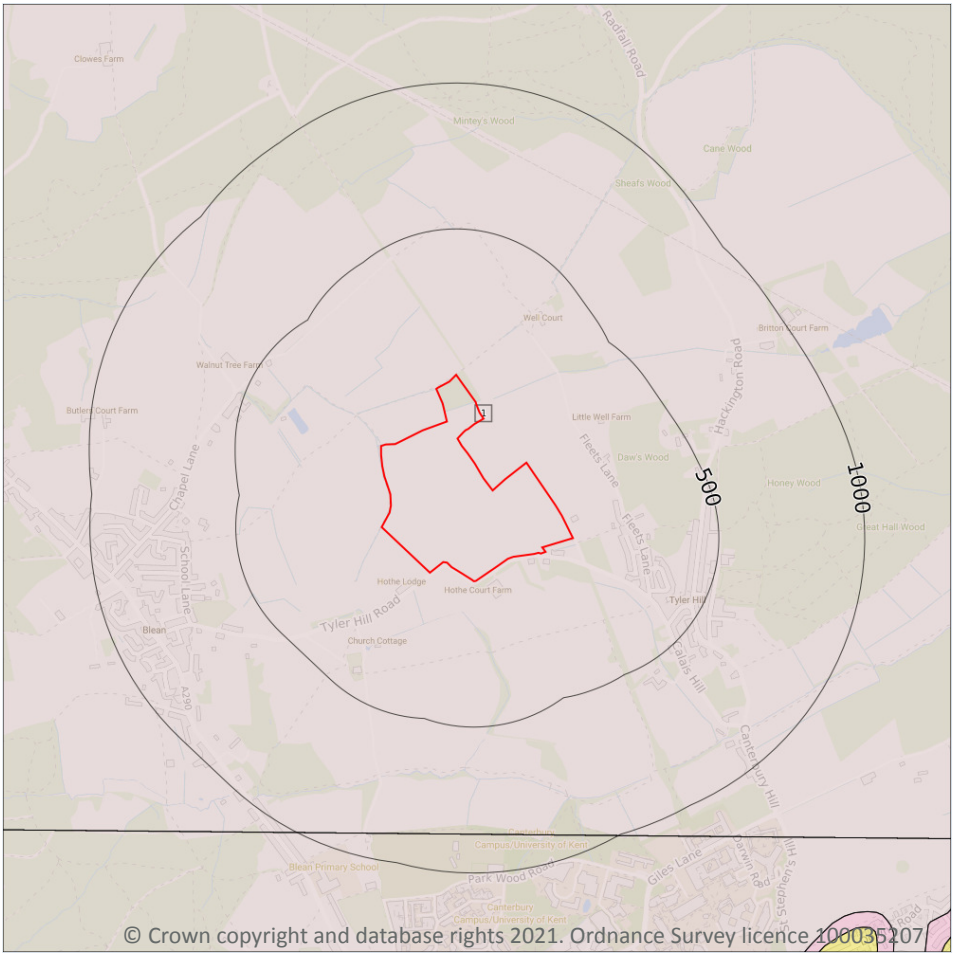
15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m	1

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 91**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**LC-XCZ**	**LONDON CLAY FORMATION - CLAY AND SILT**	**YPRESIAN**

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Low**	**Very Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

16 Boreholes

Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

16.1 BGS Boreholes

Records within 250m	1

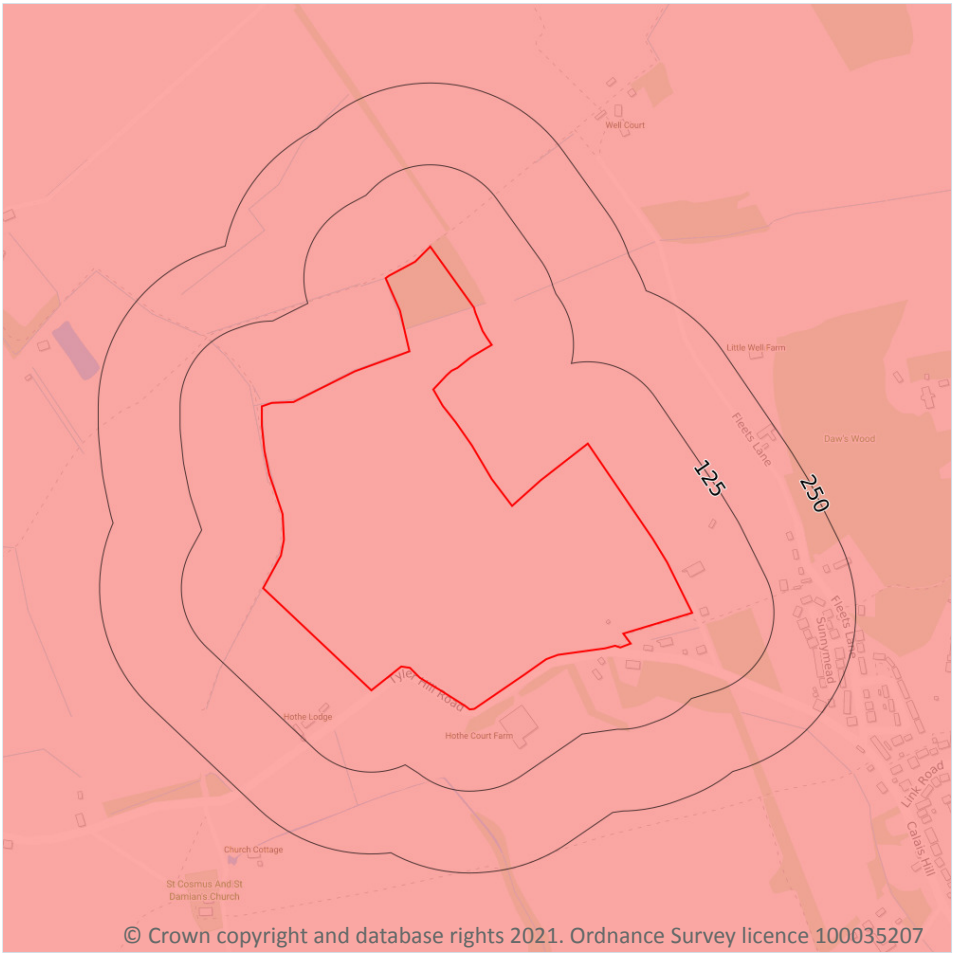
The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 93**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	216m E	613860 161080	21 SUNNYMEAD TYLER HILL CANTERBURY TP1	-	Y	N/A

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	1

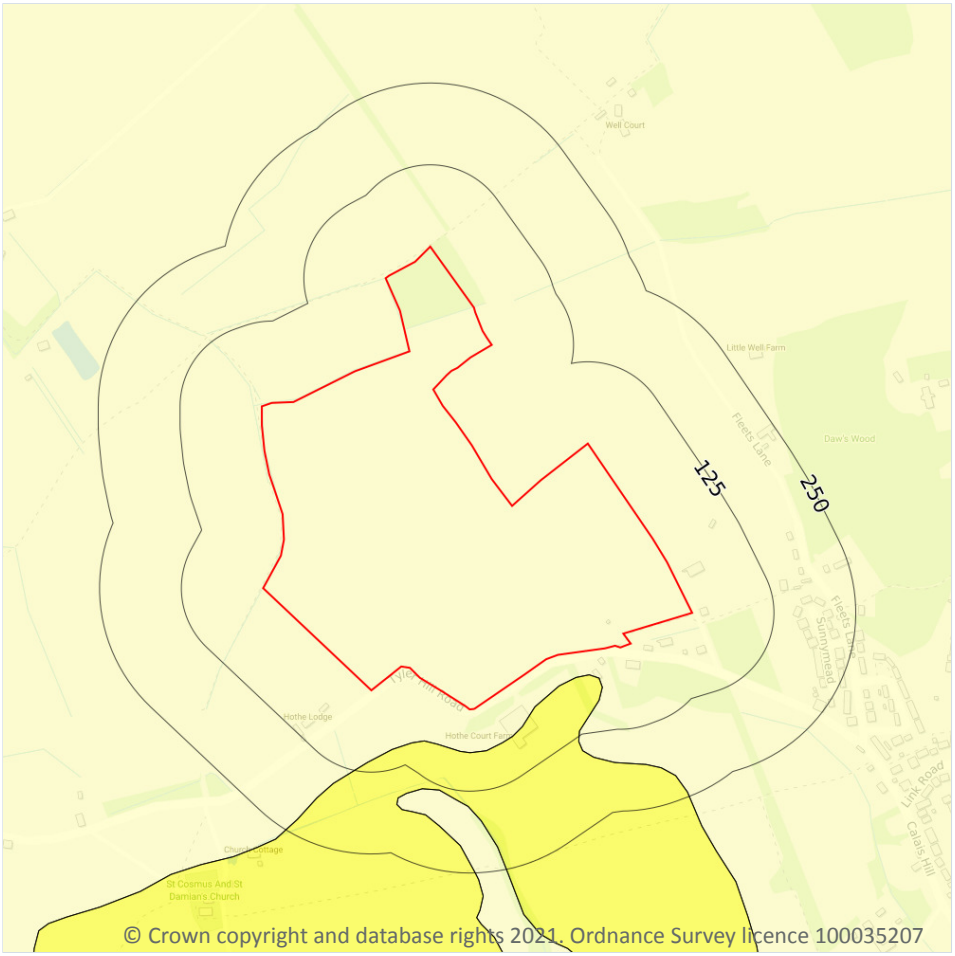
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 94**

Location	Hazard rating	Details
On site	**Moderate**	**Ground conditions predominantly high plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	2

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

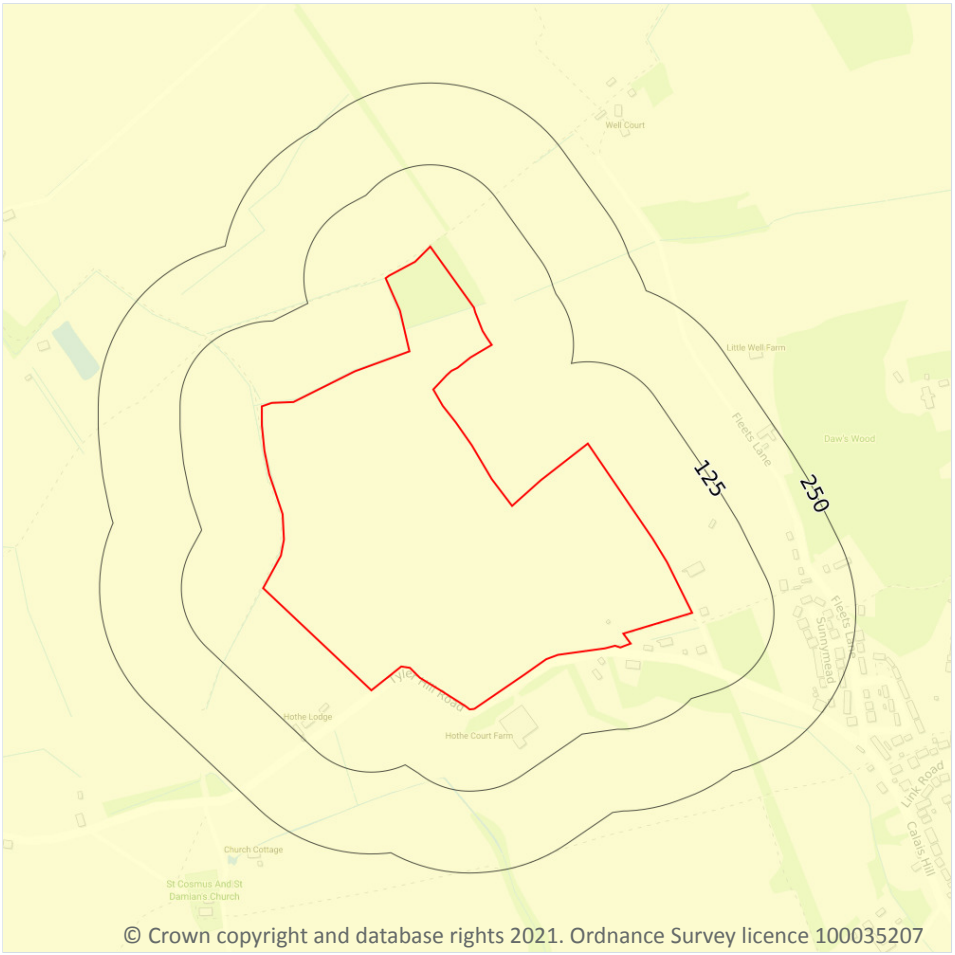
Features are displayed on the Natural ground subsidence - Running sands map on **page 95**

Location	Hazard rating	Details
On site	**Negligible**	**Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.**

Location	Hazard rating	Details
37m S	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	1

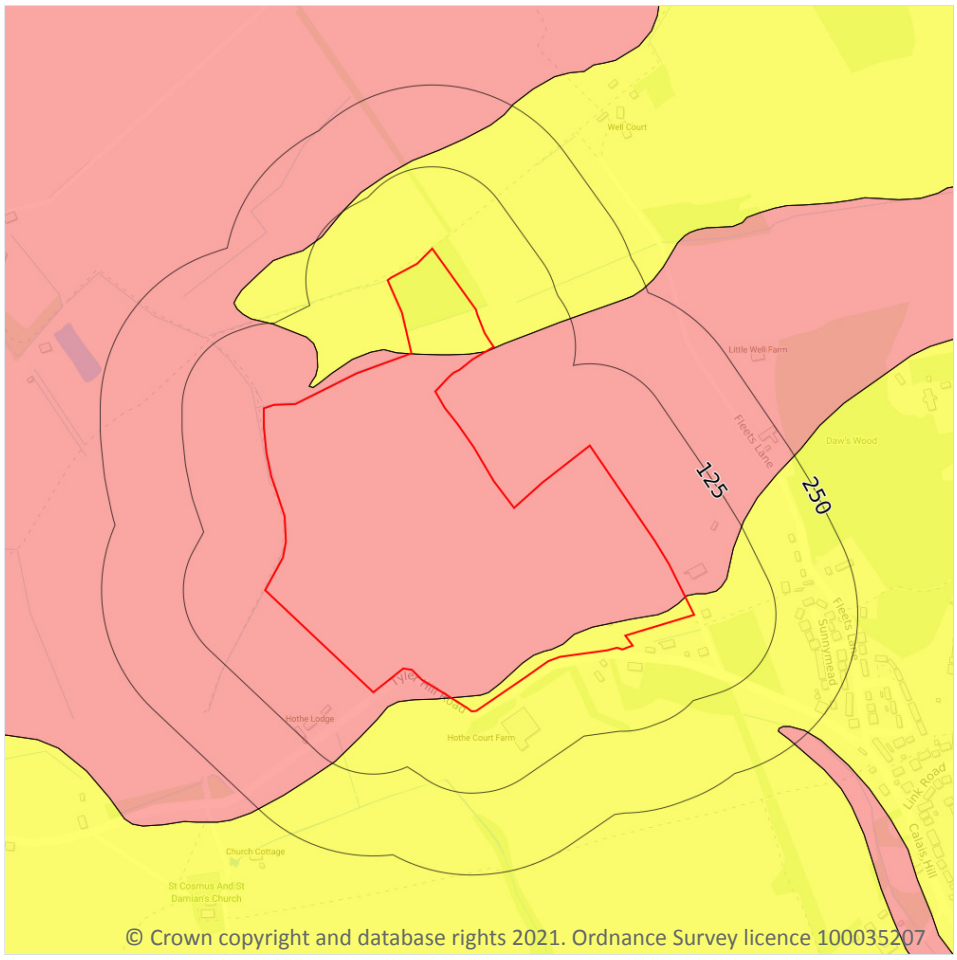
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 97**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	2

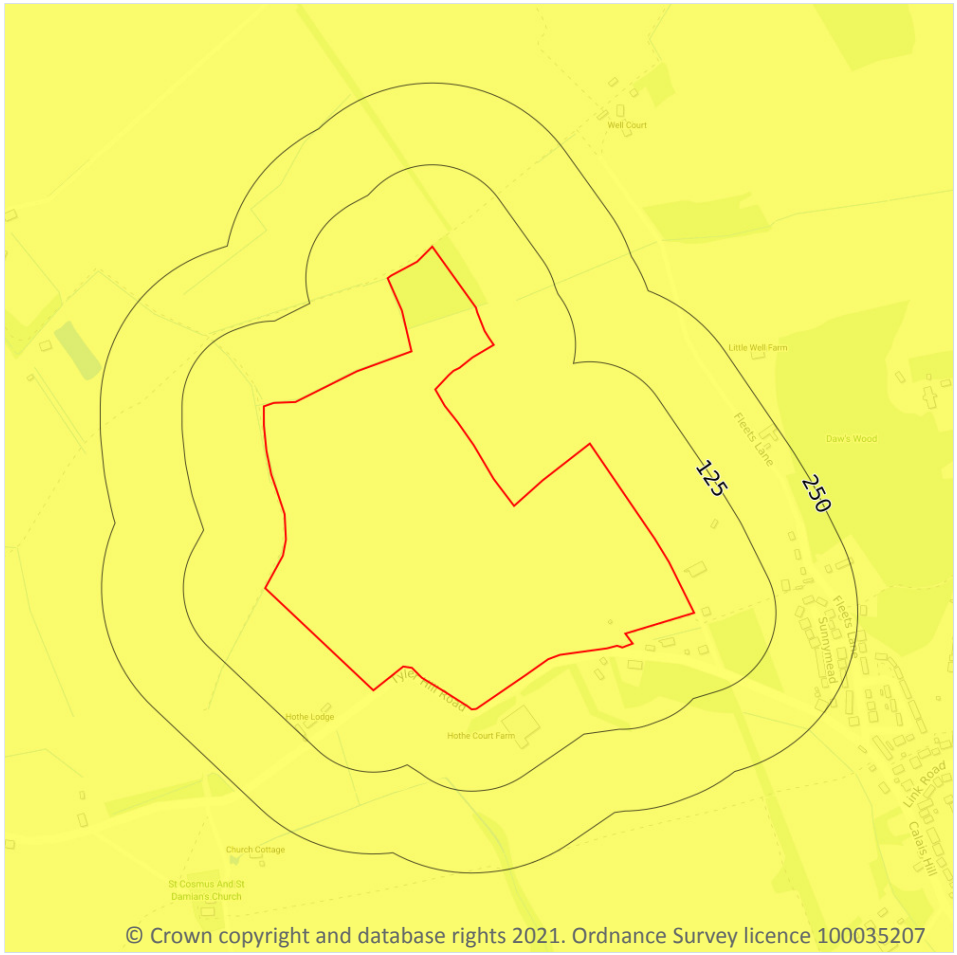
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 98**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**
On site	**Moderate**	**Deposits with potential to collapse when loaded and saturated are probably present in places.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	1

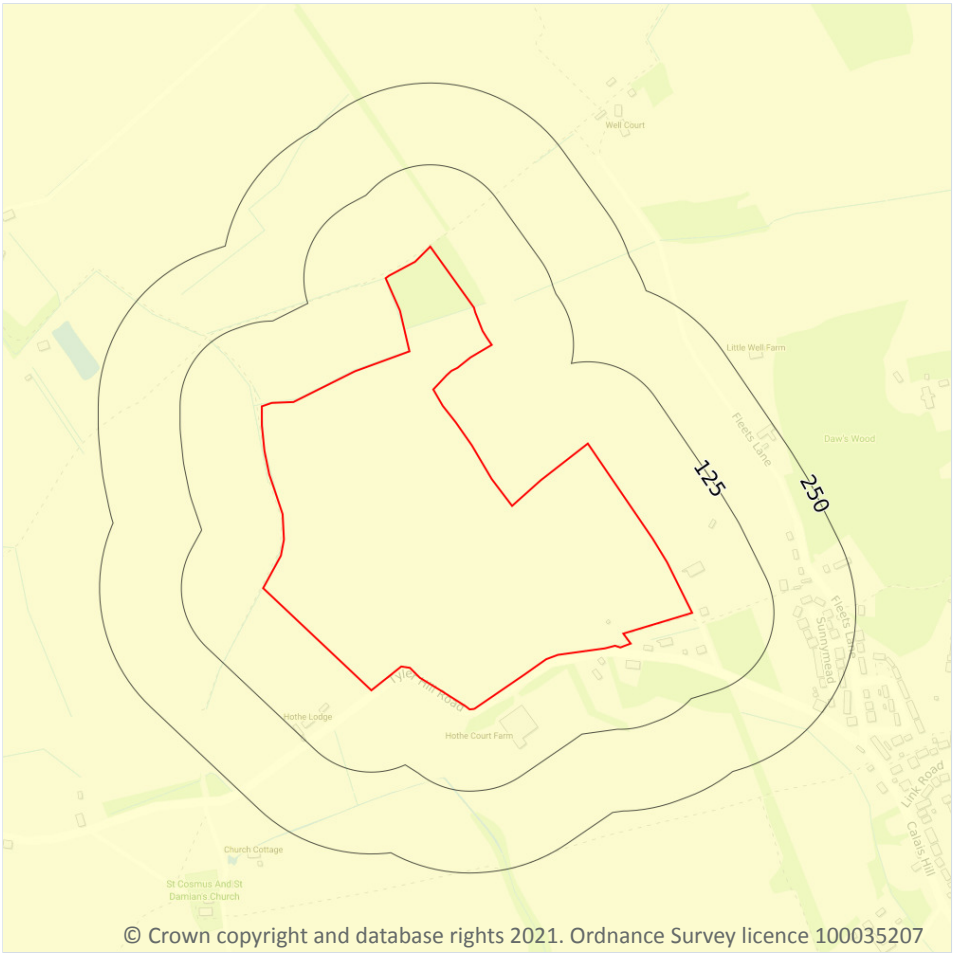
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 99**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	1

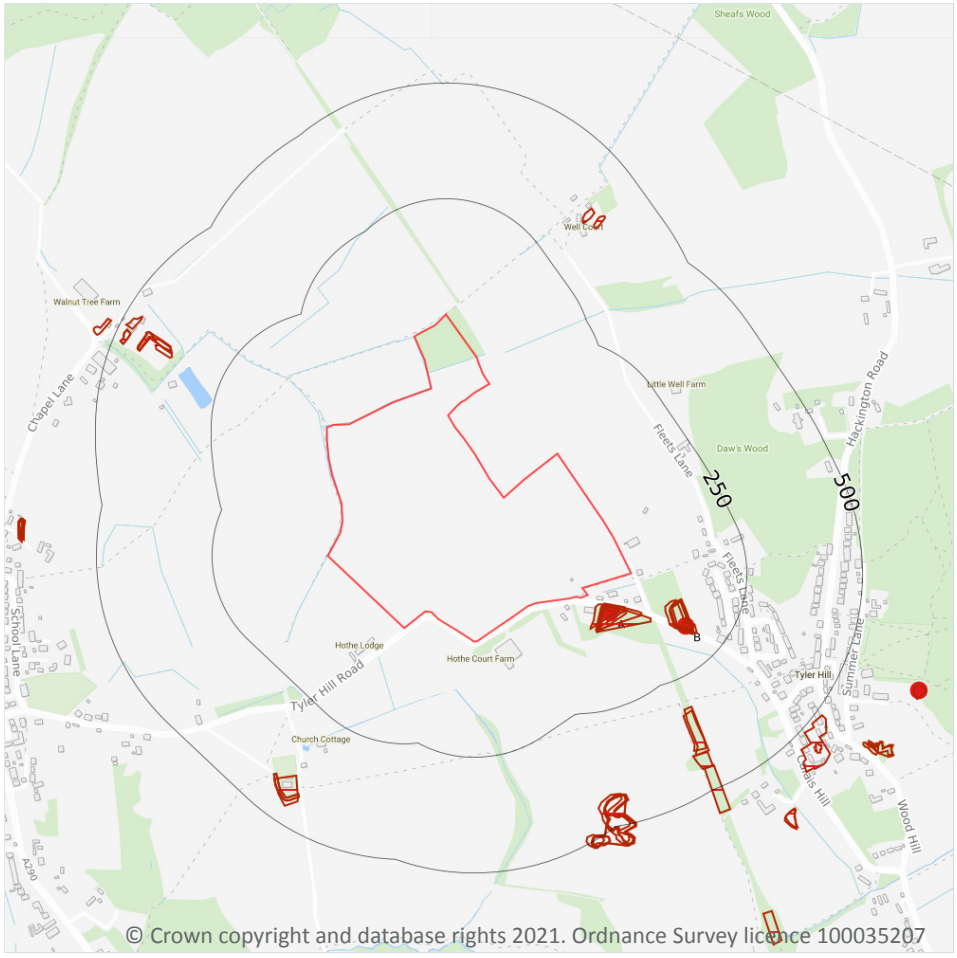
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 100**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



Site Outline

Search buffers in metres (m)

Natural cavities (Area)

Natural cavities (Point)

BritPits

Surface ground workings

Underground workings

Historical Mineral Planning Areas

Mining Cavities

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Peter Brett Associates (PBA).

18.2 BritPits

Records within 500m	2

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining, ground workings and natural cavities map on **page 102**

ID	Location	Details	Description
A	60m SE	Name: Tylerhill Clay Pit Address: Tyler Hill, CANTERBURY, Kent Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
B	163m SE	Name: Tyler Hill Clay Pit Address: Tyler Hill, CANTERBURY, Kent Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	12

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 102**

ID	Location	Land Use	Year of mapping	Mapping scale
A	31m SE	Unspecified Pit	1938	1:10560
A	39m SE	Unspecified Ground Workings	1957	1:10560
A	40m SE	Unspecified Pit	1906	1:10560
A	41m SE	Old Clay Pit	1896	1:10560
A	43m SE	Unspecified Pit	1947	1:10560
A	50m SE	Unspecified Pit	1873	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
B	103m SE	Unspecified Pit	1938	1:10560
B	112m SE	Unspecified Pit	1957	1:10560
B	112m SE	Unspecified Pit	1906	1:10560
B	114m SE	Unspecified Pit	1947	1:10560
B	116m SE	Old Clay Pit	1896	1:10560
B	155m SE	Clay Pit	1873	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	**2**

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

Features are displayed on the Mining, ground workings and natural cavities map on **page 102**

ID	Location	Land Use	Year of mapping	Mapping scale
-	999m SE	Tunnel	1872	1:10560
-	999m SE	Tunnel	1872	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	**0**

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Peter Brett Associates (PBA).

18.8 JPB mining areas

Records on site	0

Areas which could be affected by former coal mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

18.13 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon

© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

19.1 Radon

Records on site	1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 107**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None****

This data is sourced from the British Geological Survey and Public Health England.

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	18

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
10m NW	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
34m NW	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
37m SE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
41m SE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
46m SE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
46m S	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects

Site Outline

Search buffers in metres (m)

- Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 1 Worksites
- Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	1

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 110**

Location	Land Use	Year of mapping	Mapping scale
28m NE	Railway Sidings	1938	2500

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	1

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

Features are displayed on the Railway infrastructure and projects map on **page 110**

Location	Description
20m E	Abandoned

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

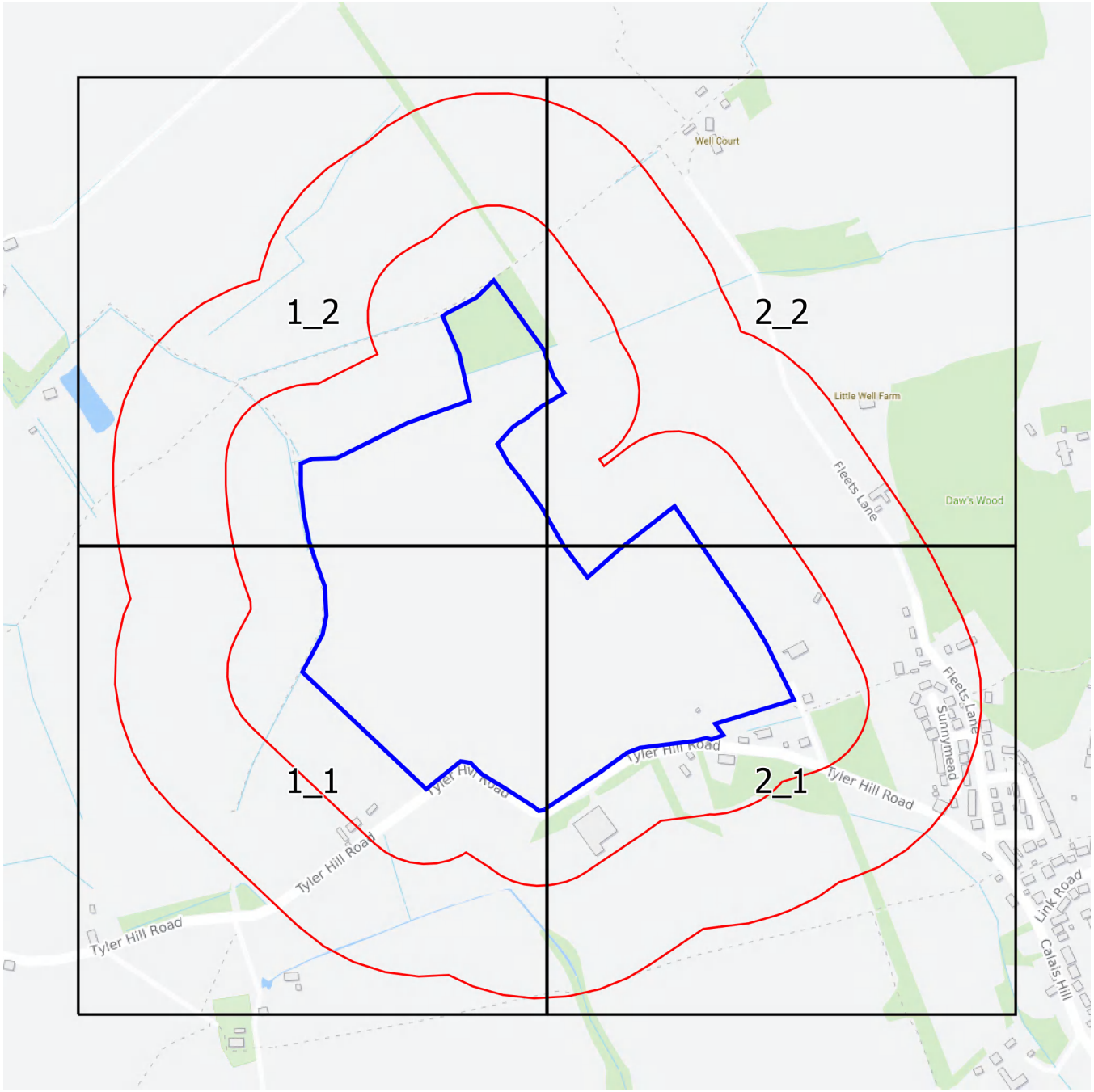
This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

Terms and conditions

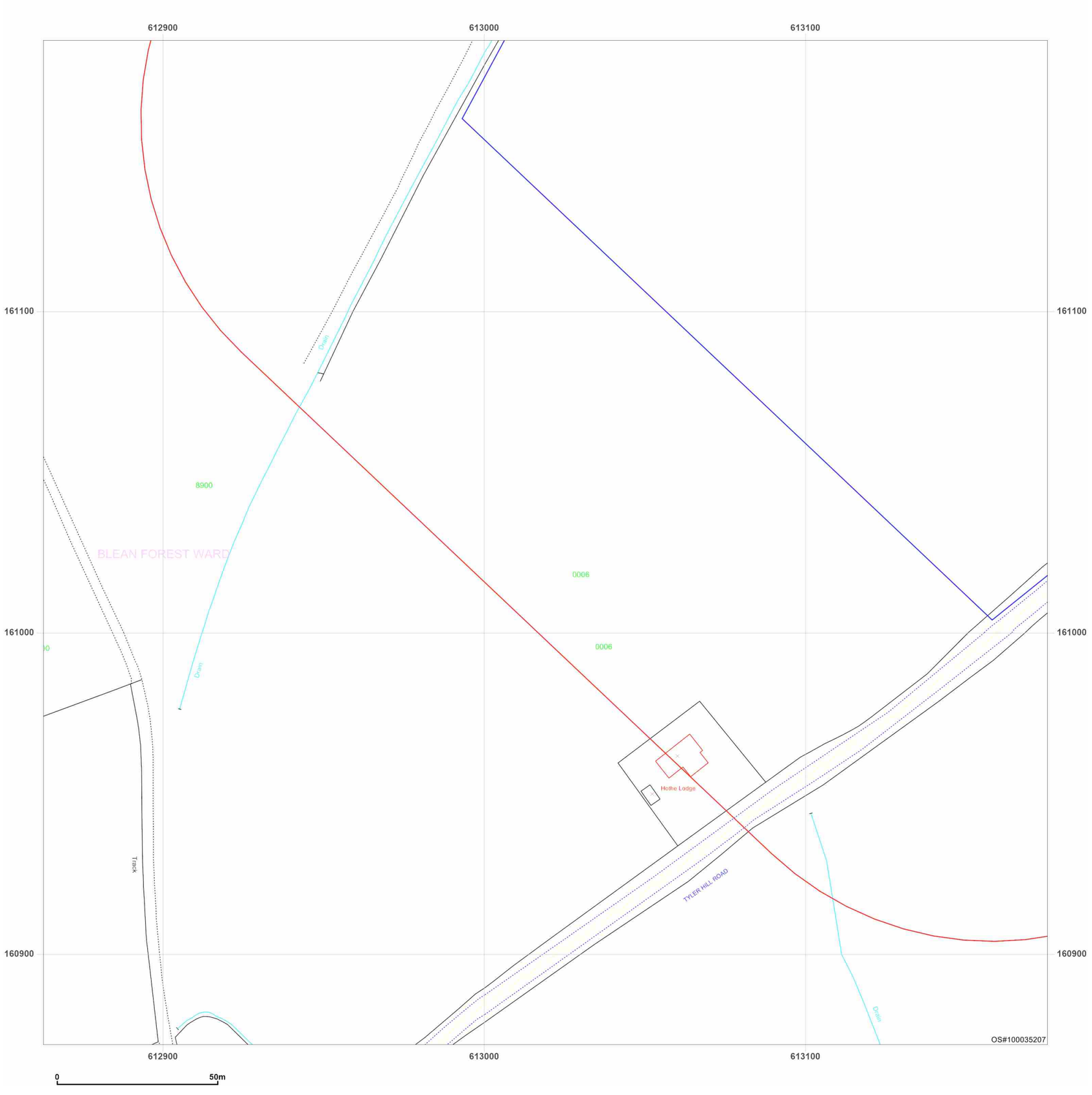
Groundsure's Terms and Conditions can be accessed at this link: https://www.groundsure.com/terms-and-conditions-jan-2020/.



Groundsure INSIGHTS

1:2,500 Scale Grid Index

N
W
E
S



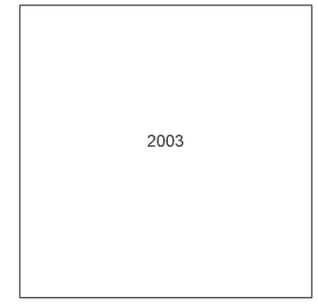
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_1_1
Grid Ref: 613019, 161028

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

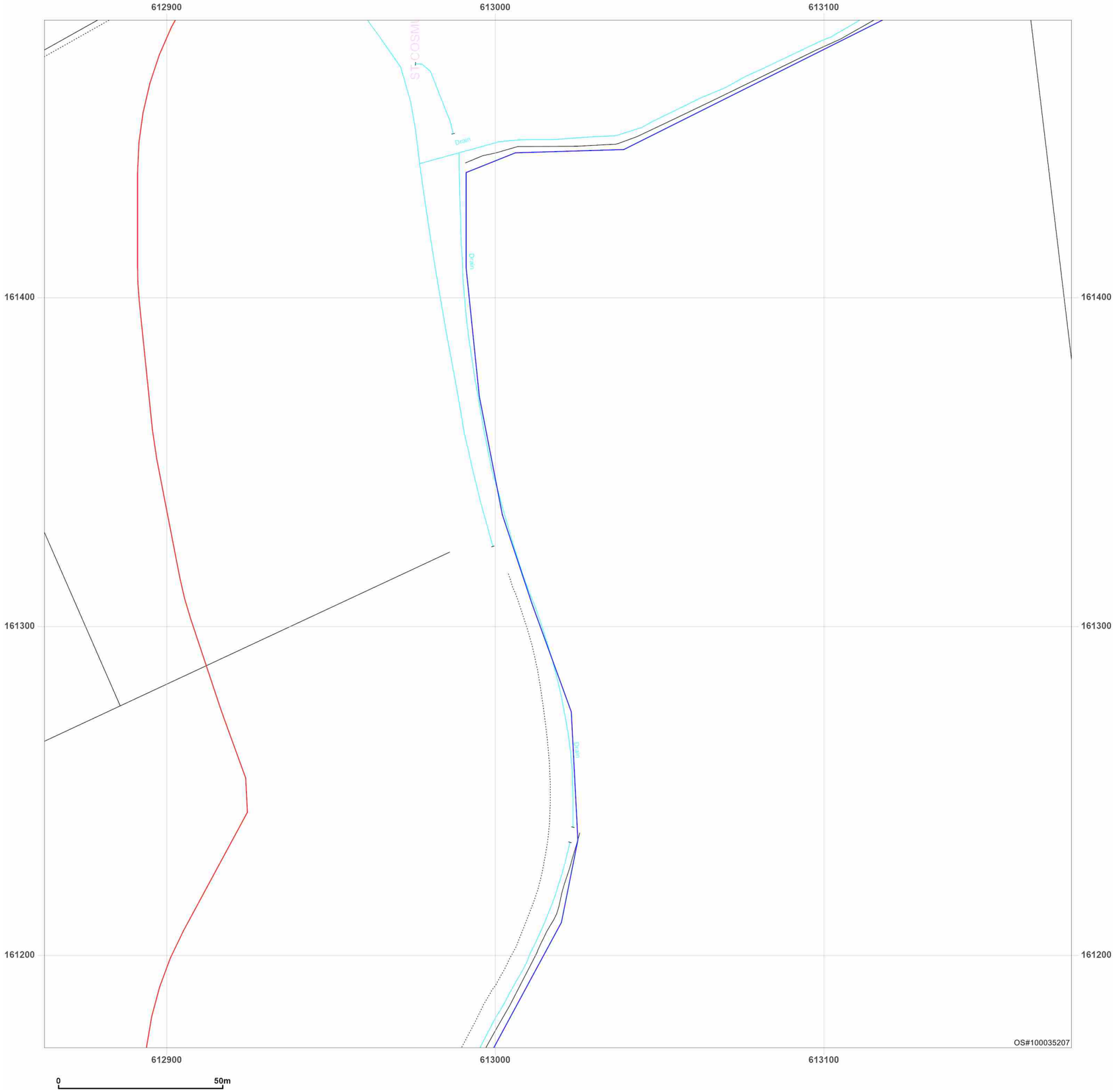
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



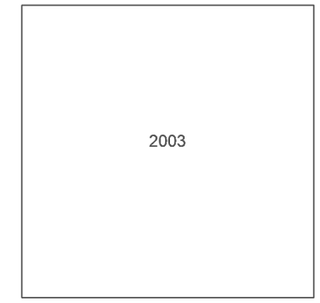
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_1_2
Grid Ref: 613019, 161328

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

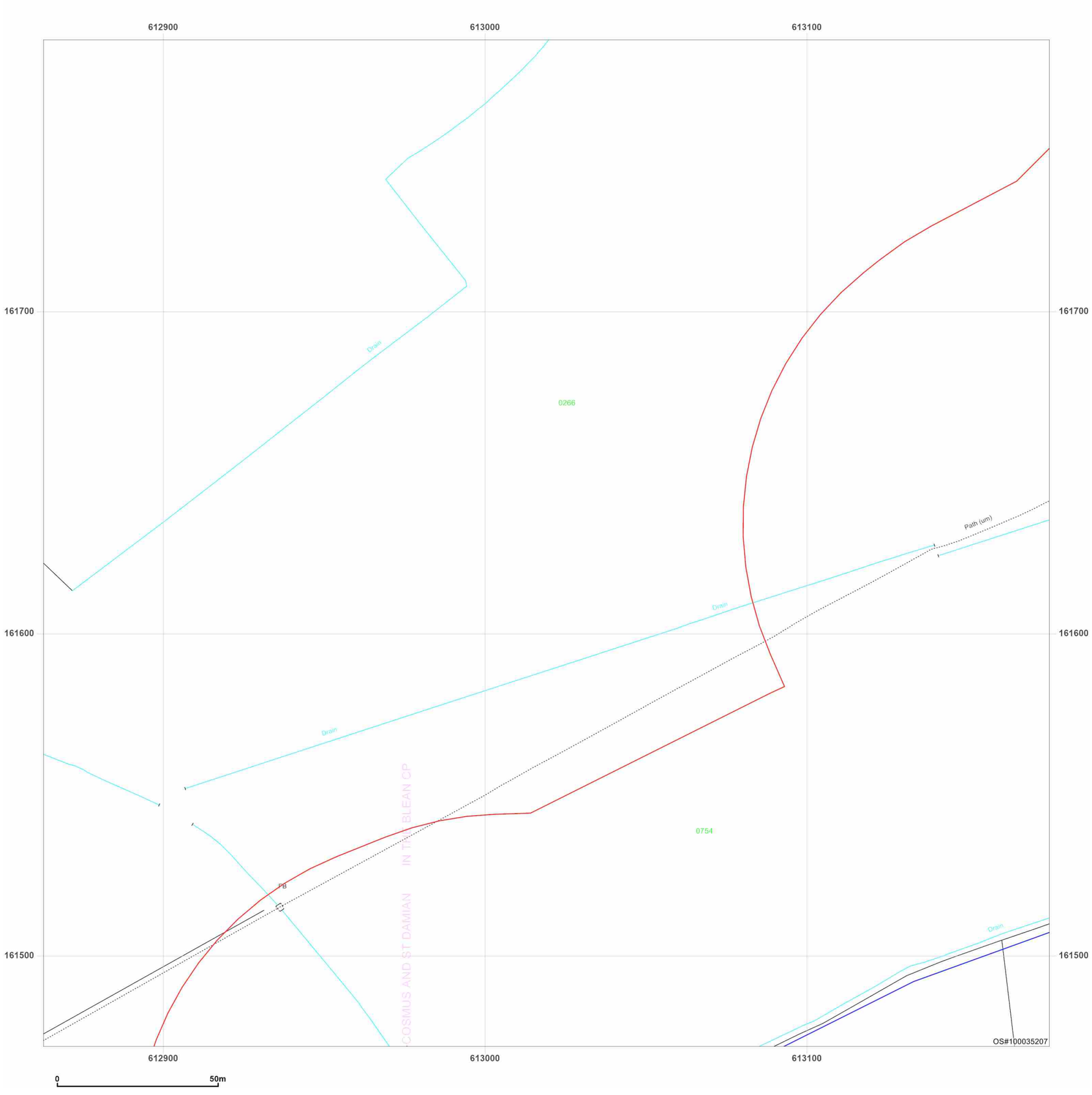
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



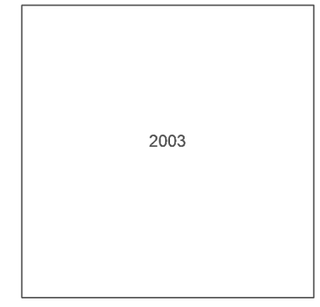
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_1_3
Grid Ref: 613019, 161628

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

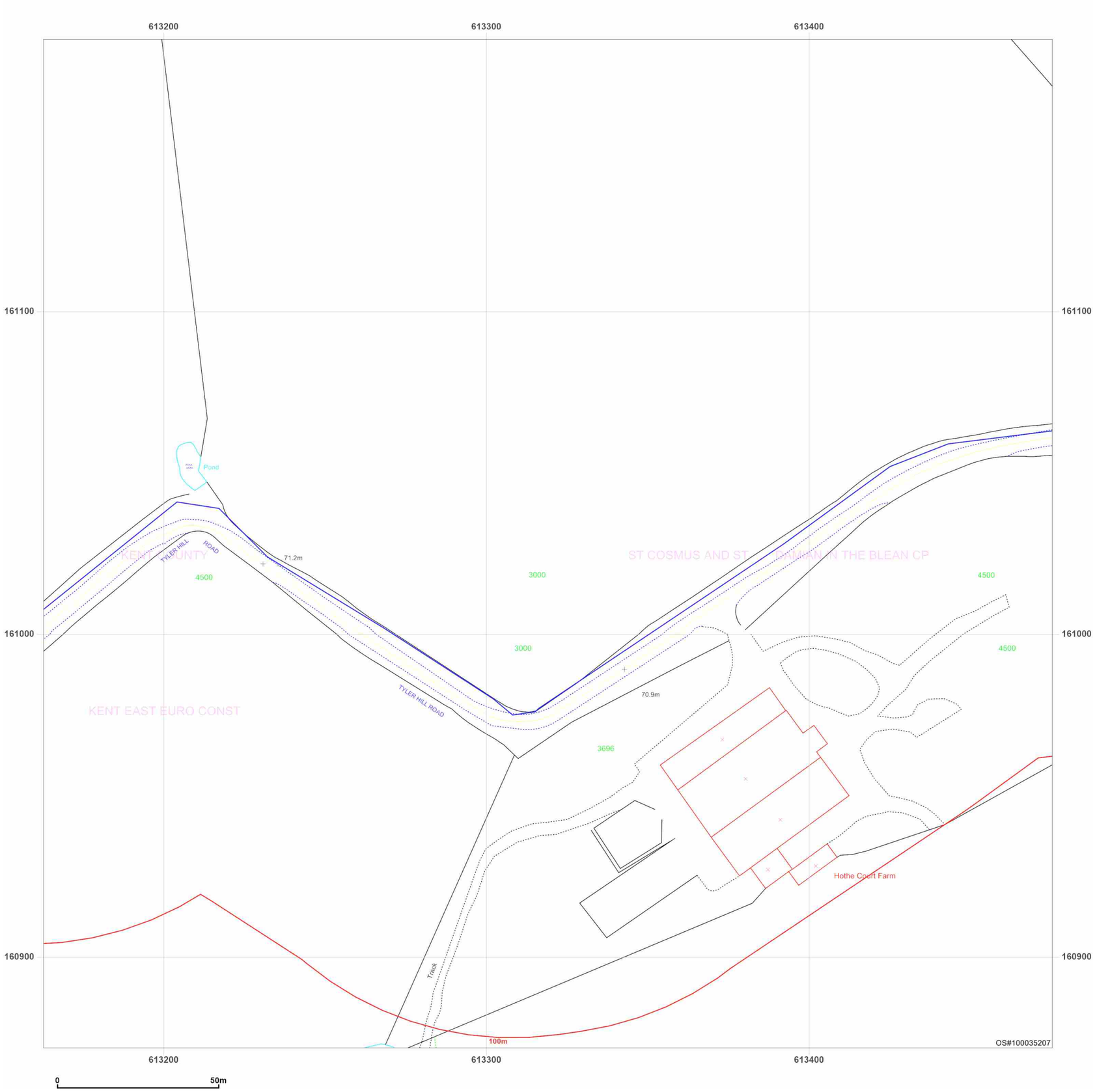
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



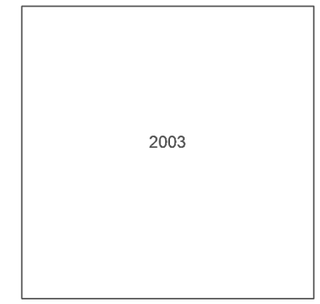
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_2_1
Grid Ref: 613319, 161028

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

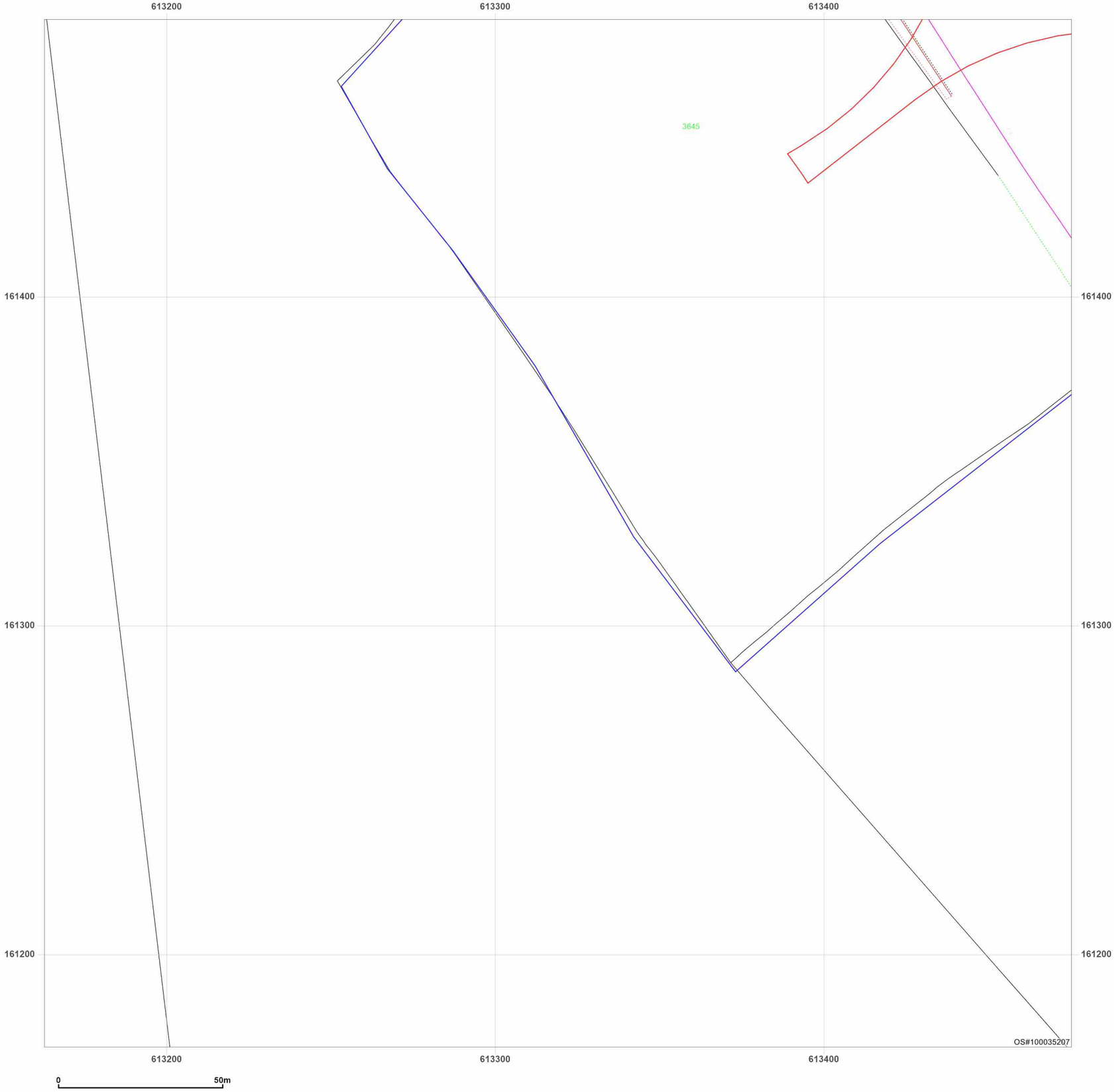
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



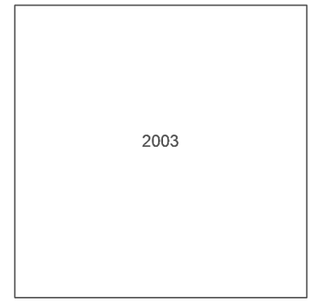
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_2_2
Grid Ref: 613319, 161328

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

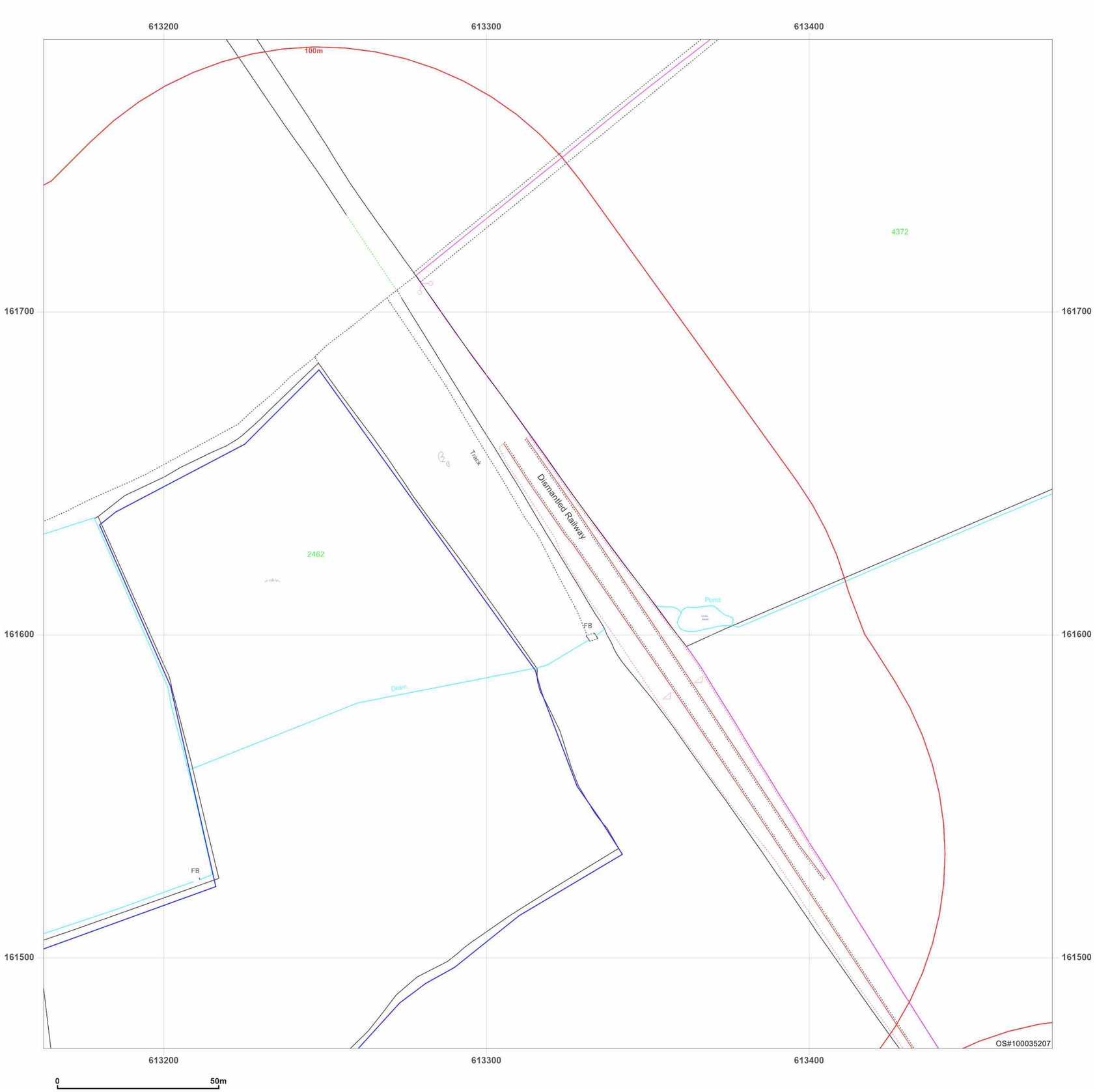
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



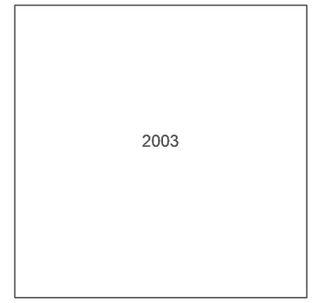
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_2_3
Grid Ref: 613319, 161628

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

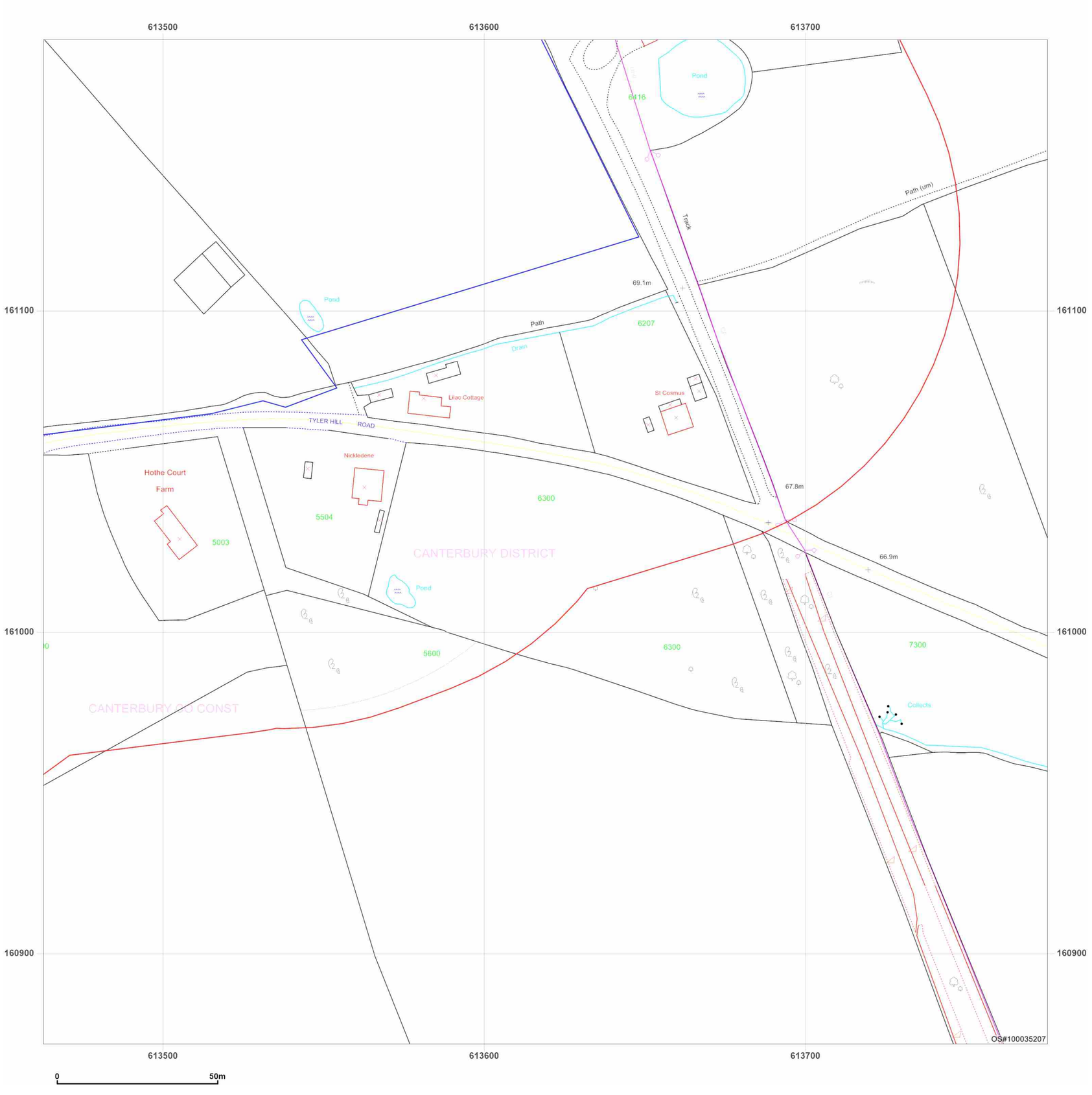
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_3_1
Grid Ref: 613619, 161028

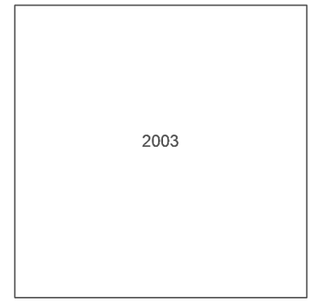
Map Name: LandLine

Map date: **2003**

Scale: 1:1,250

Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

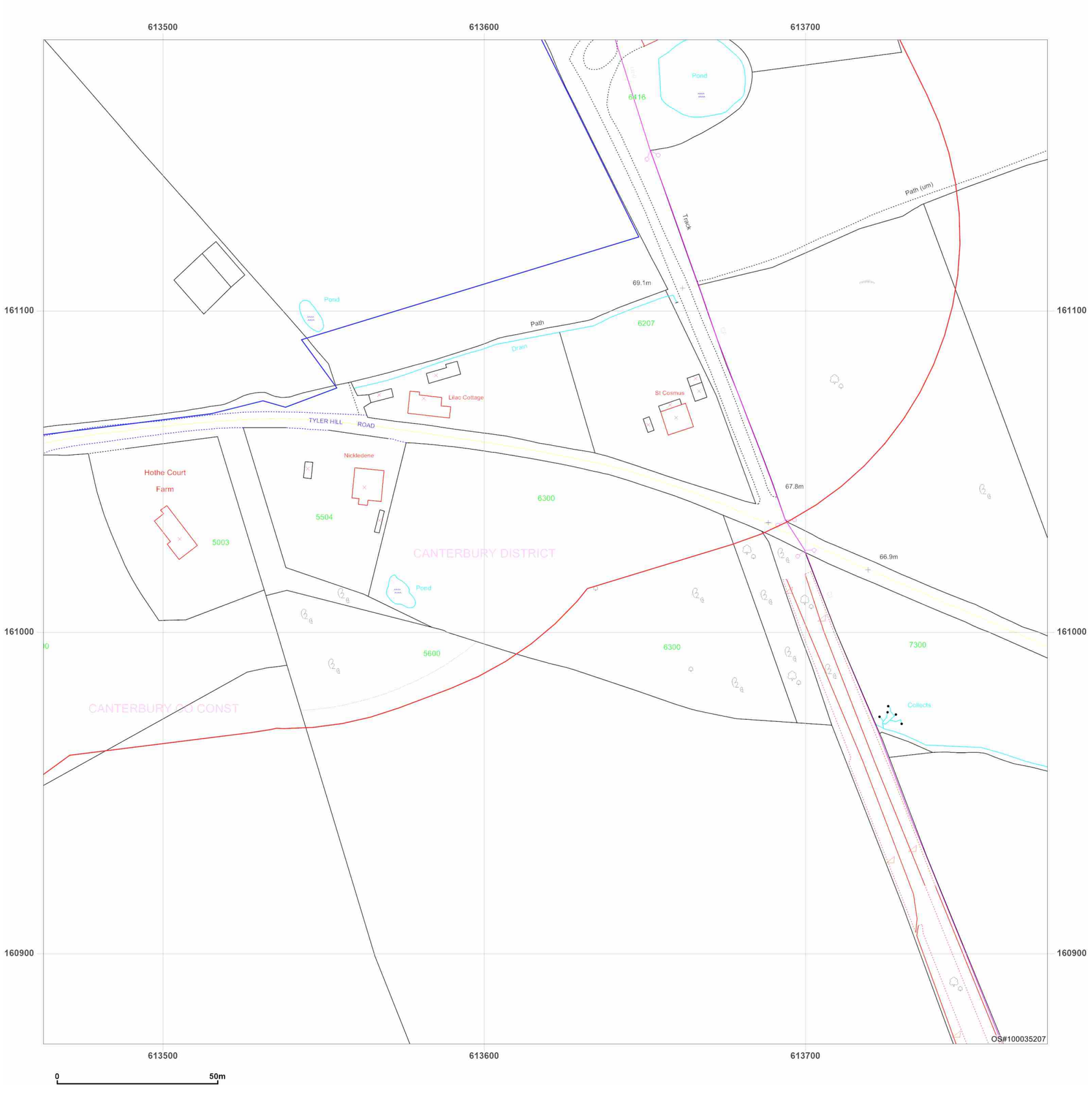
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_3_1
Grid Ref: 613619, 161028

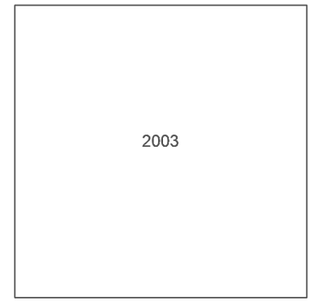
Map Name: LandLine

Map date: **2003**

Scale: 1:1,250

Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

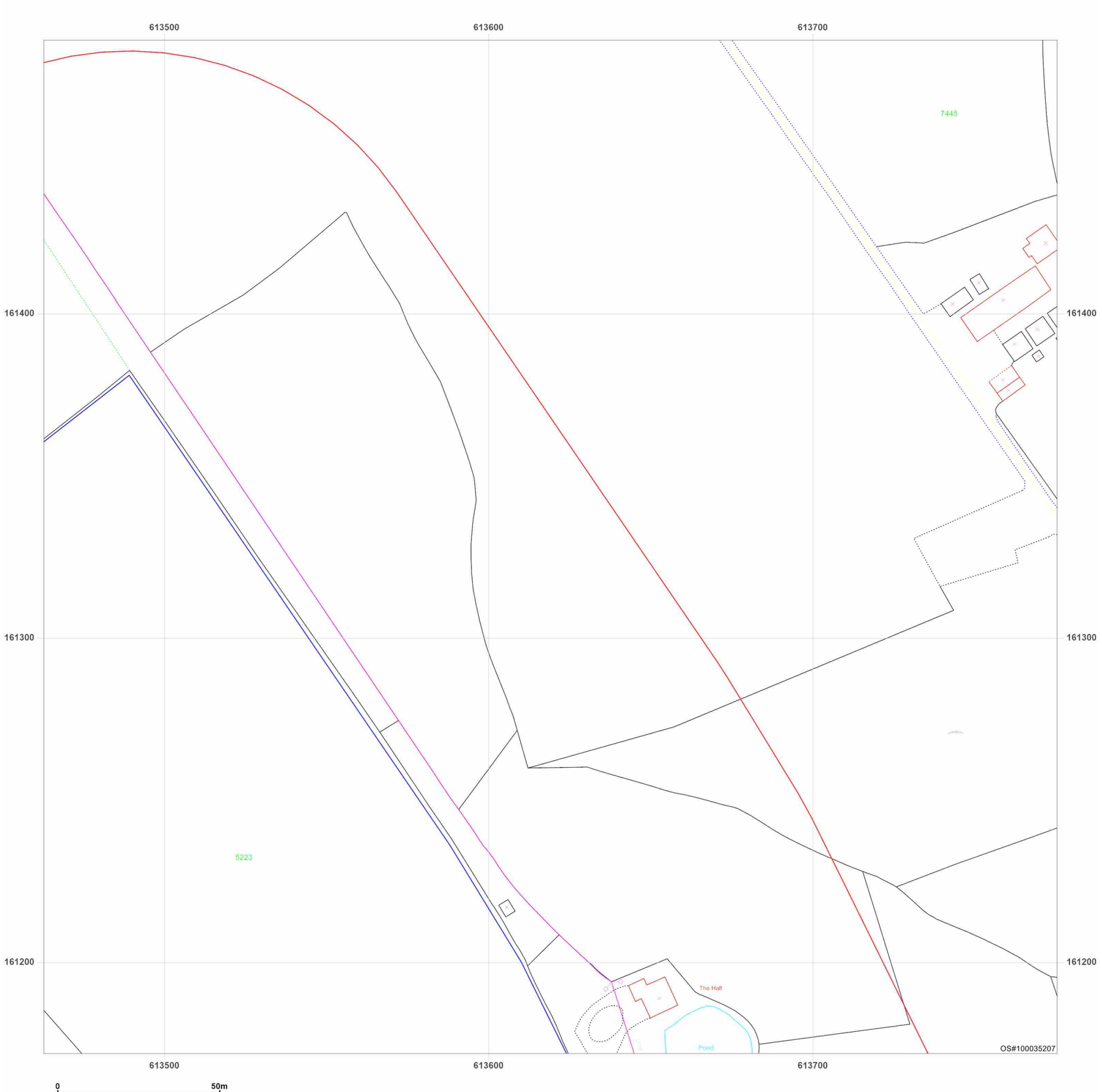
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



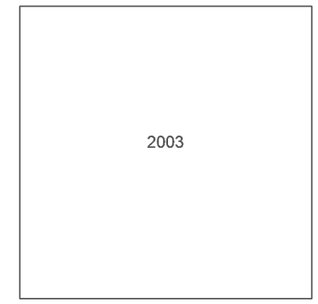
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_Landline_3_2
Grid Ref: 613619, 161328

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S



Groundsure INSIGHTS

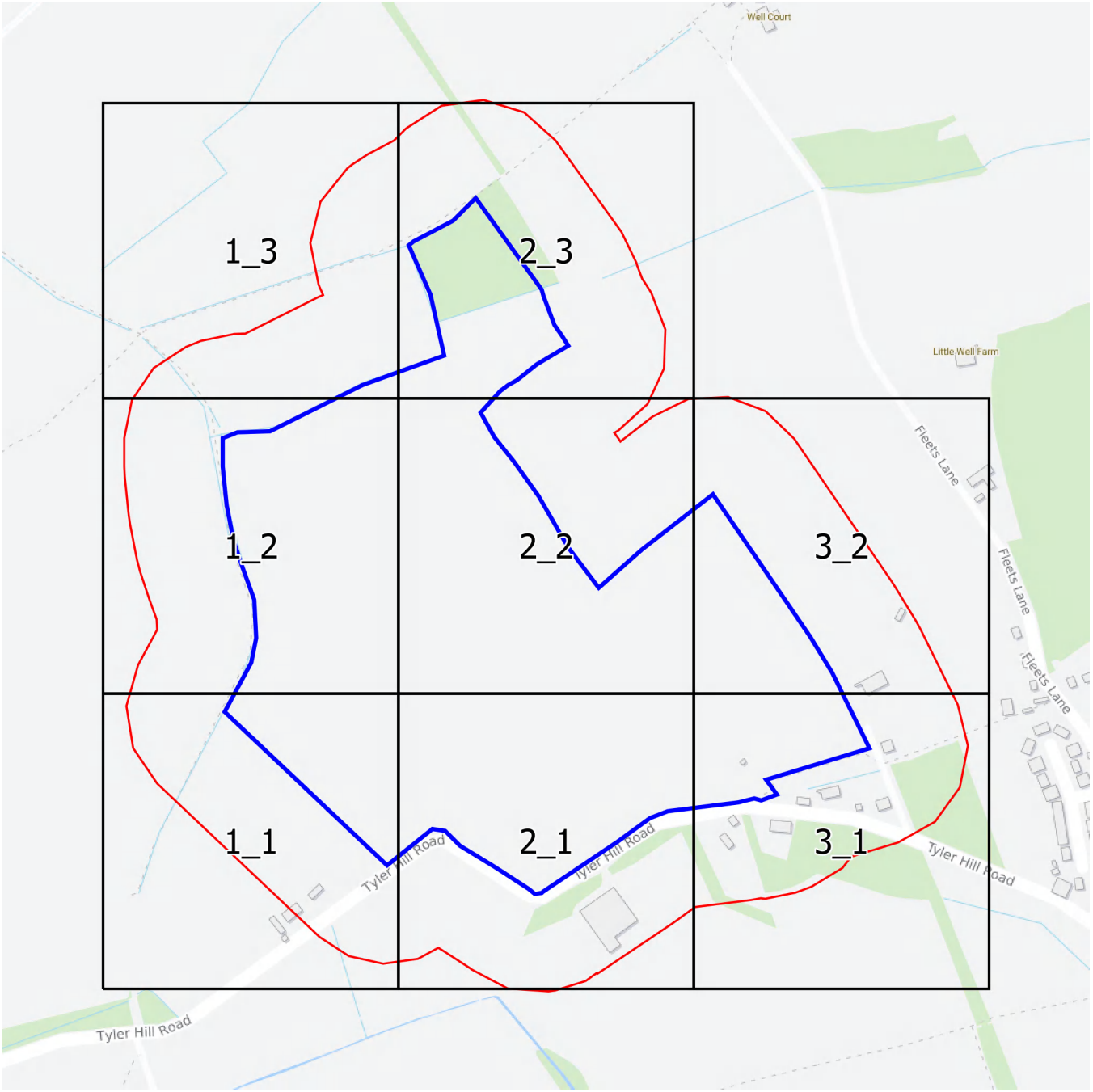
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

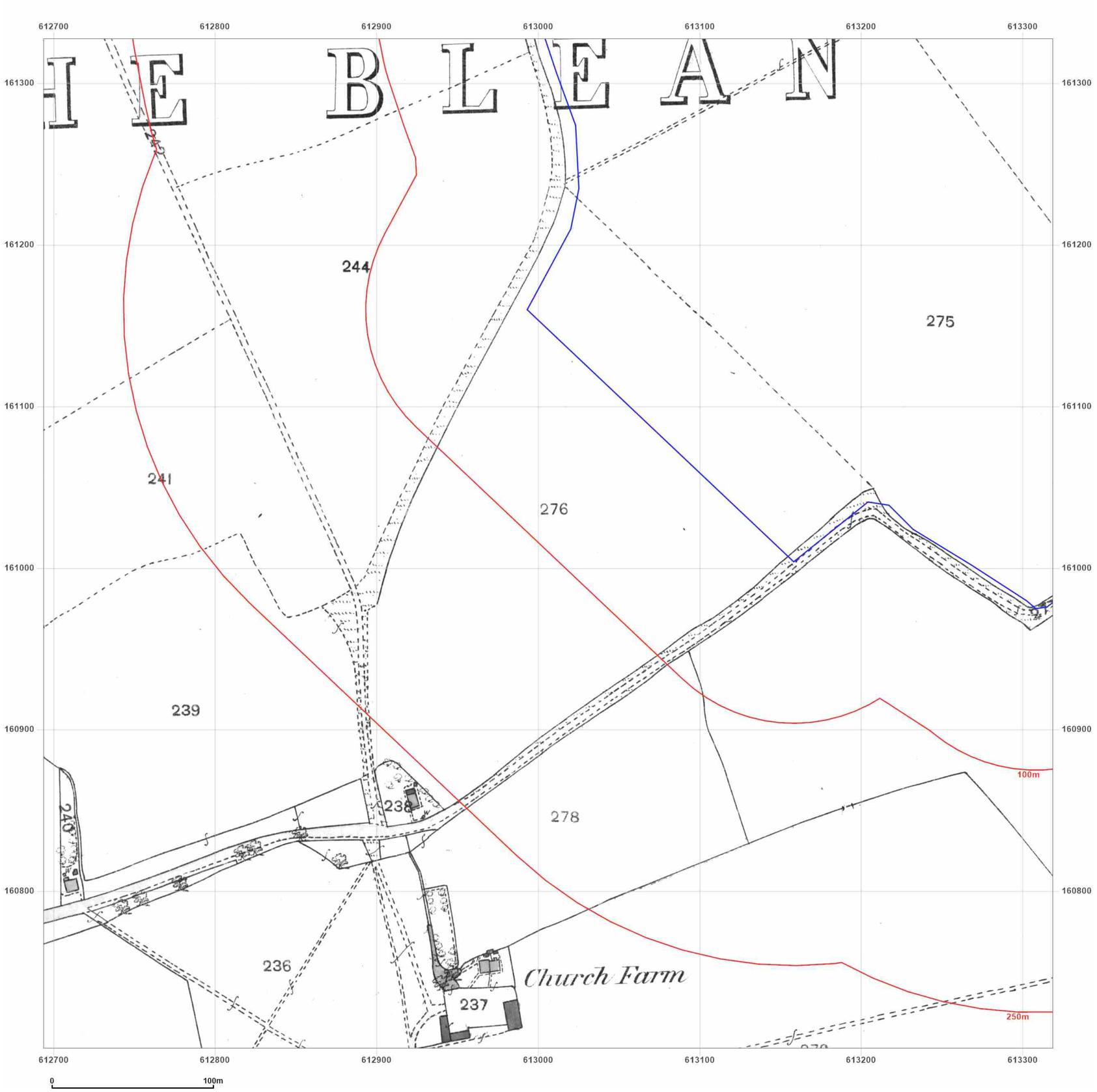
Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Landline Scale Grid Index



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

Map Name: County Series

Map date: **1873**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

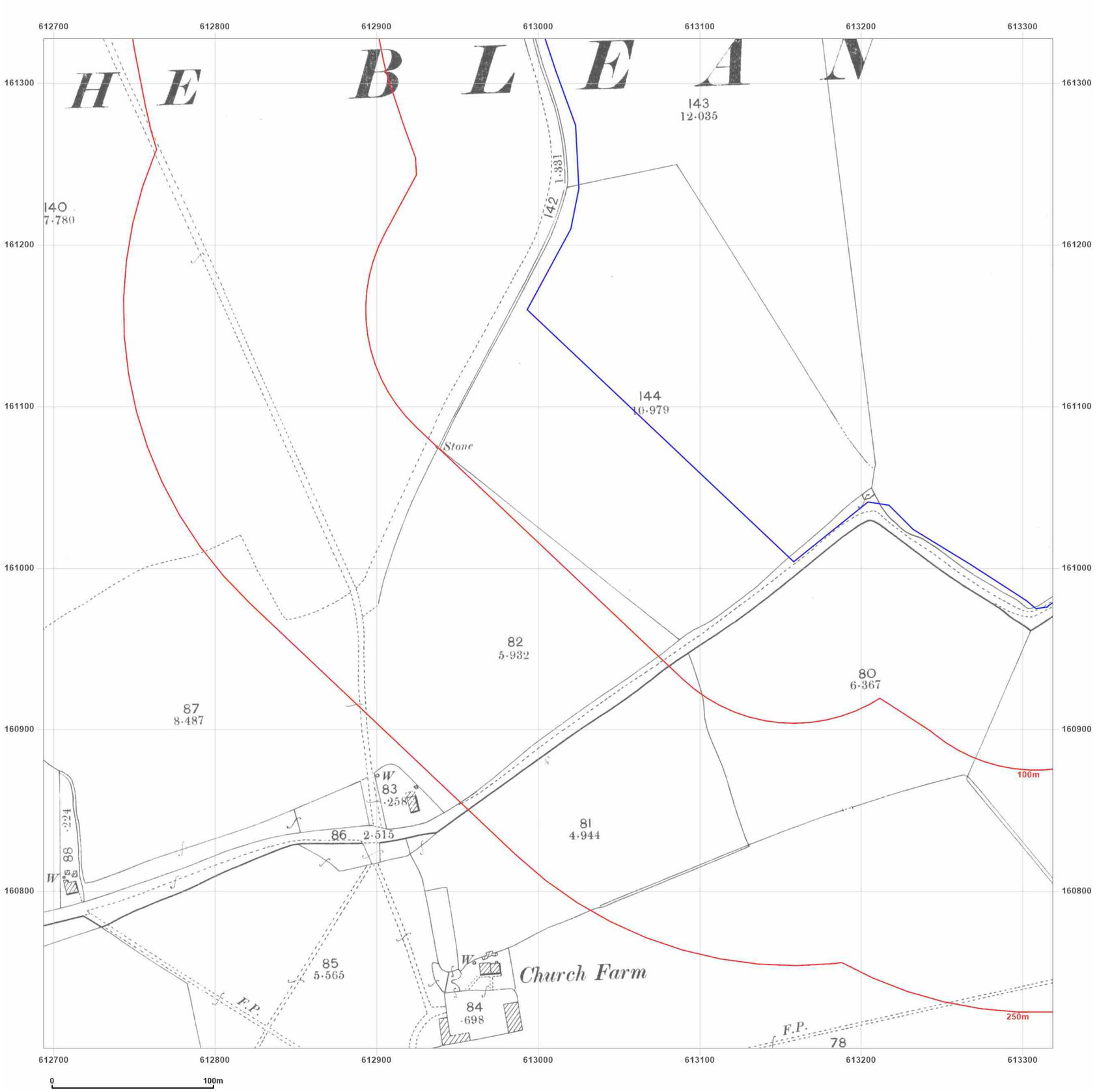
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

Map Name: County Series

Map date: **1898**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

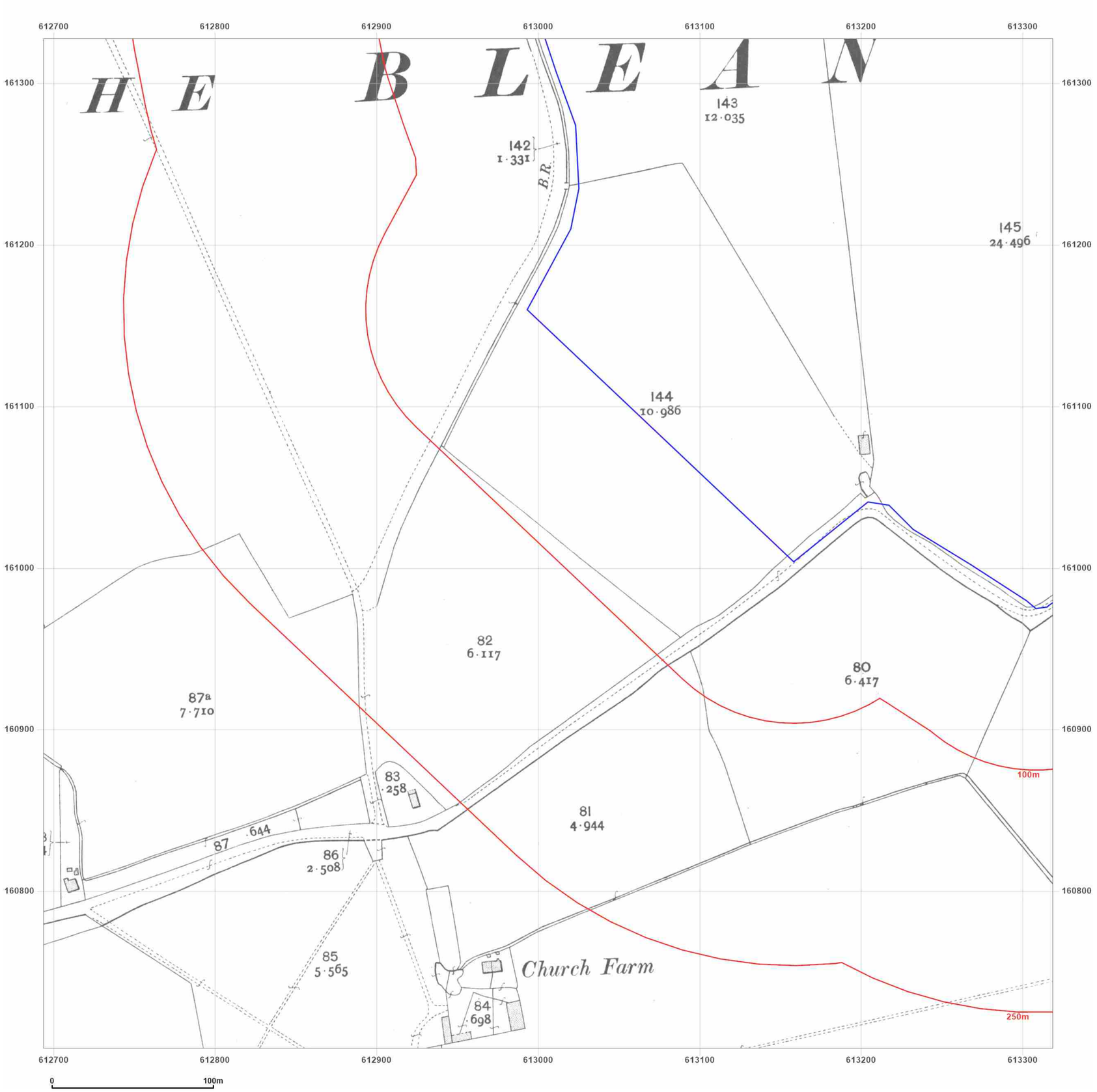
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

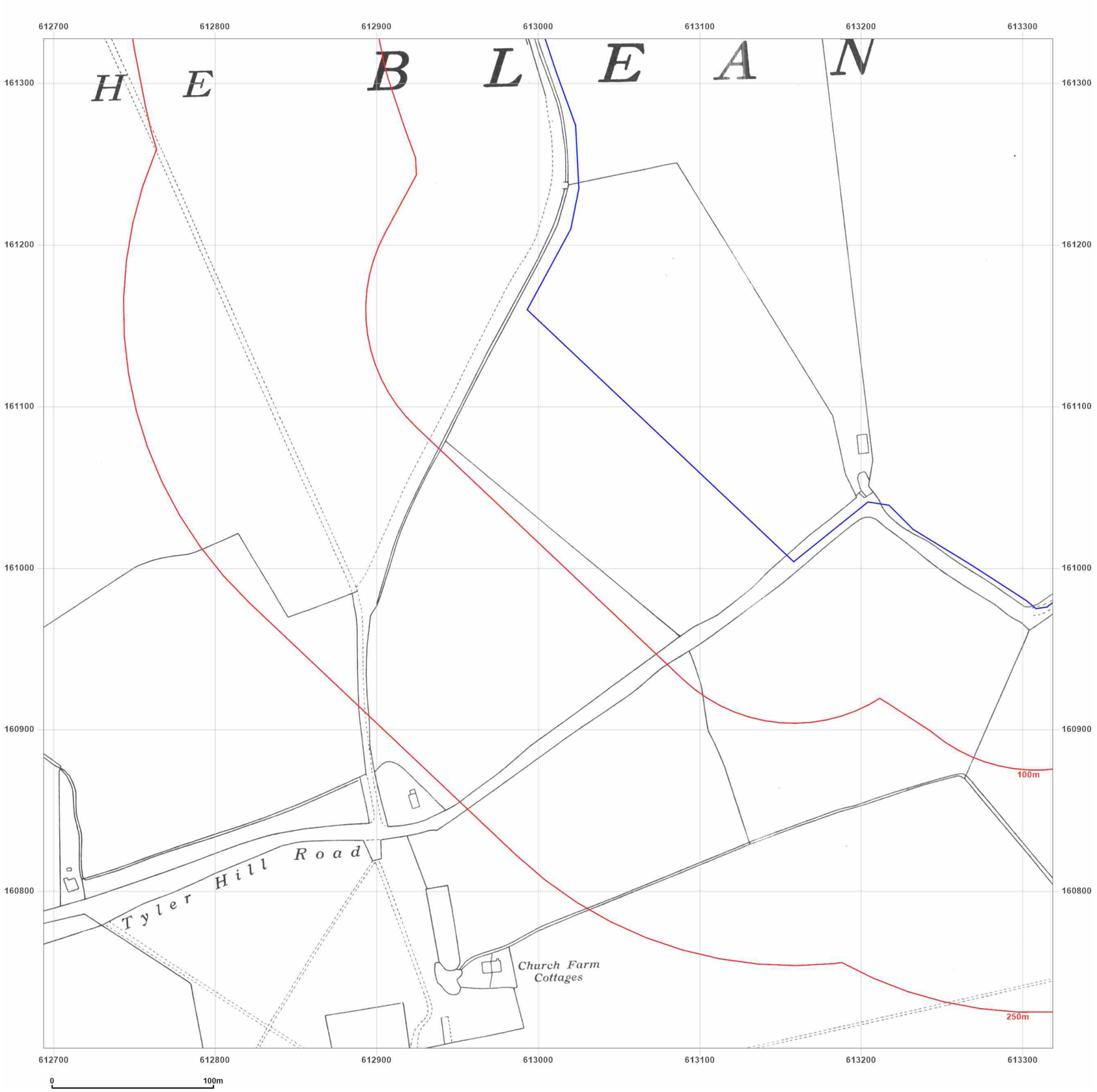
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

Map Name: County Series

Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

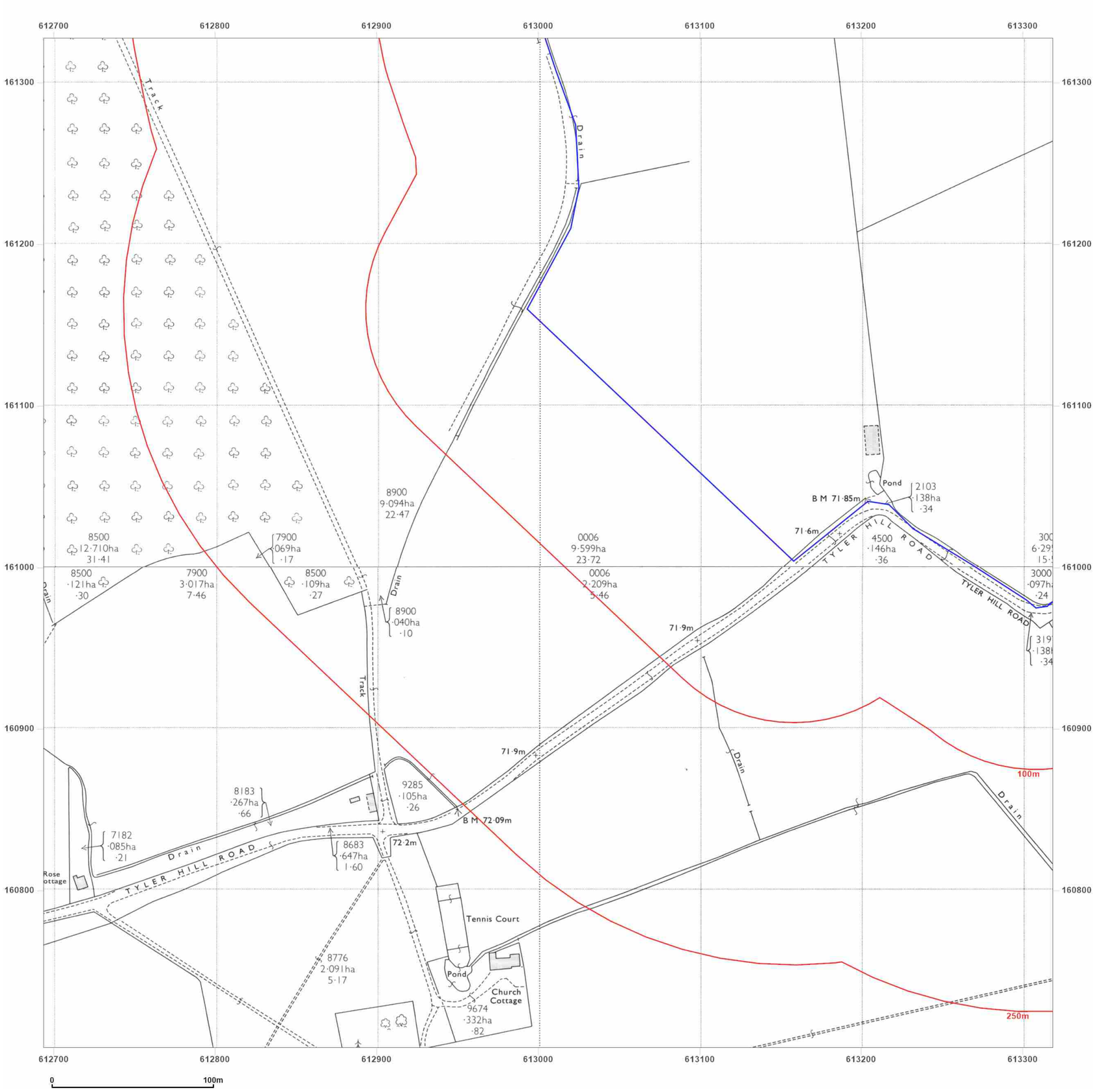
Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

Map Name: National Grid

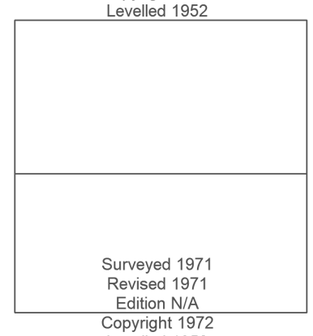
Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952



Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

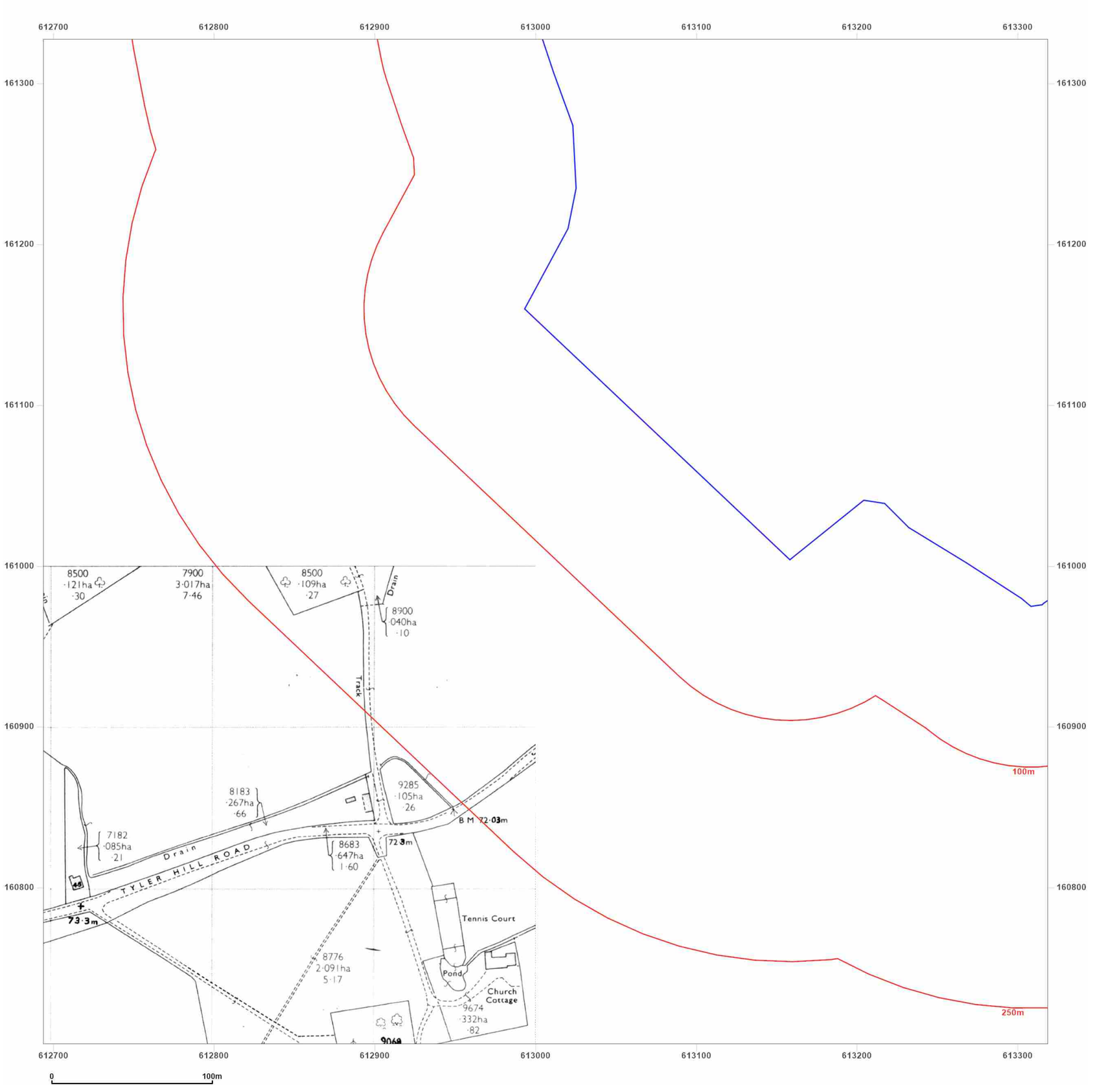
Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Powered by OS

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

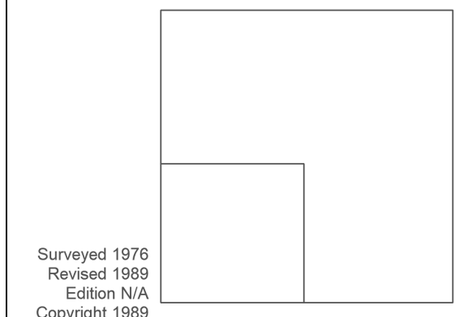
Map Name: National Grid

Map date: **1989**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Surveyed 1976
Revised 1989
Edition N/A
Copyright 1989
Levelled 1976

Groundsure INSIGHTS

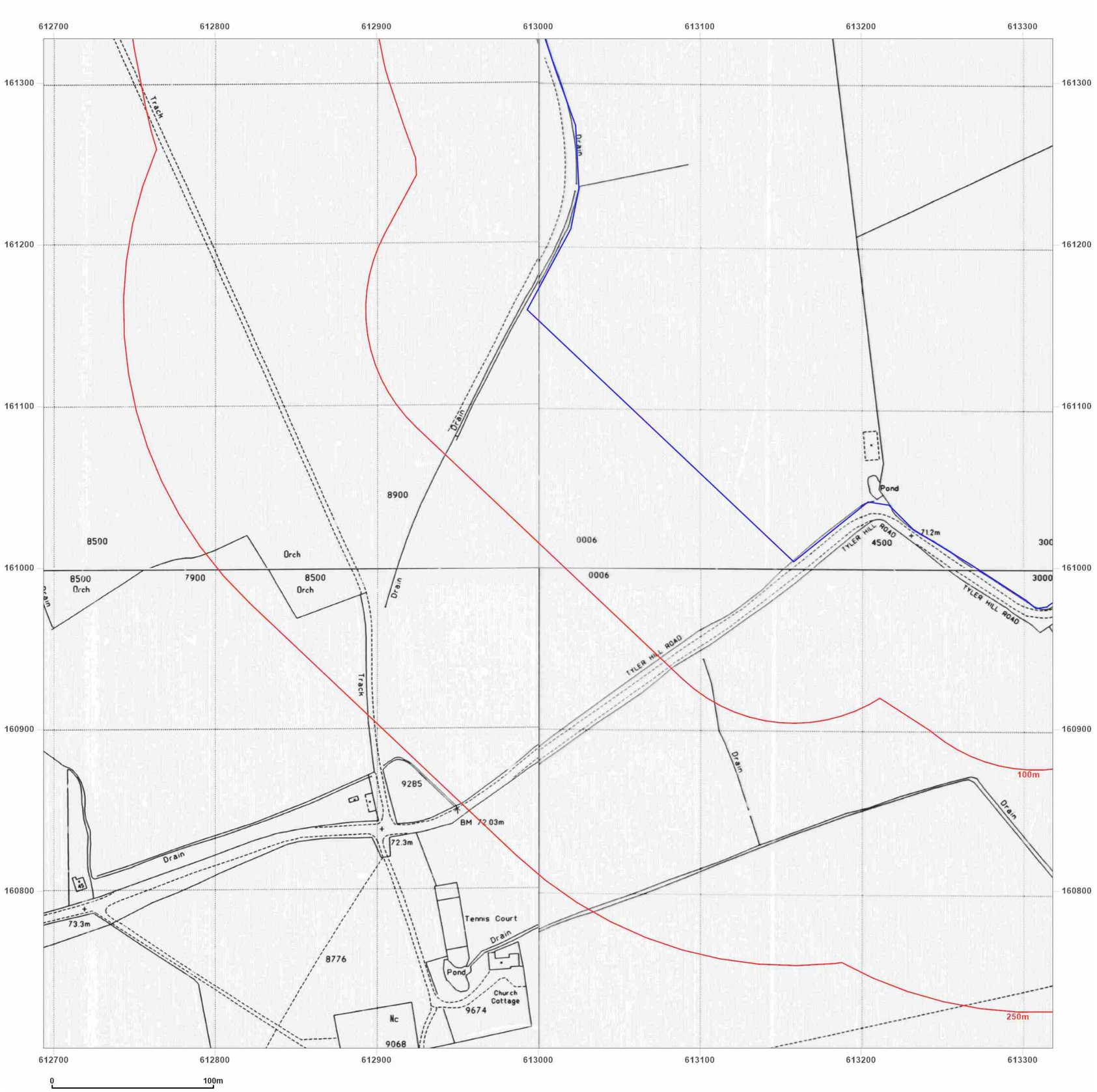
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_1
Grid Ref: 613006, 161015

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Groundsure INSIGHTS

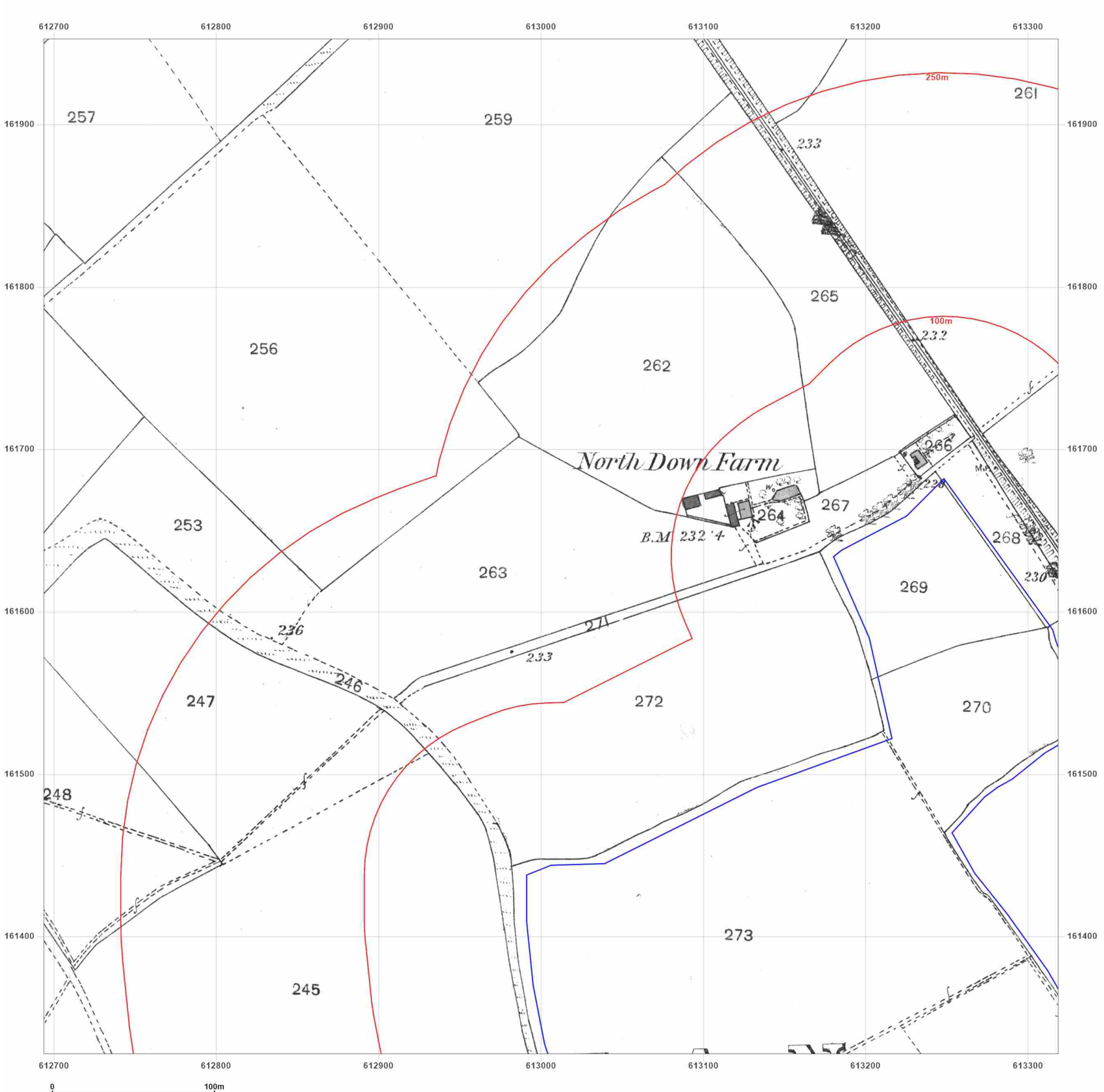
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_2
Grid Ref: 613006, 161640

Map Name: County Series

Map date: **1873**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

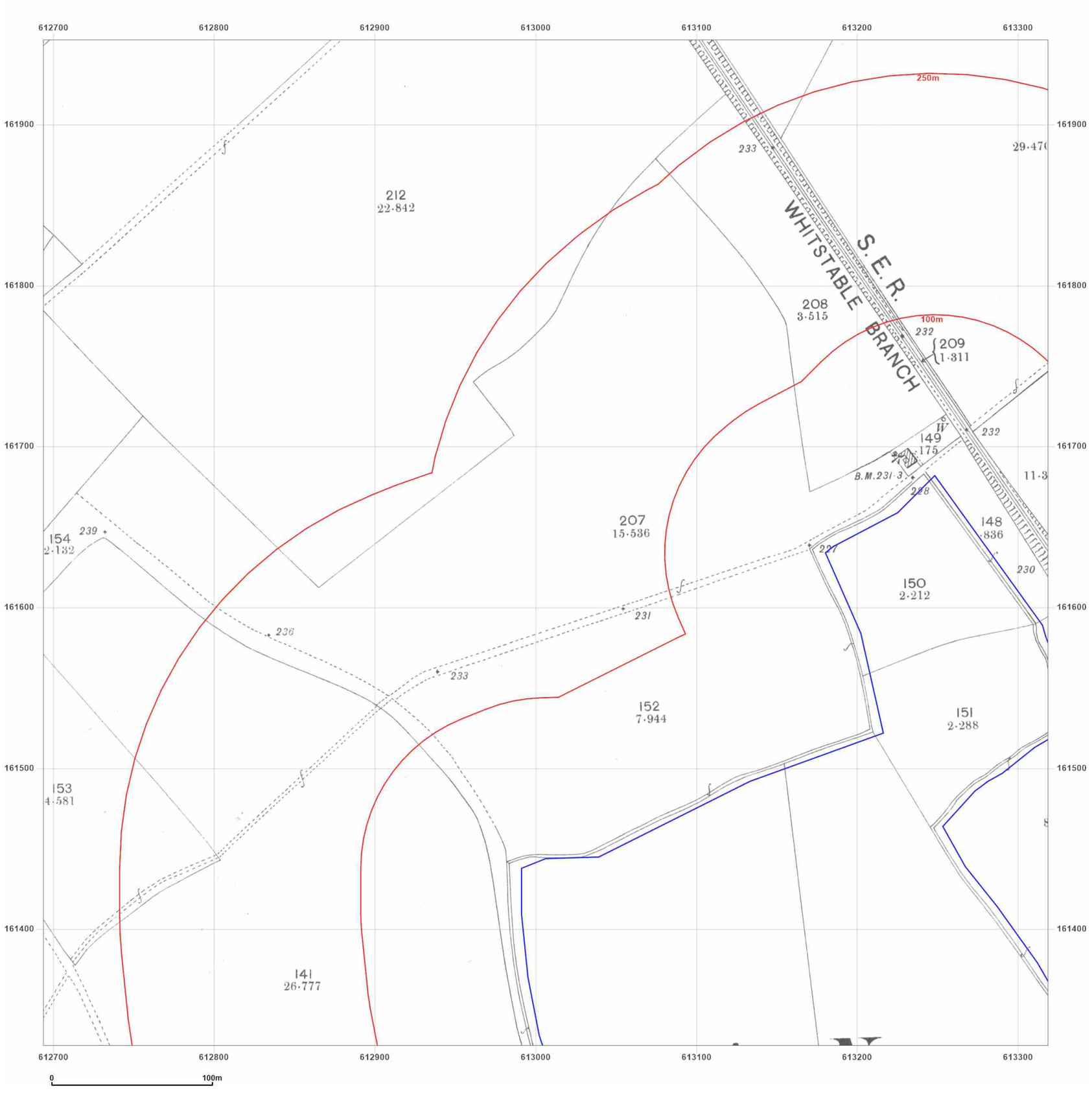
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_2
Grid Ref: 613006, 161640

Map Name: County Series
Map date: **1898**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

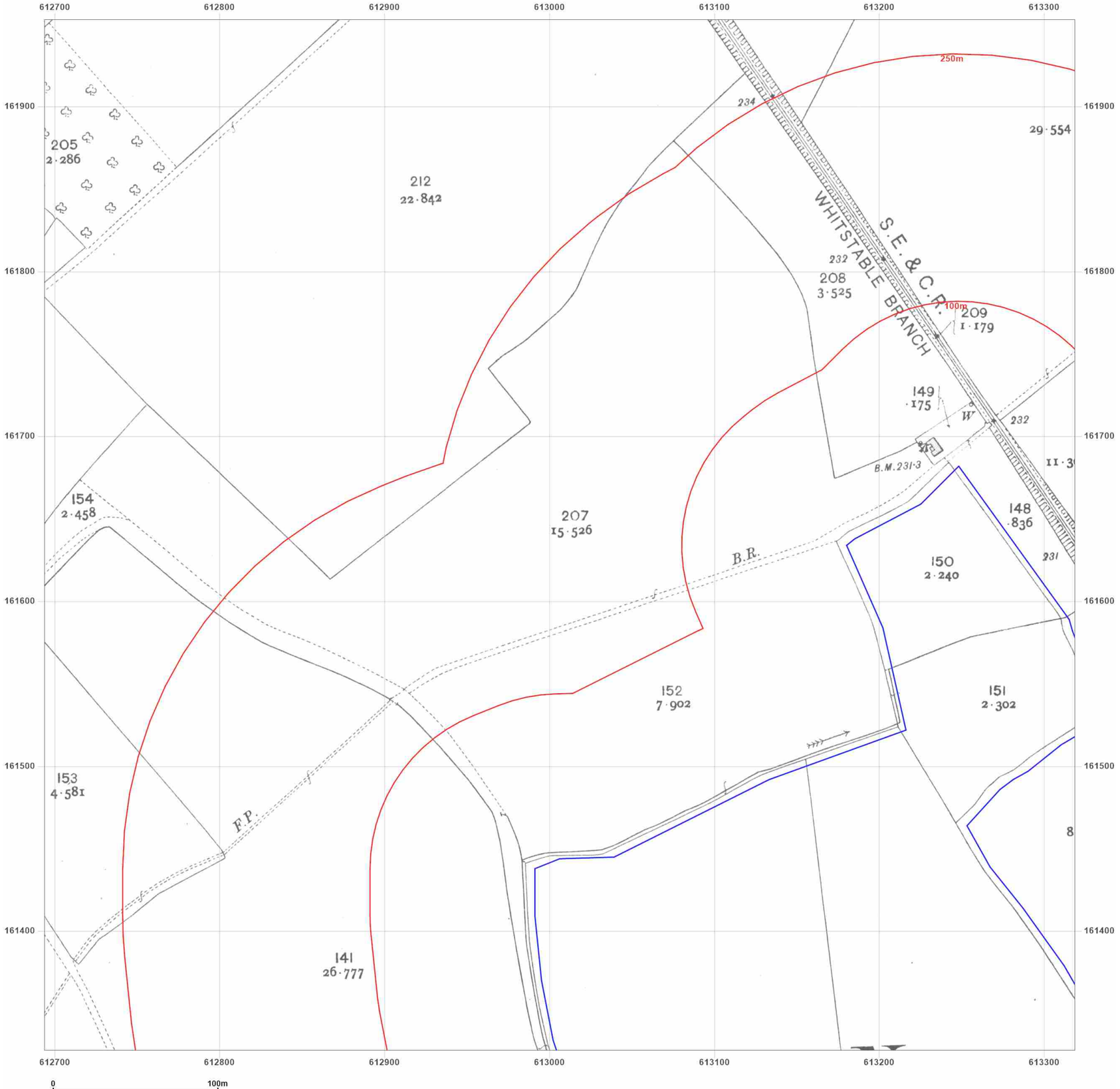
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_2
Grid Ref: 613006, 161640

Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

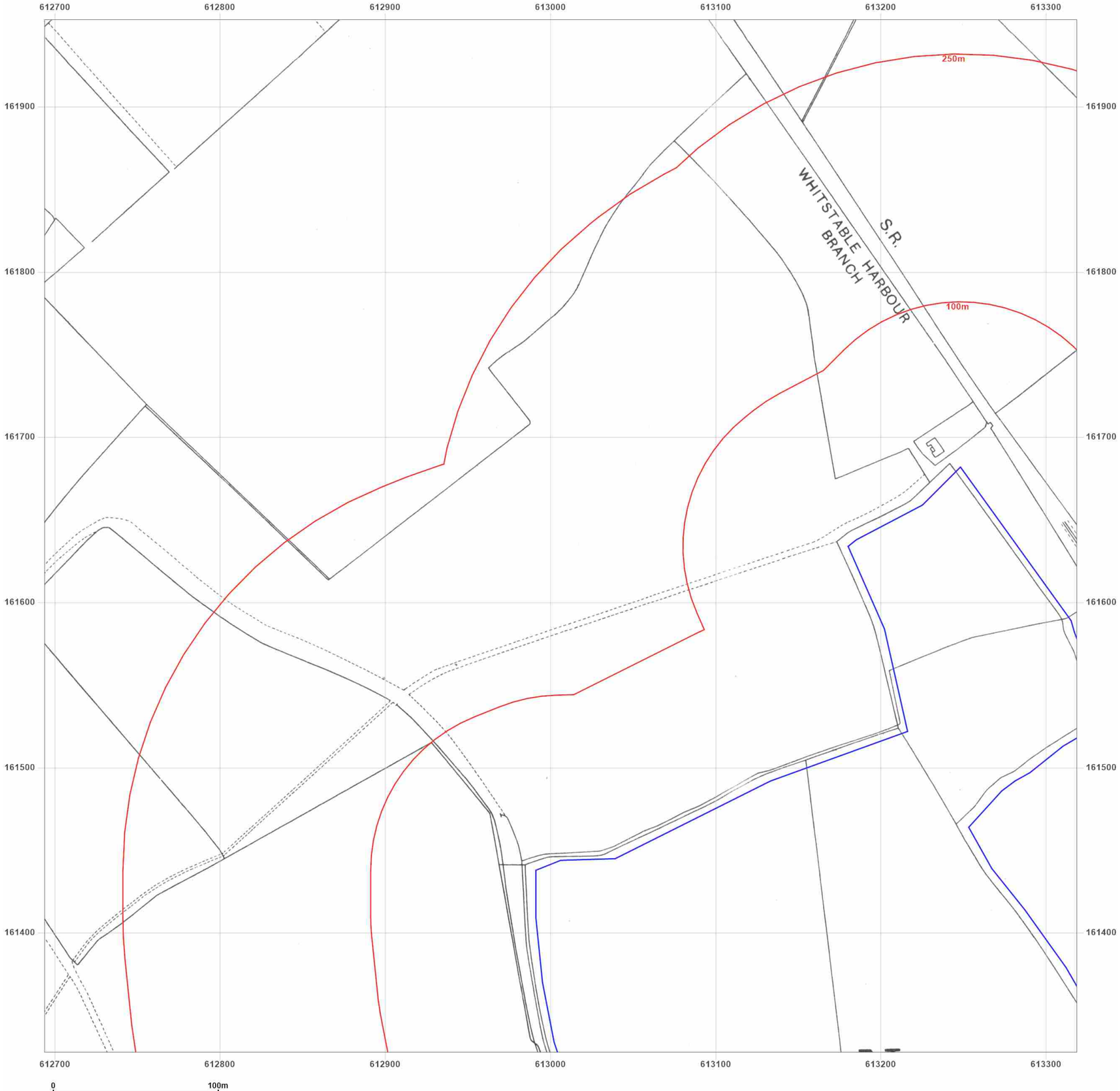
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_2
Grid Ref: 613006, 161640

Map Name: County Series

Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

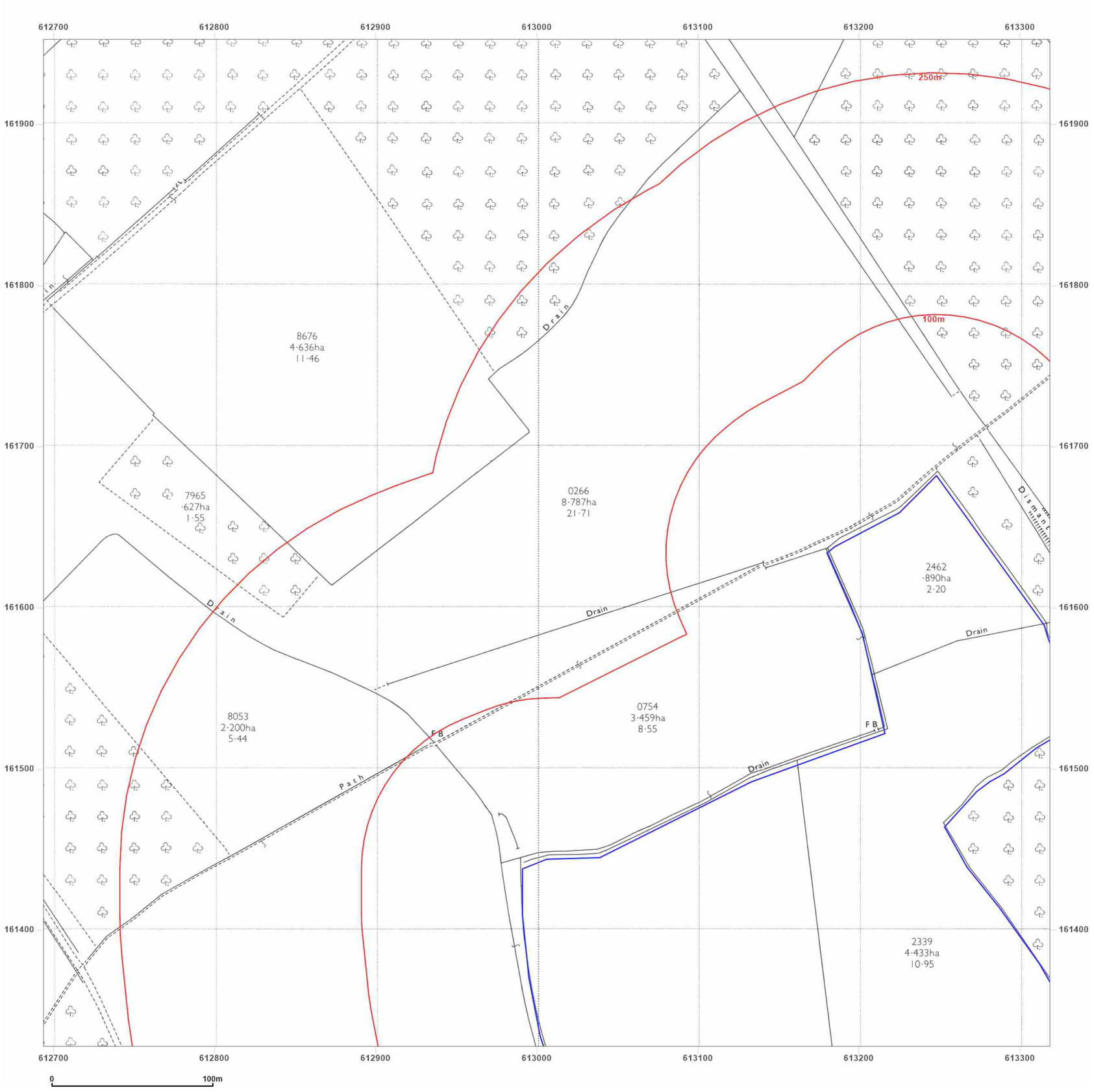
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_2
Grid Ref: 613006, 161640

Map Name: National Grid

Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

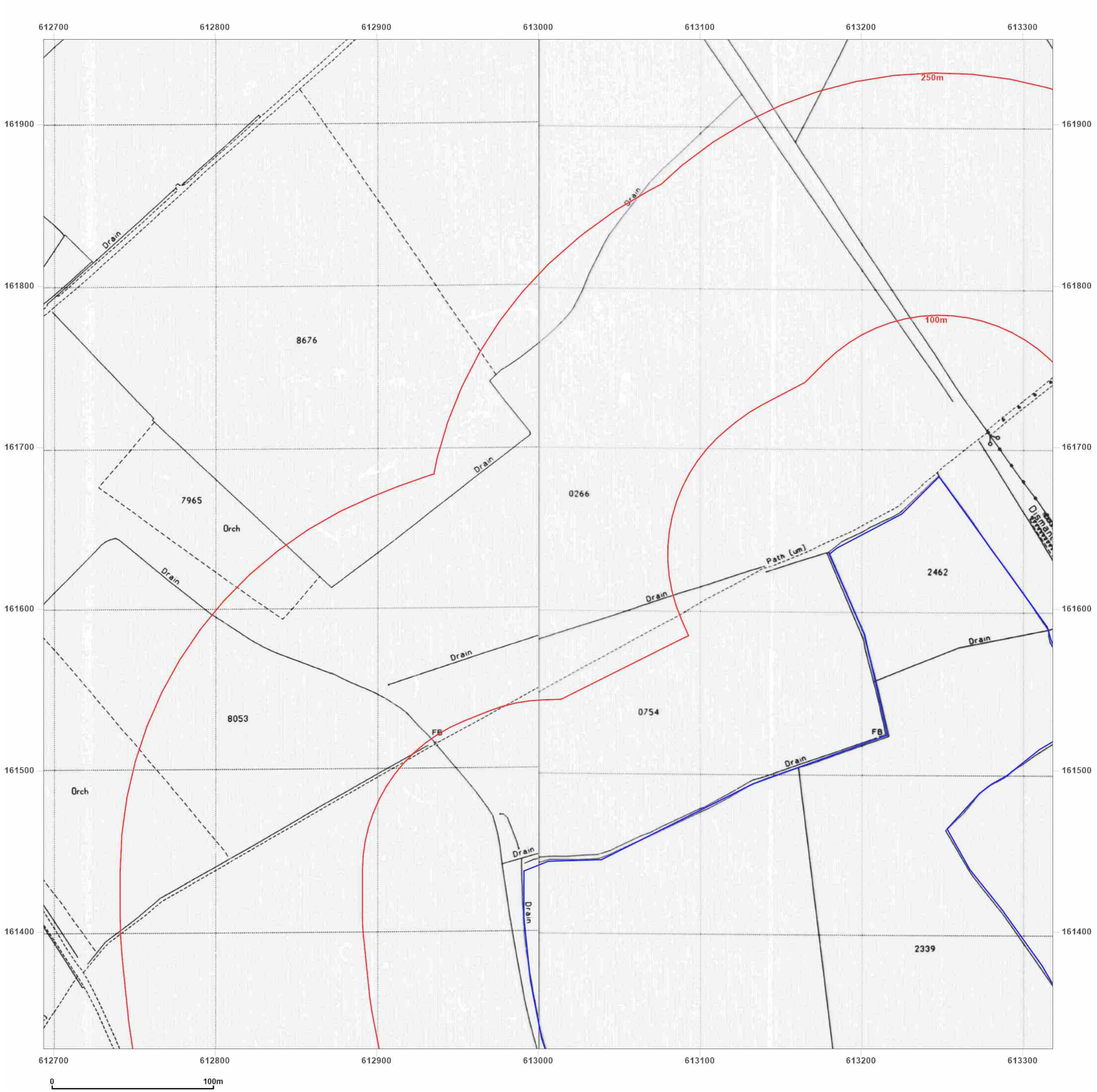
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_1_2
Grid Ref: 613006, 161640

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Groundsure INSIGHTS

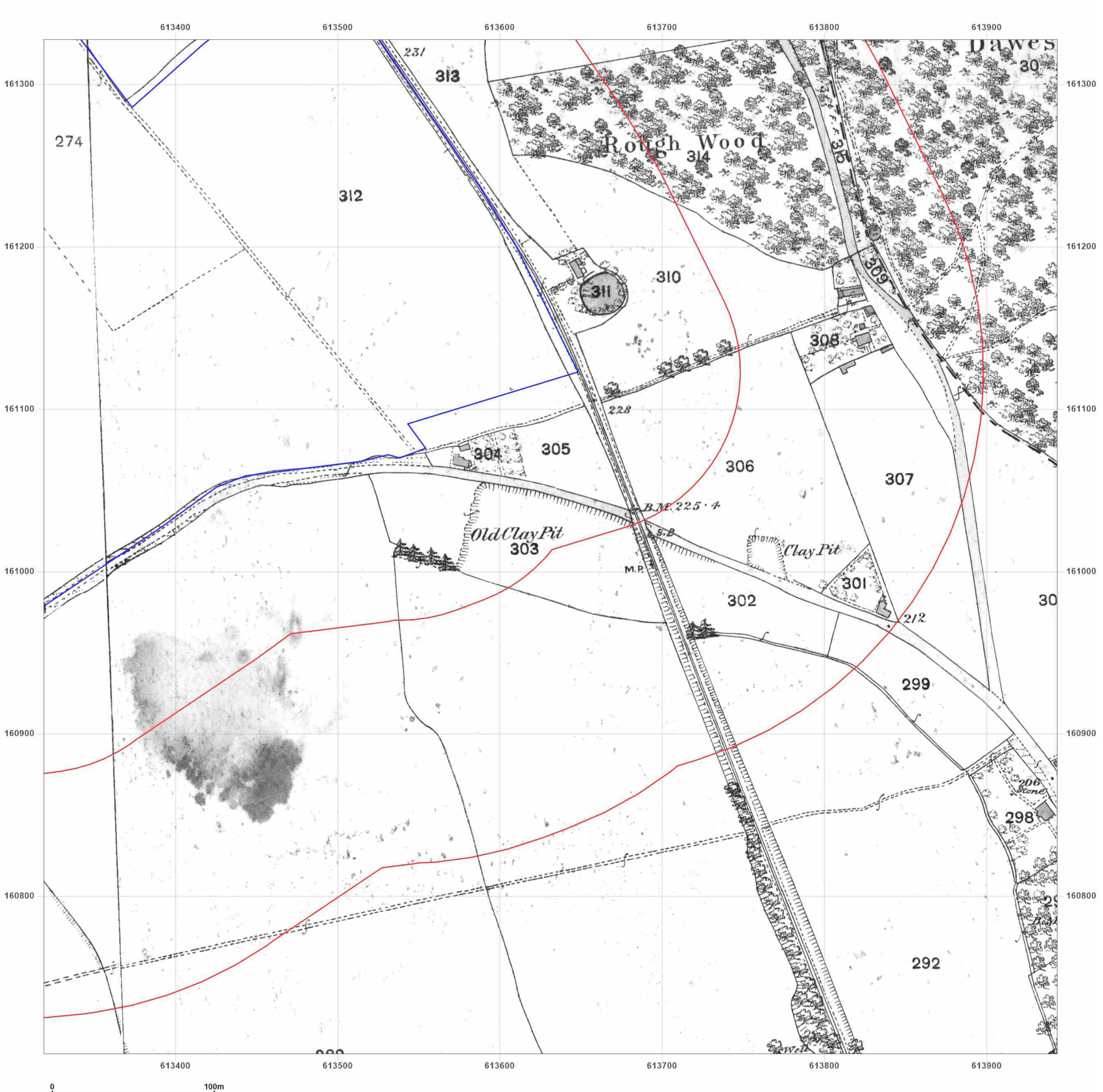
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



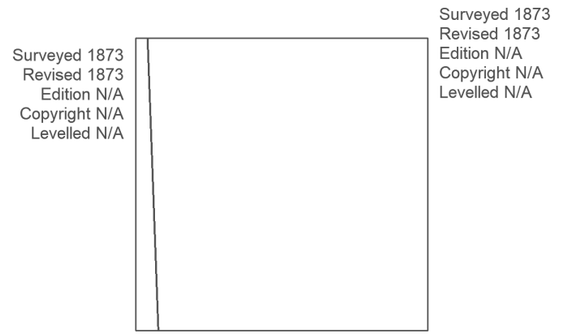
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: County Series
Map date: **1873**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

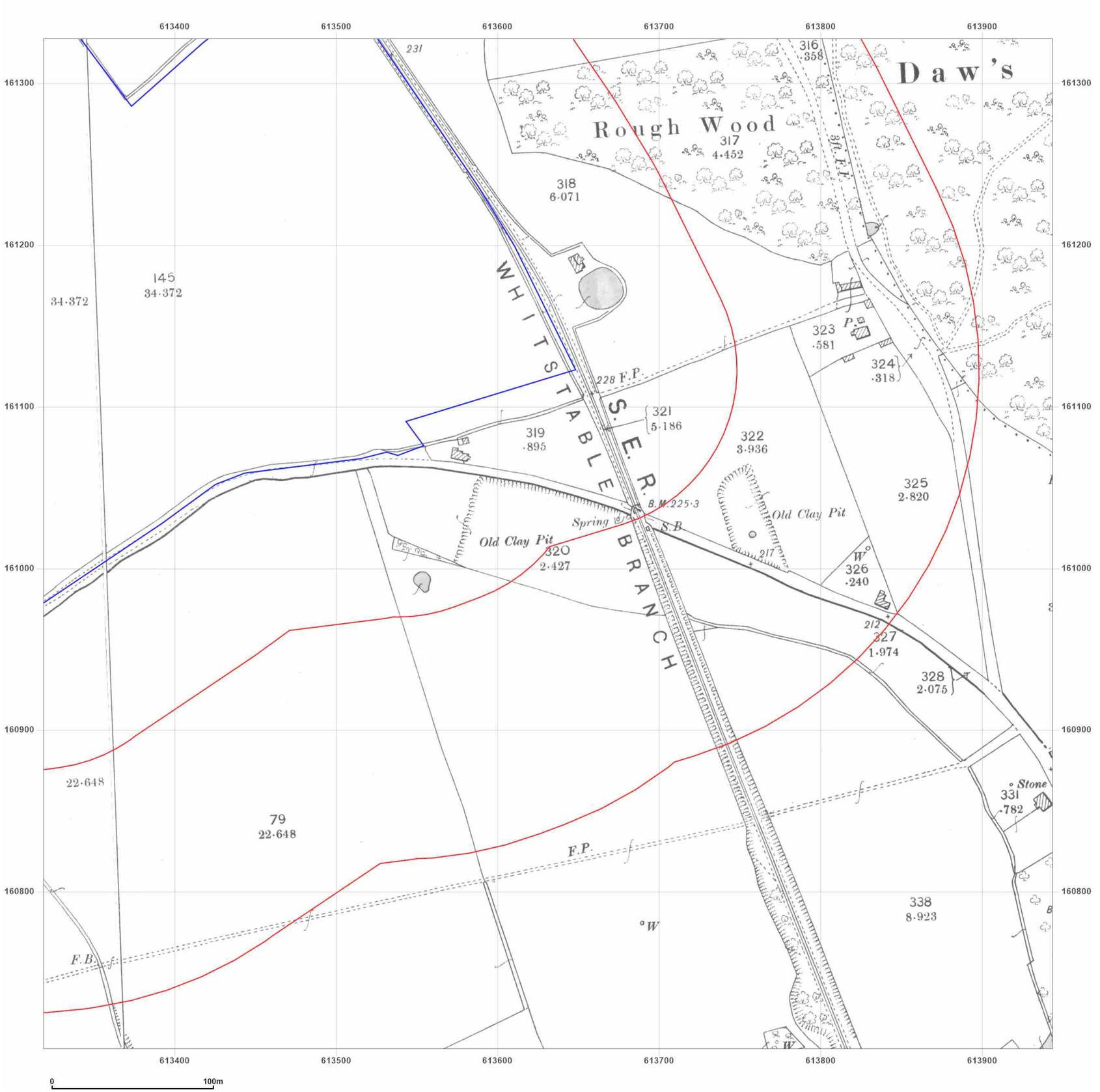
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: County Series
Map date: **1898**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

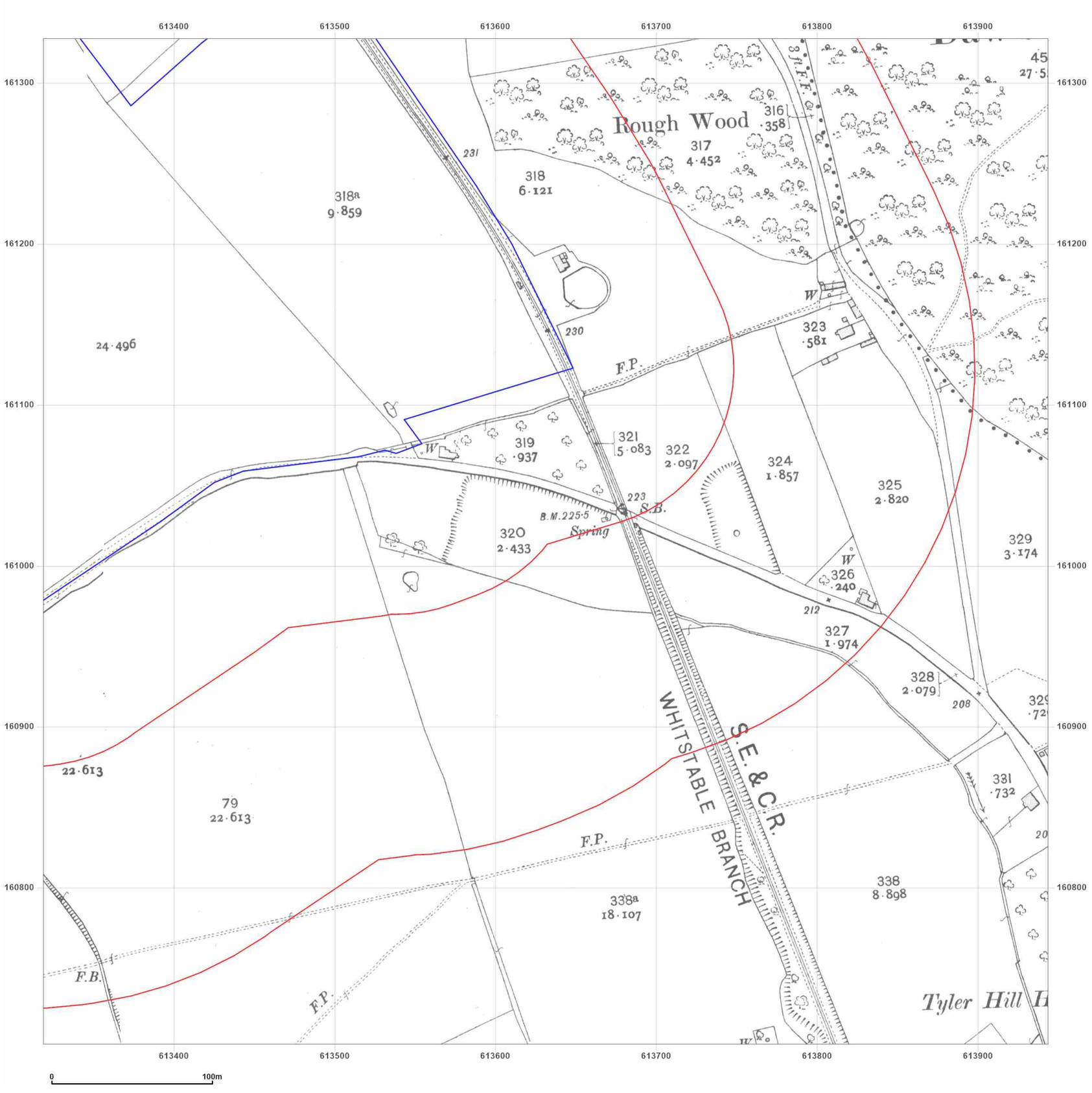
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

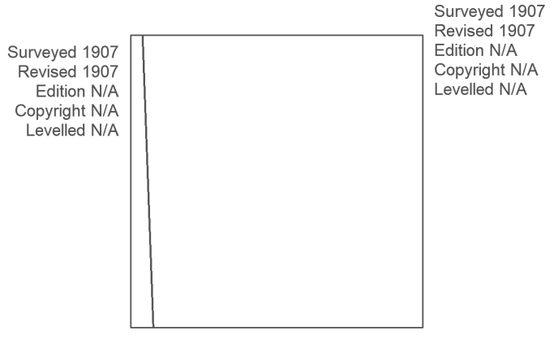
Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

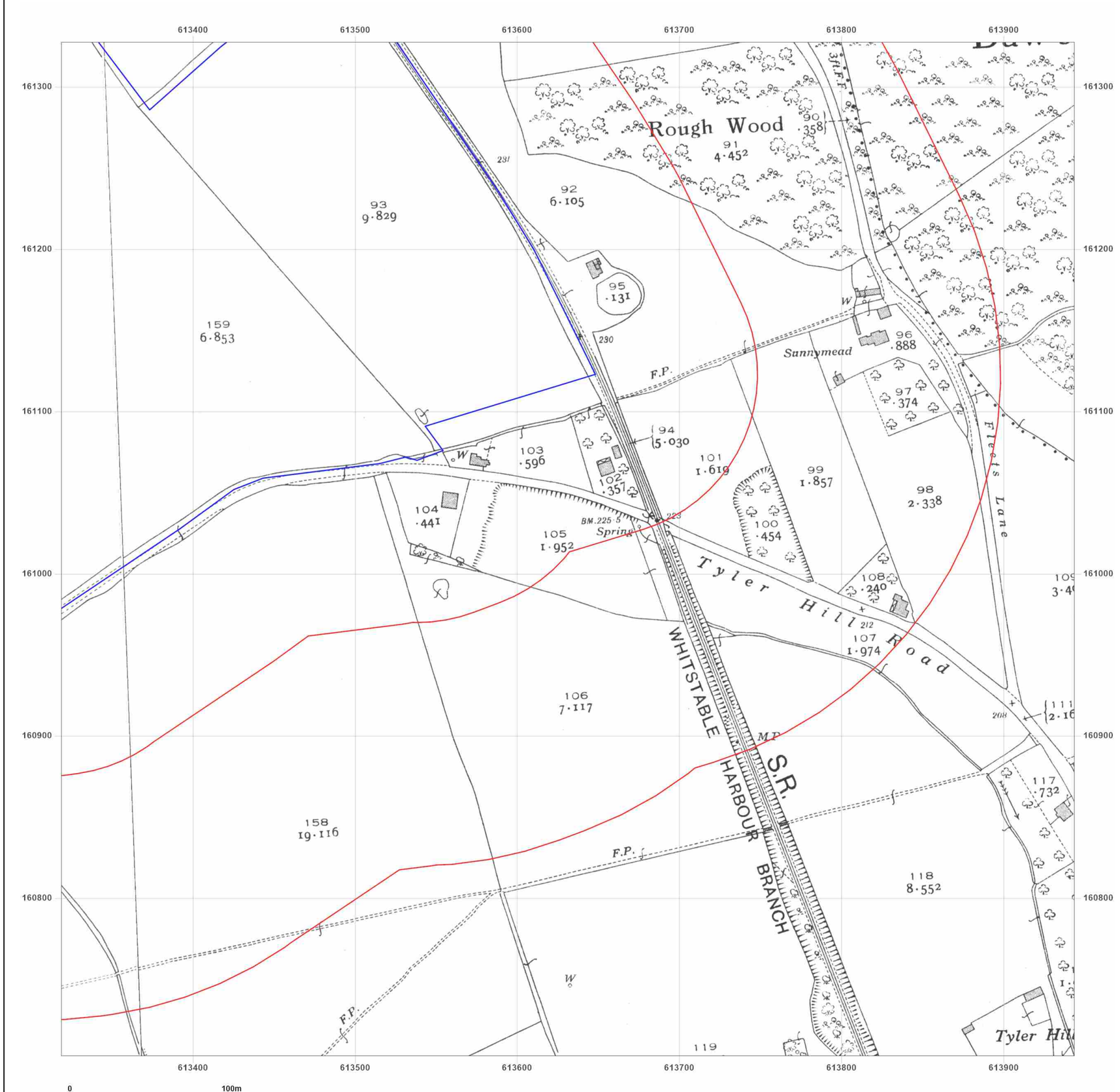
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

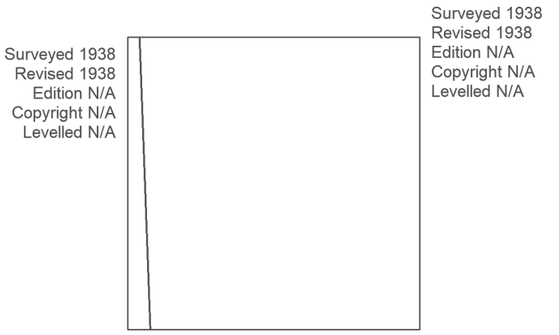
Map Name: County Series

Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

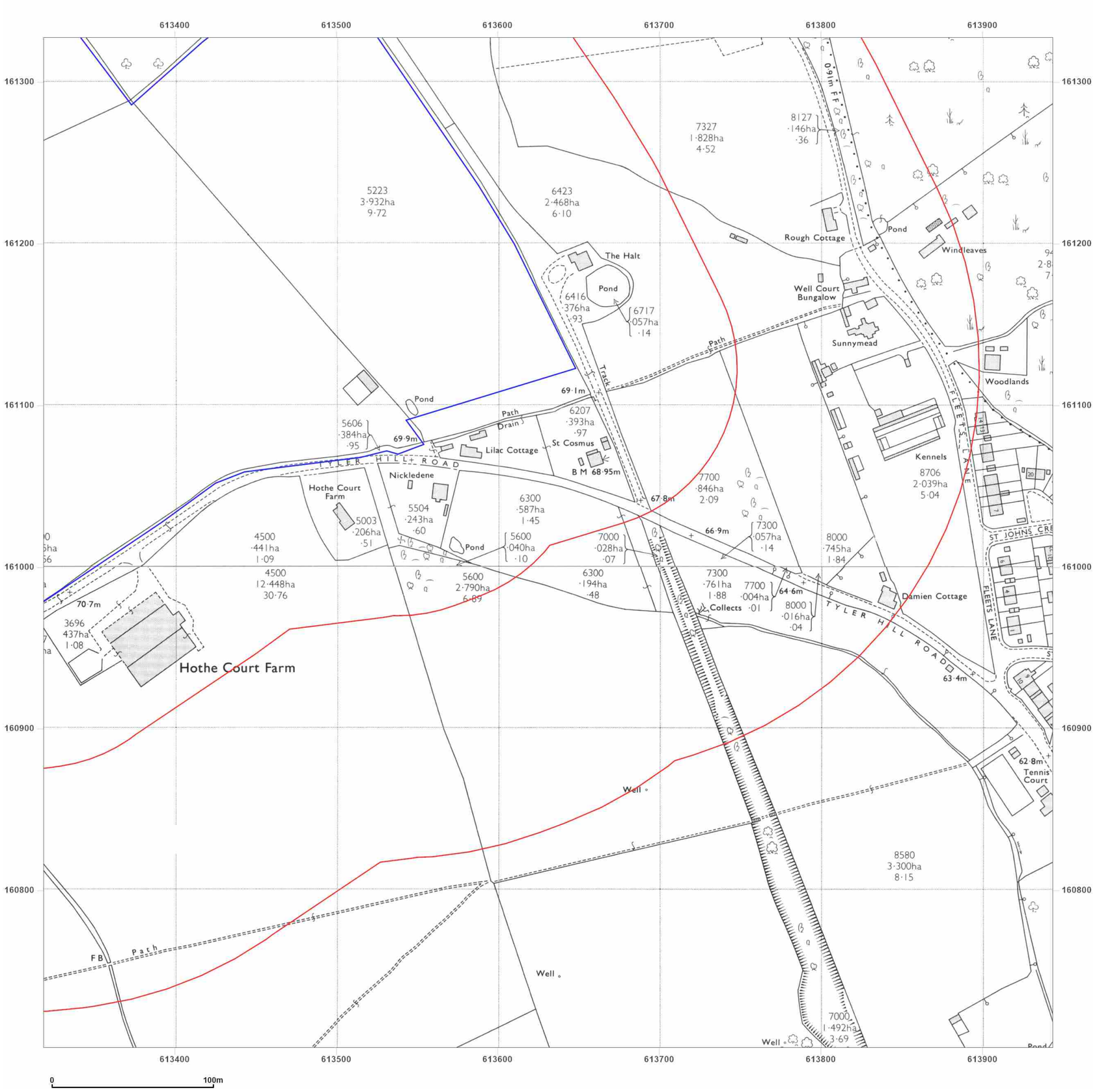
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: National Grid

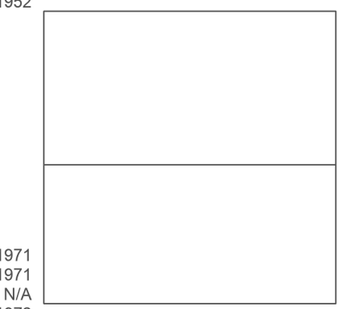
Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952



Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

WSP

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Groundsure INSIGHTS

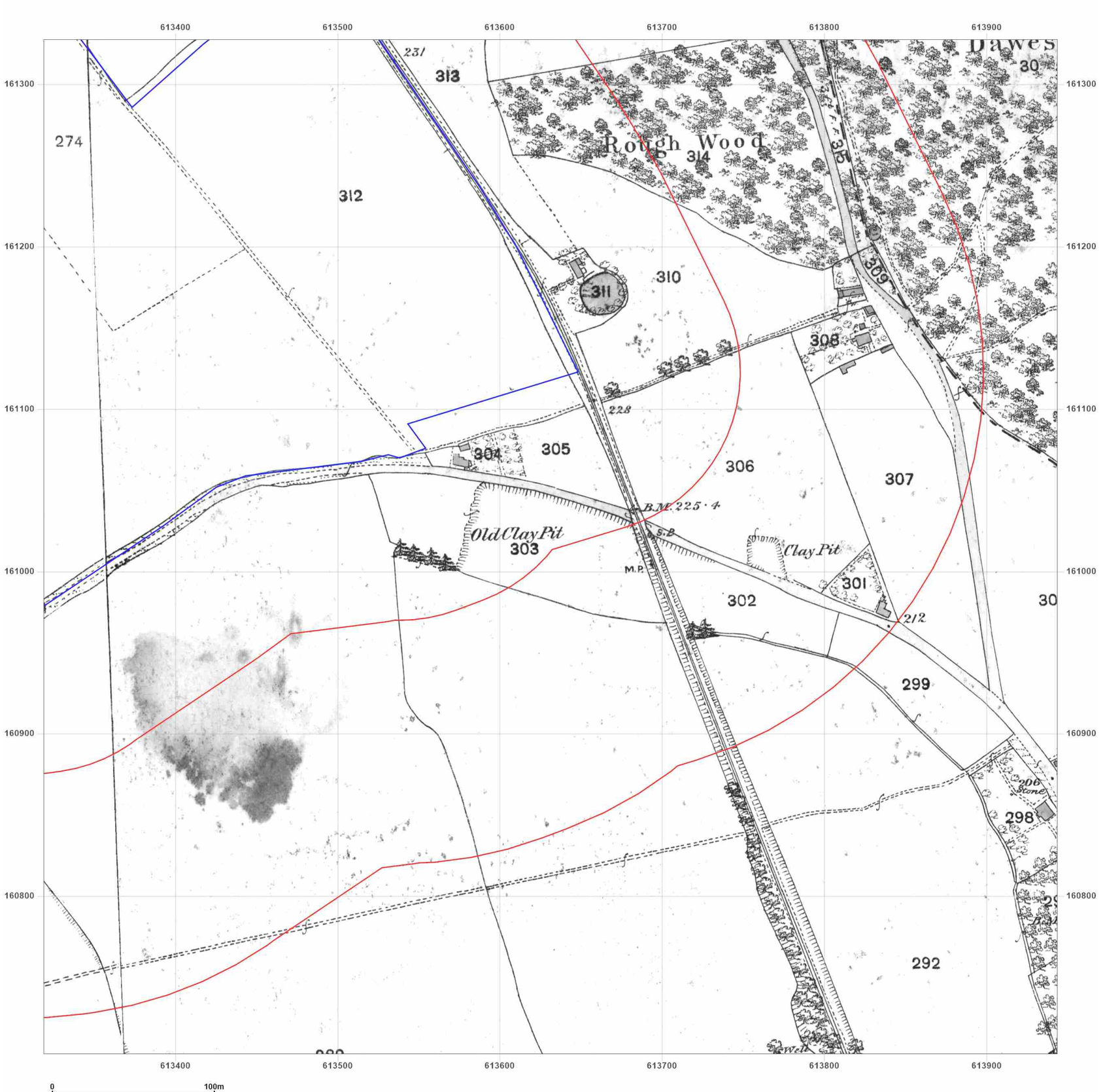
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



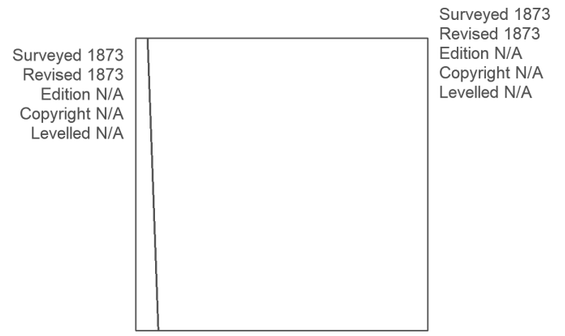
Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: County Series
Map date: **1873**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

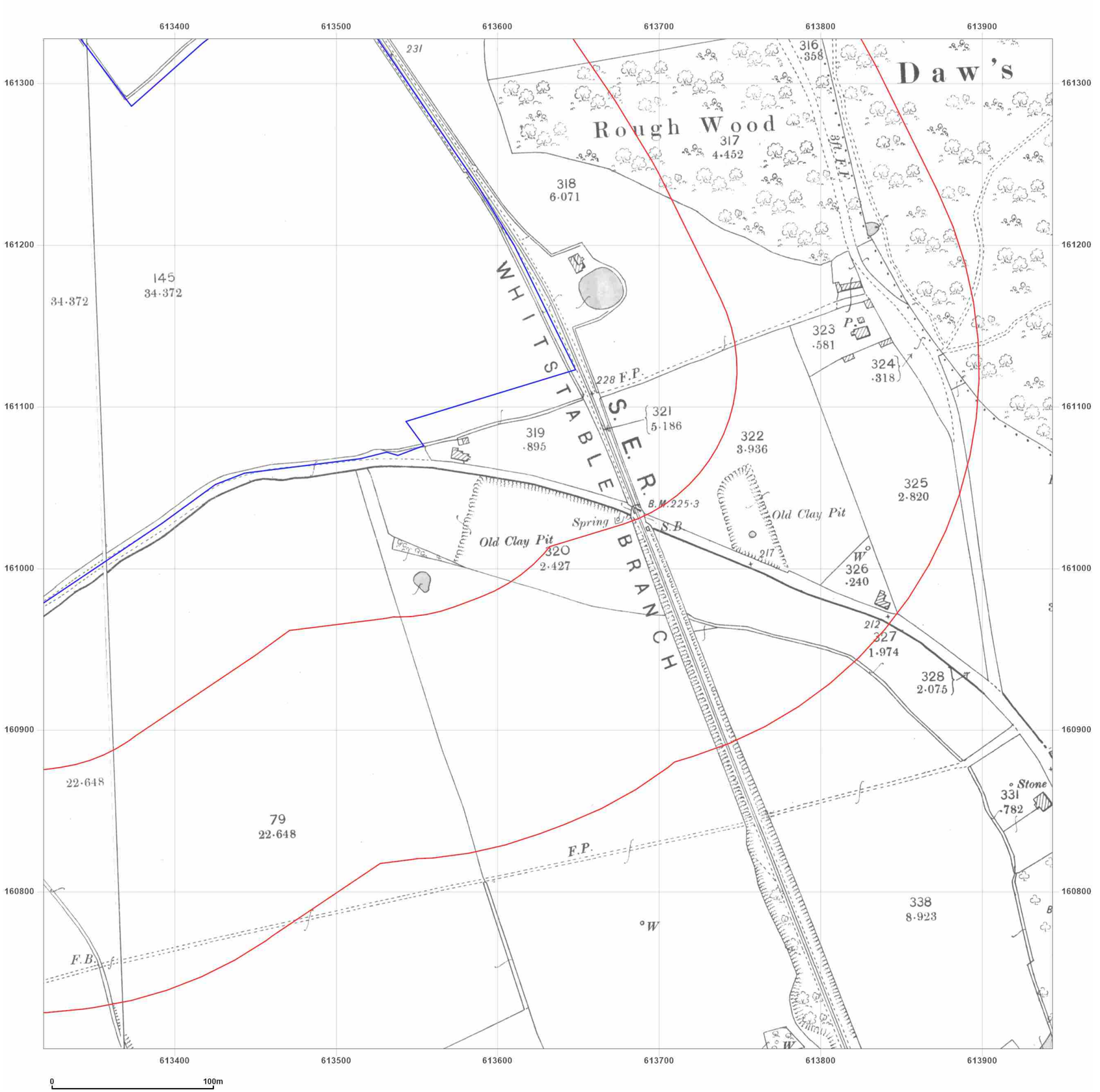
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

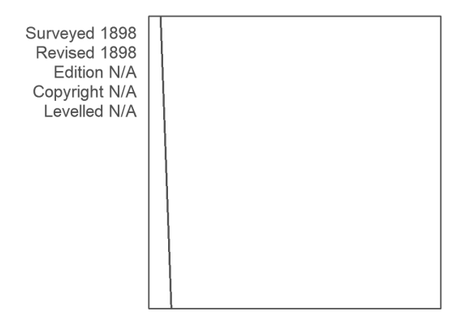
Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: County Series
Map date: **1898**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

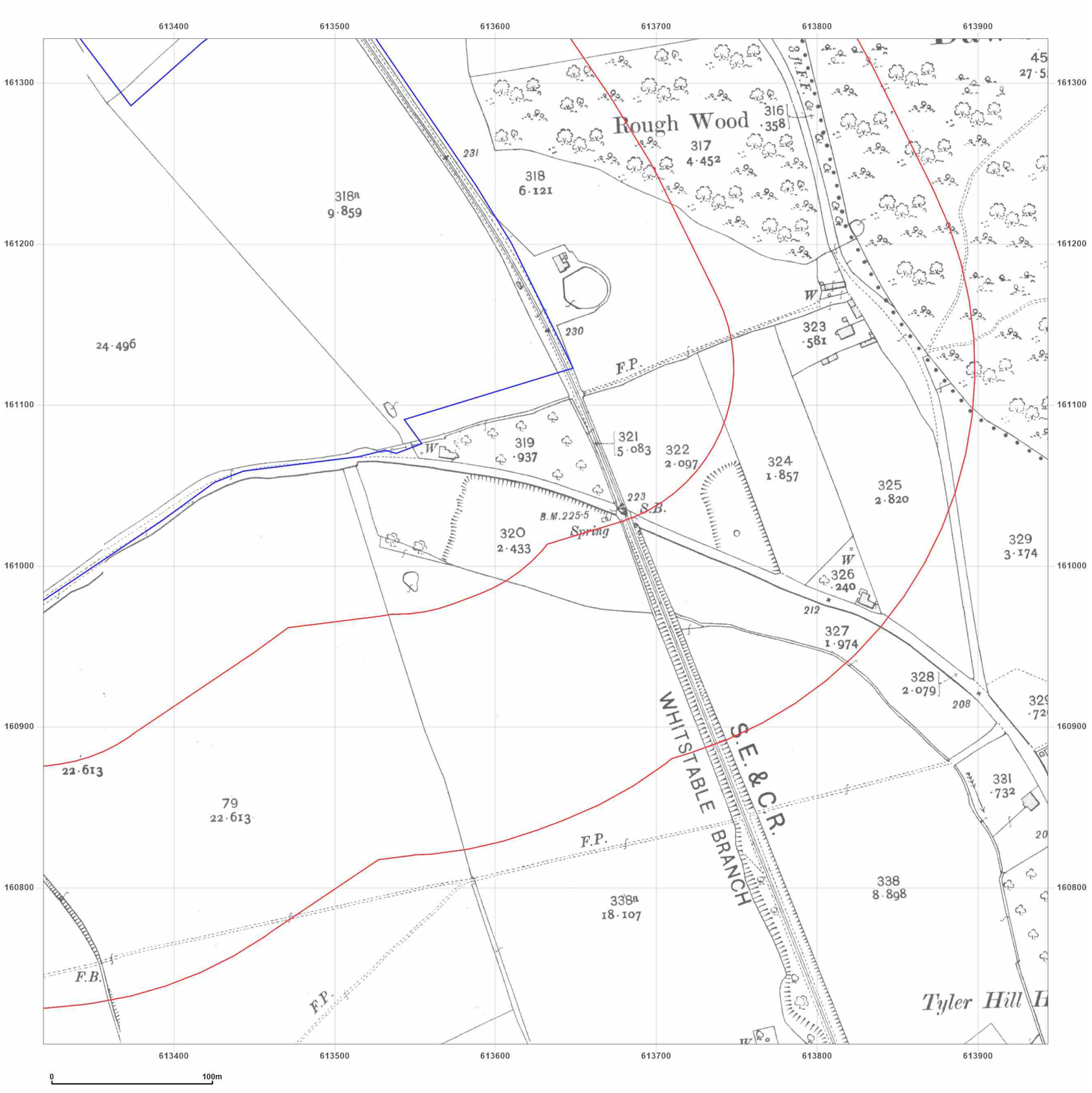
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

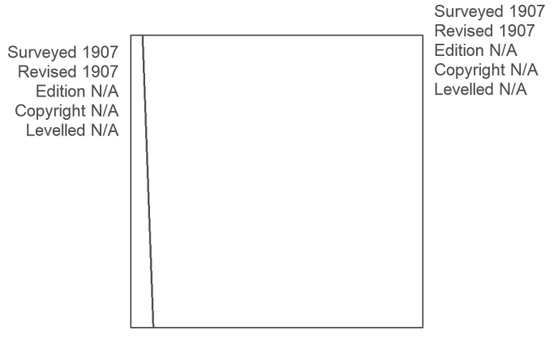
Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

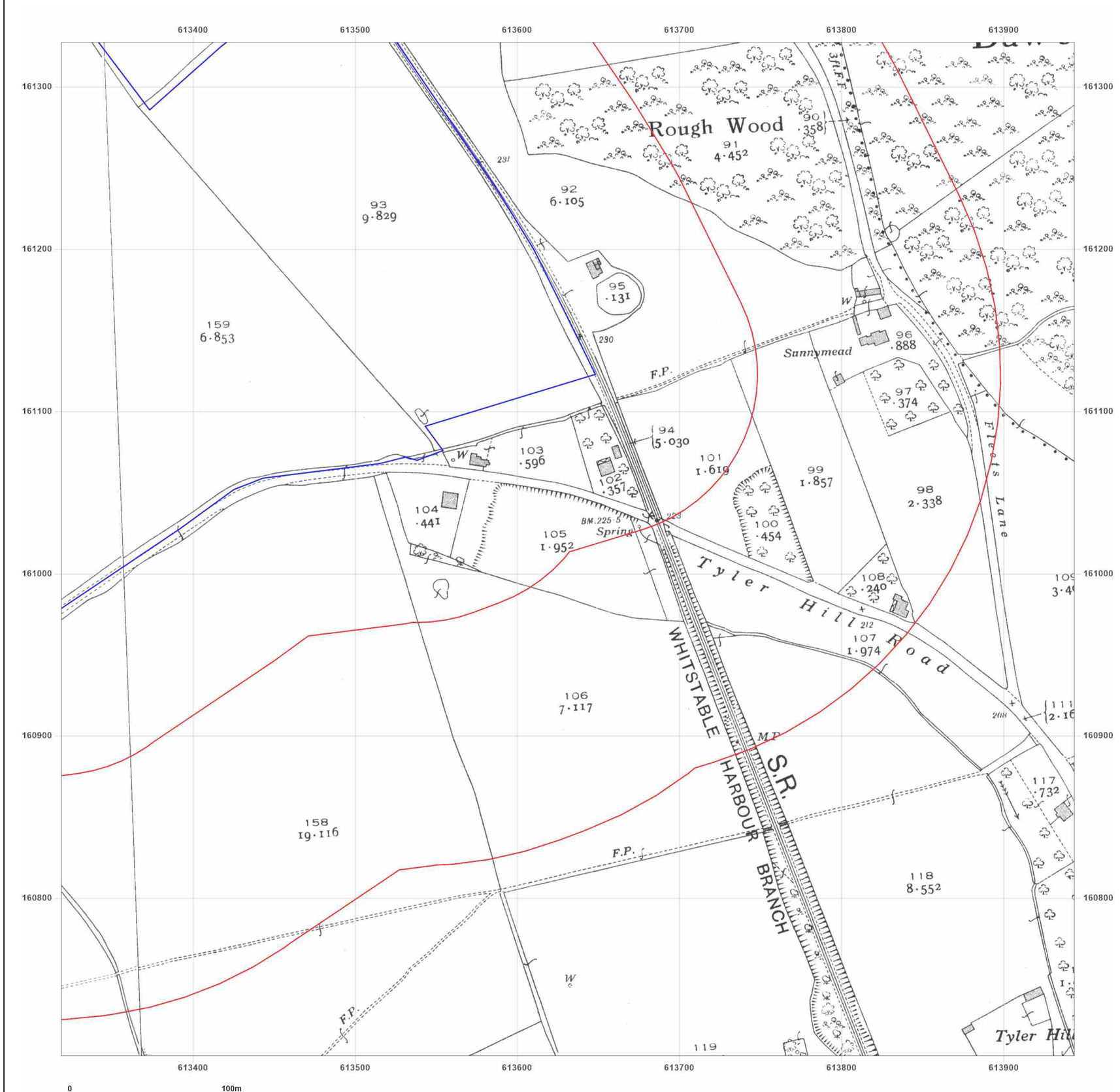
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

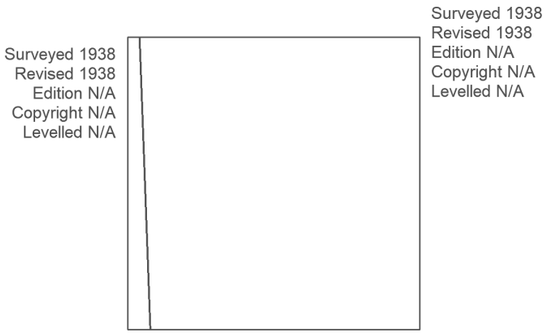
Map Name: County Series

Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Groundsure INSIGHTS

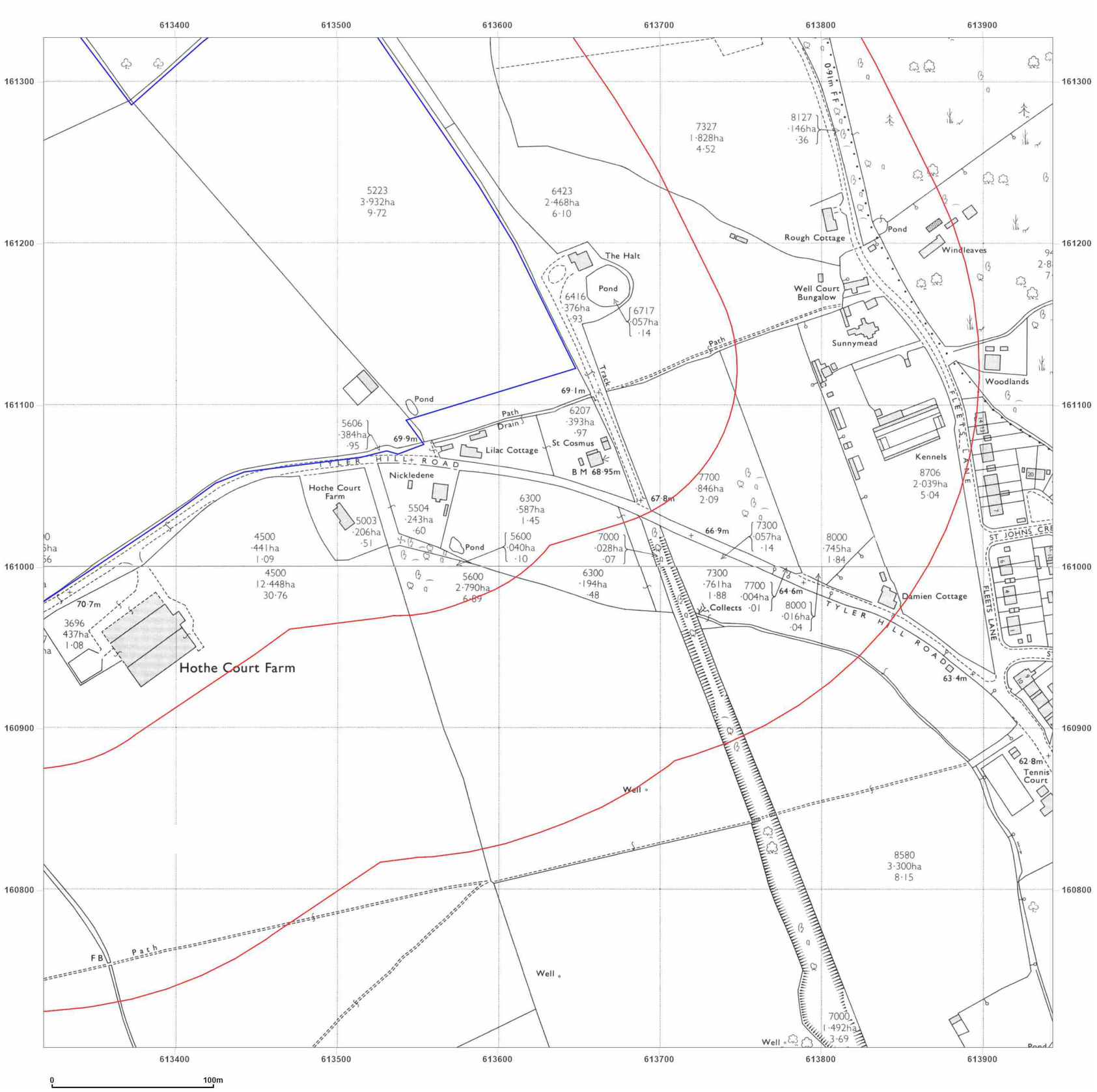
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: National Grid

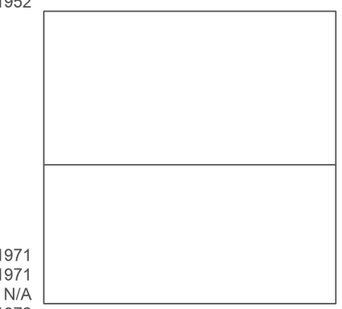
Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952



Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

WSP

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_1
Grid Ref: 613631, 161015

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Groundsure INSIGHTS

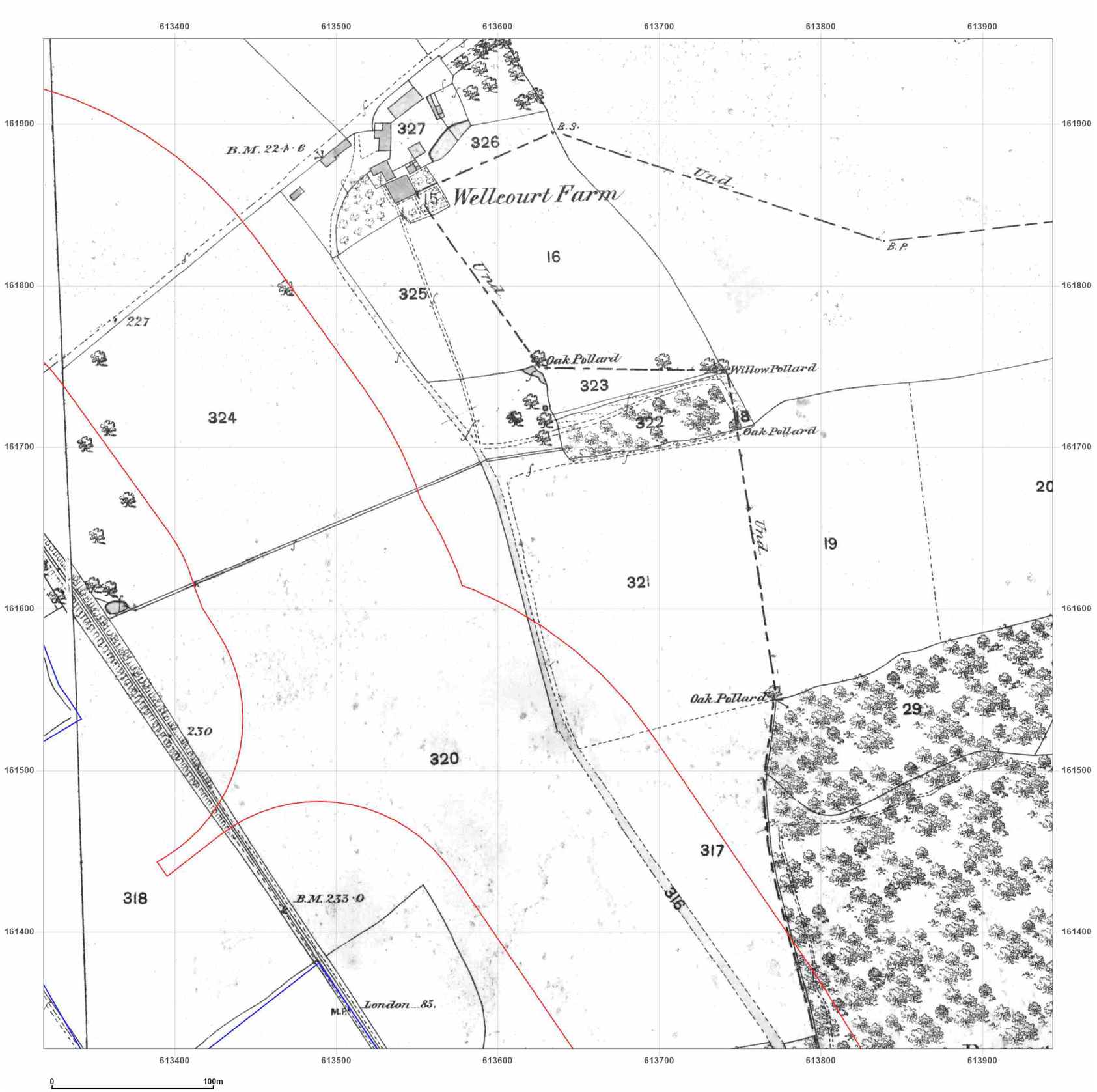
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT
CANTERBURY, THE REGISTRY,
GILES LANE, CANTERBURY,
CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_2
Grid Ref: 613631, 161640

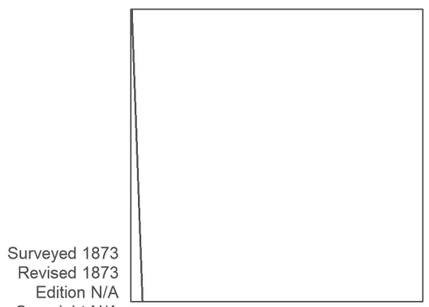
Map Name: County Series

Map date: **1873**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

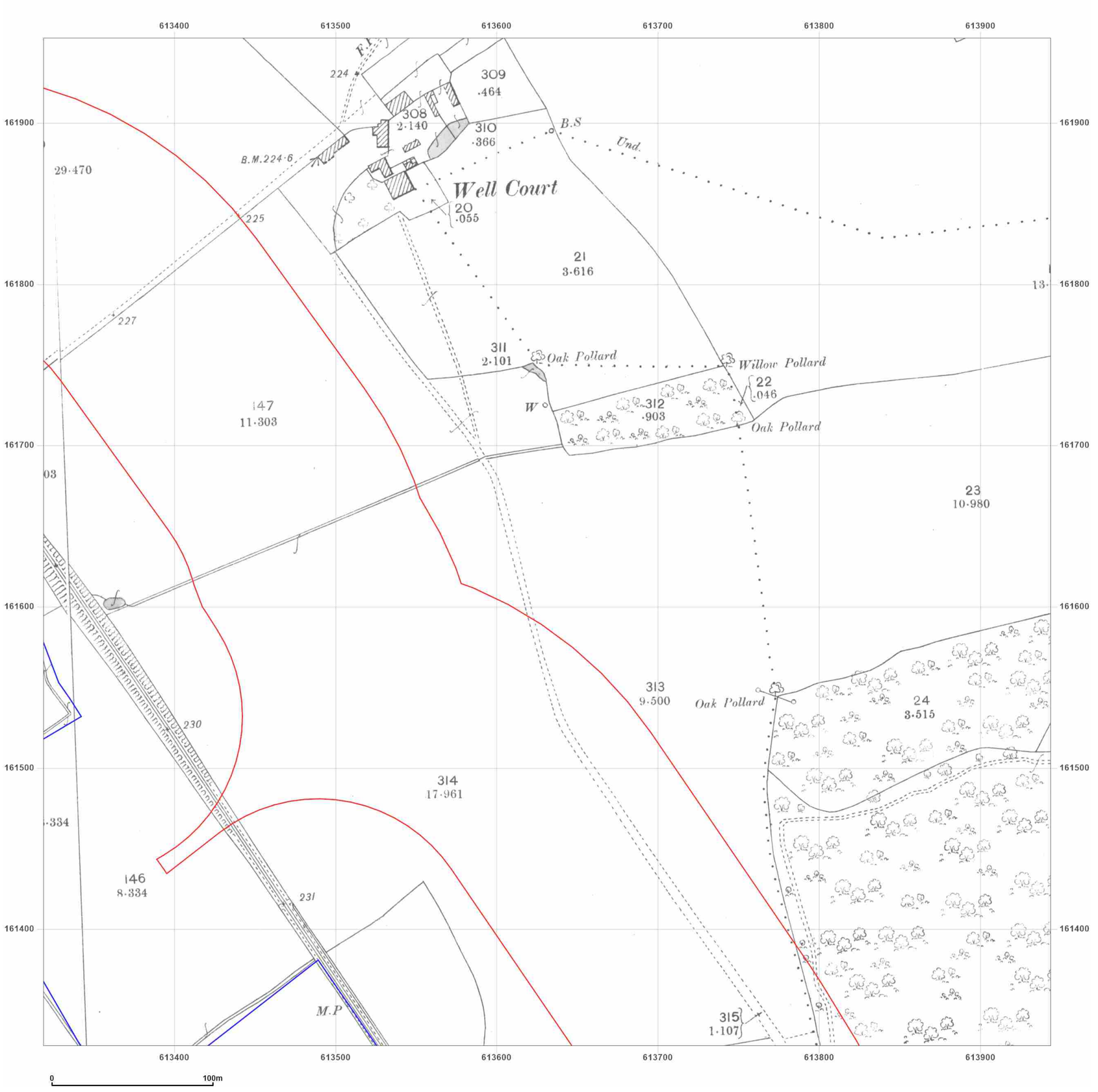
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_2
Grid Ref: 613631, 161640

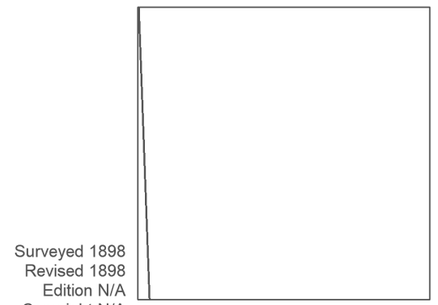
Map Name: County Series

Map date: **1898**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

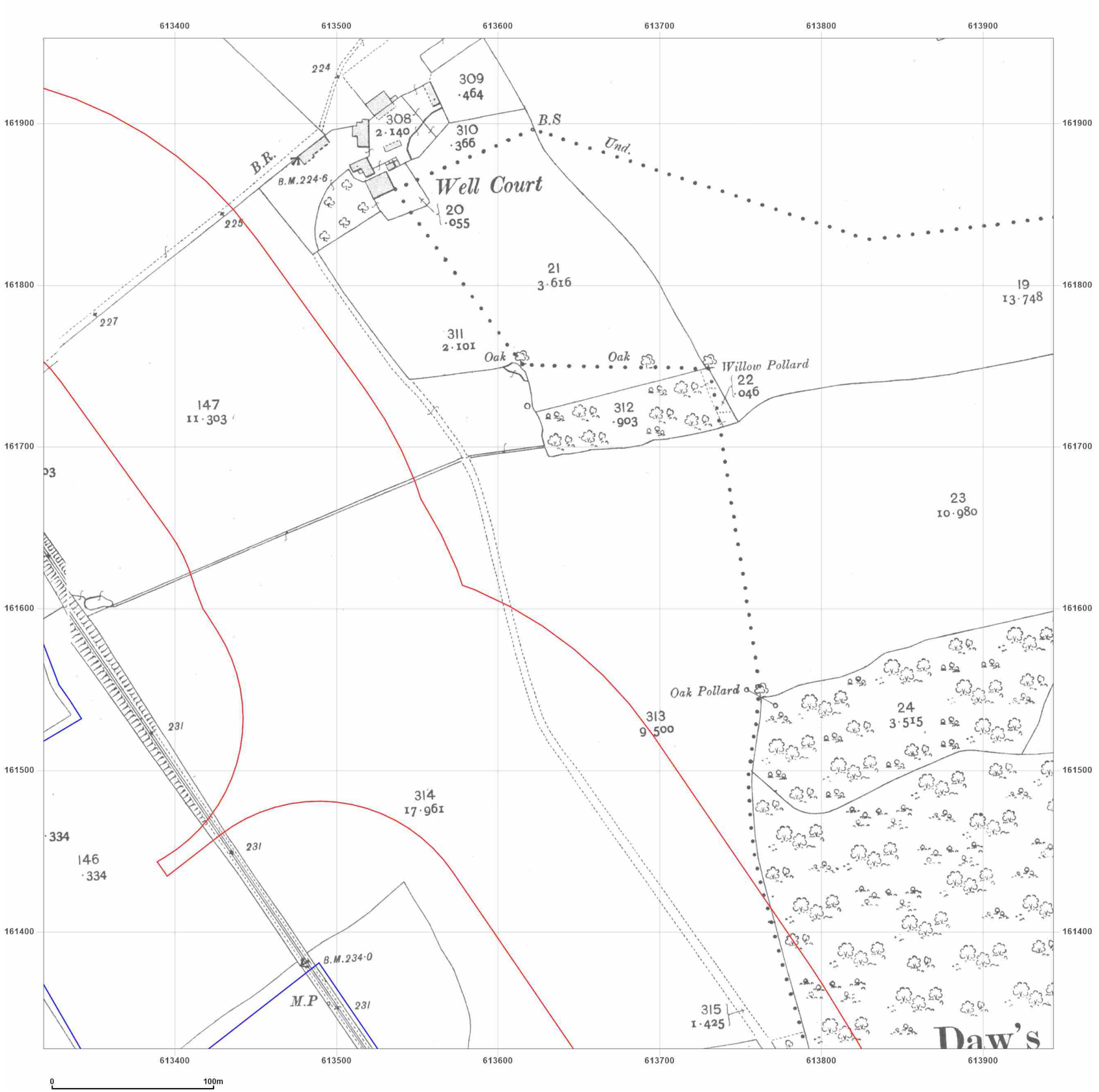
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_2
Grid Ref: 613631, 161640

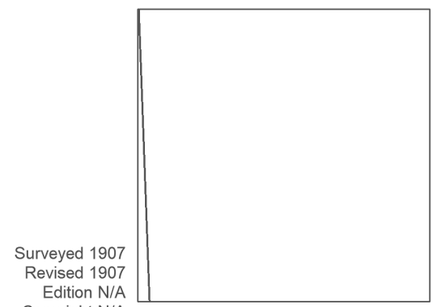
Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

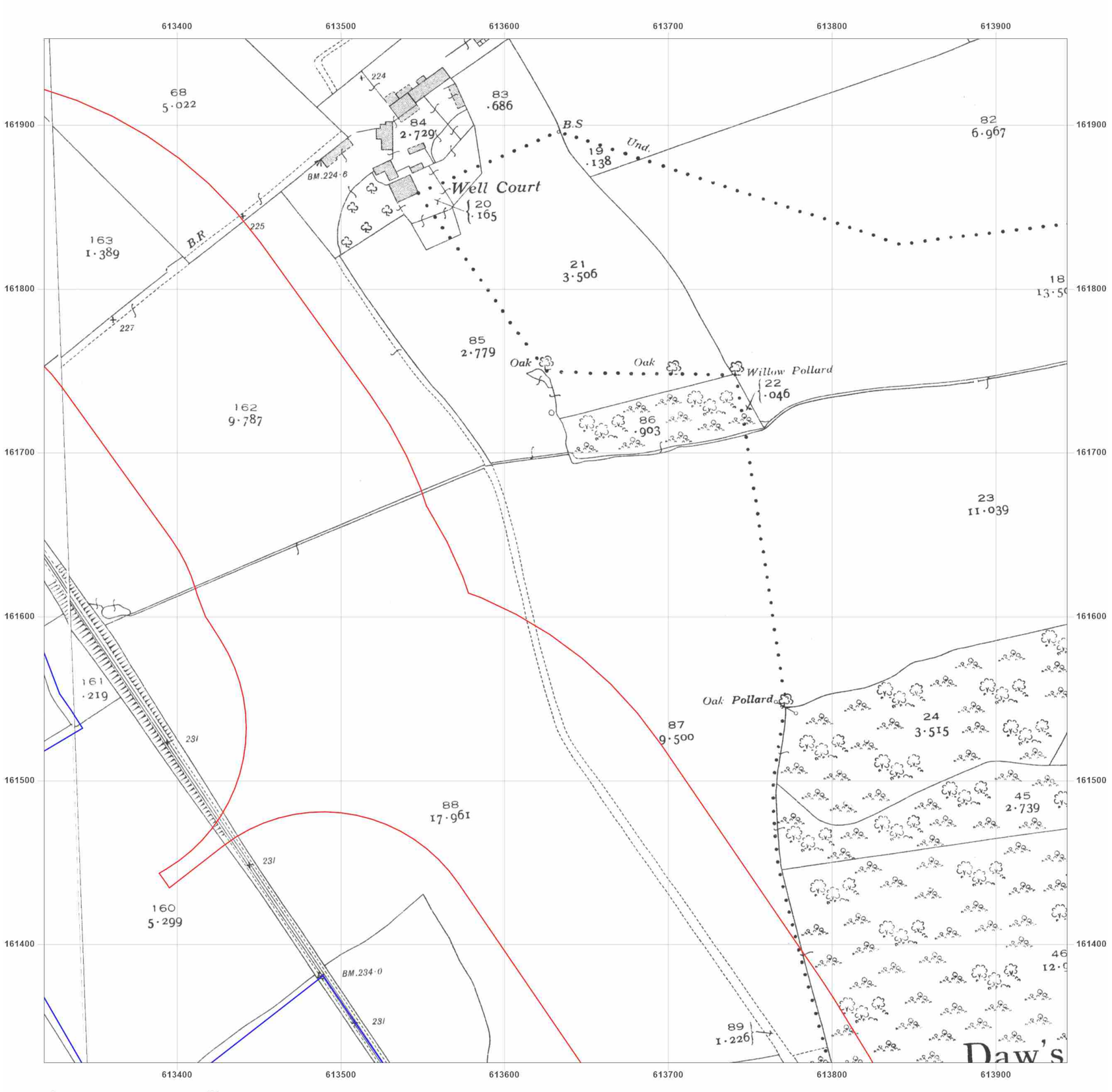
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

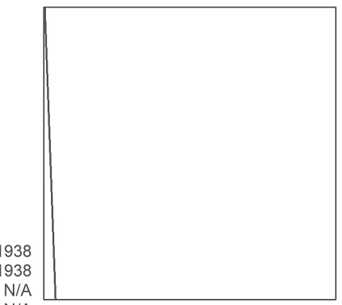
Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_2
Grid Ref: 613631, 161640

Map Name: County Series
Map date: **1938**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S



Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

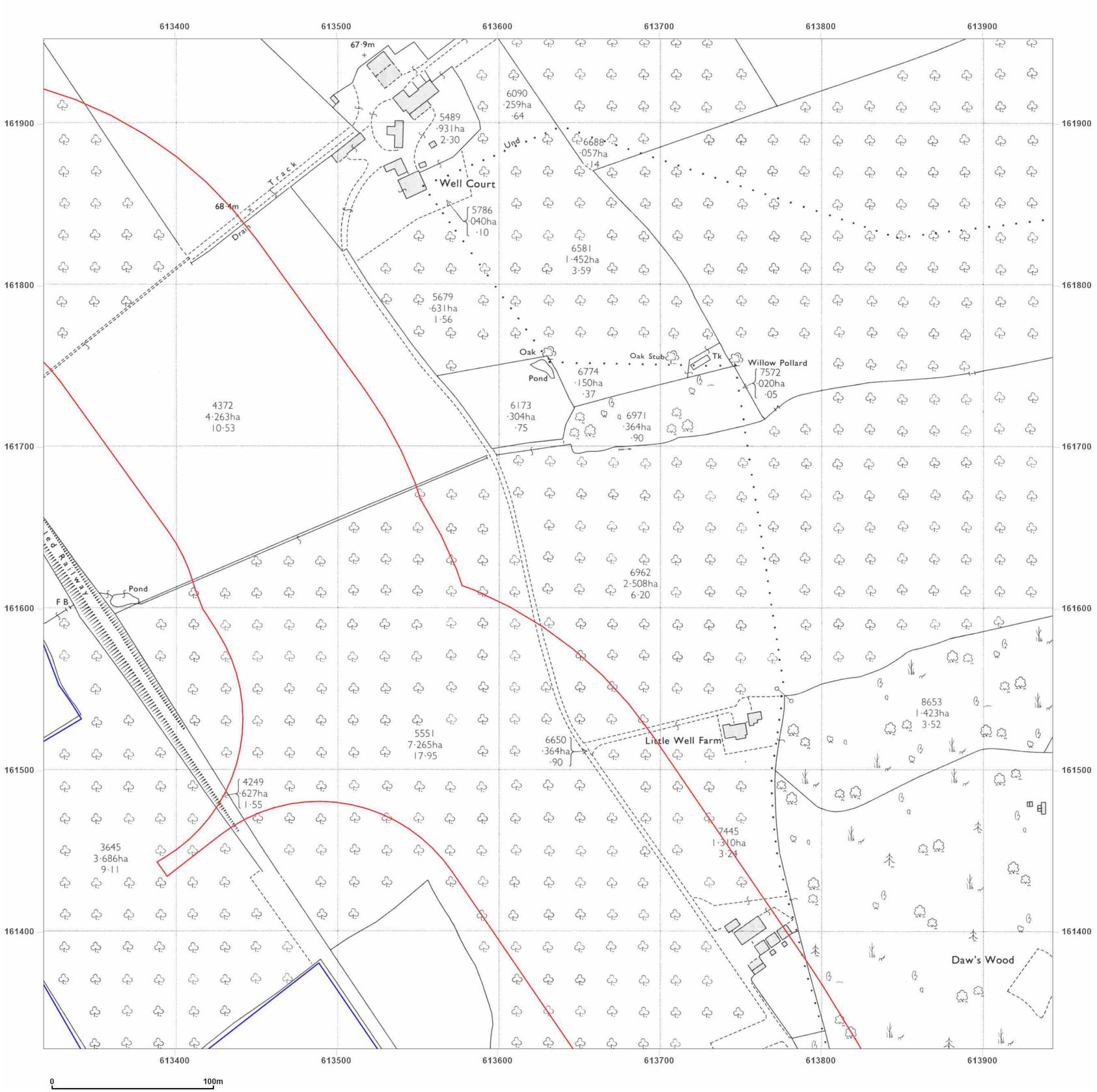
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_2
Grid Ref: 613631, 161640

Map Name: National Grid

Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1952

Groundsure INSIGHTS

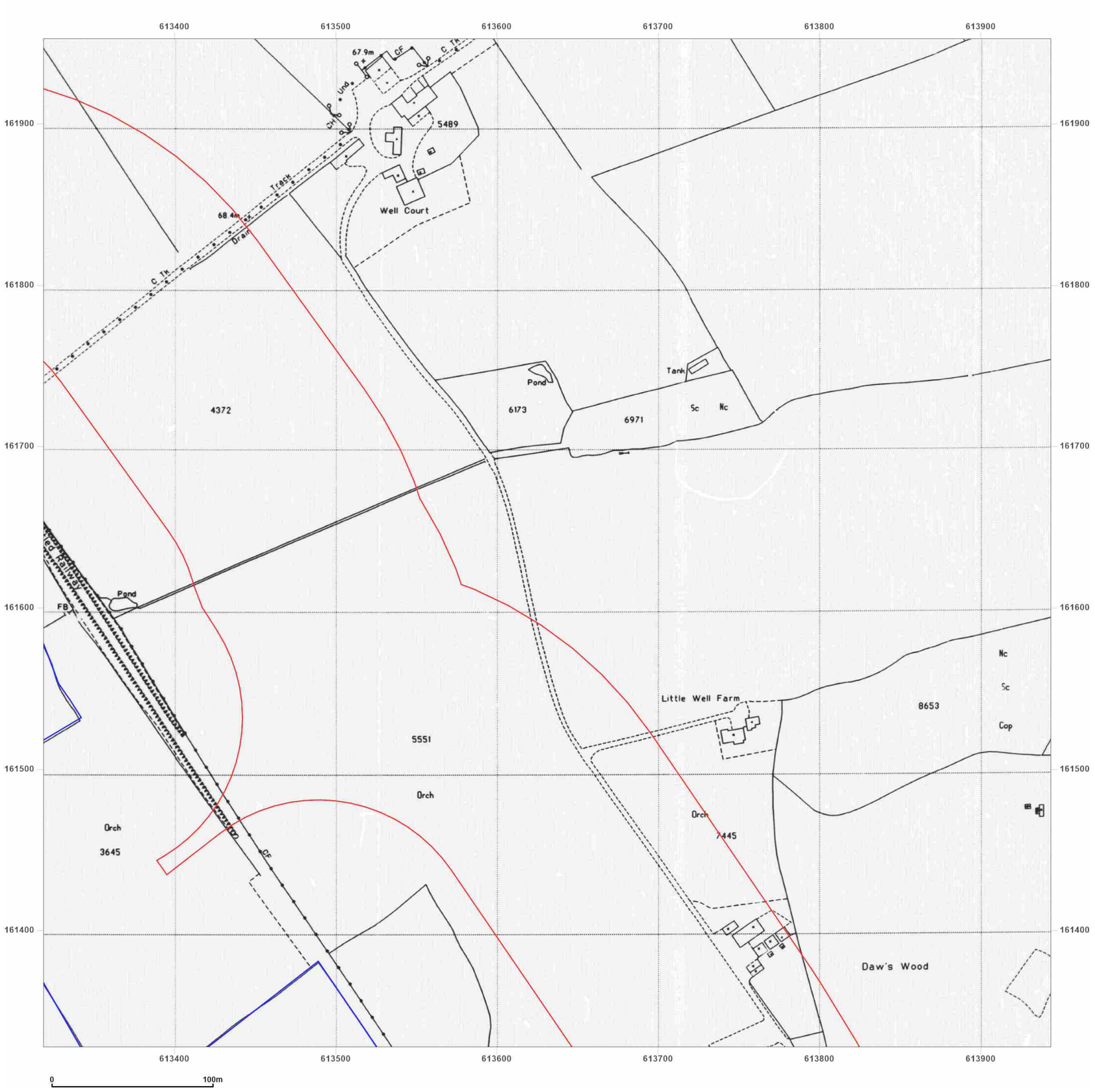
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187_LS_2_2
Grid Ref: 613631, 161640

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Groundsure INSIGHTS

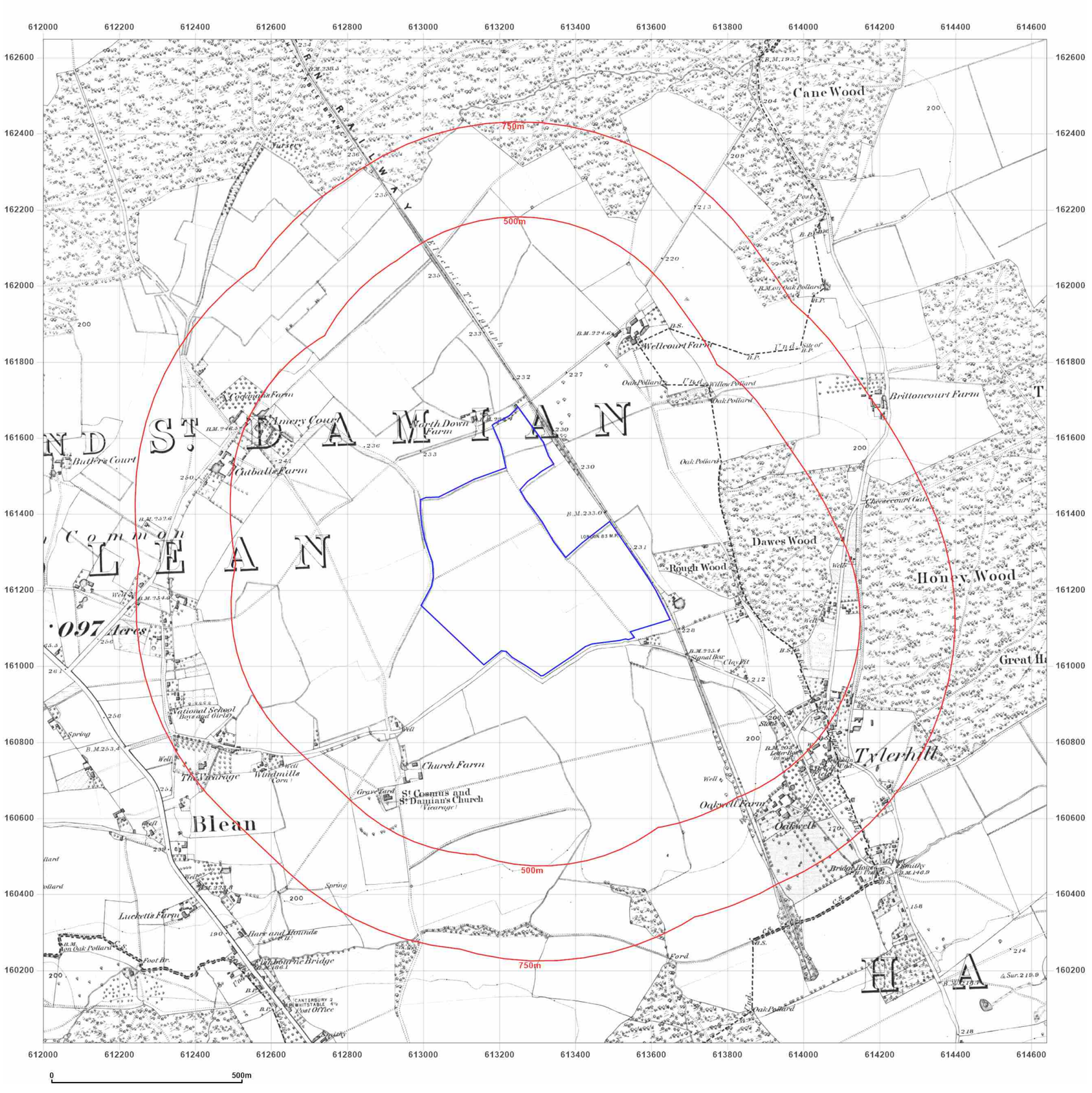
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: County Series

Map date: **1873**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

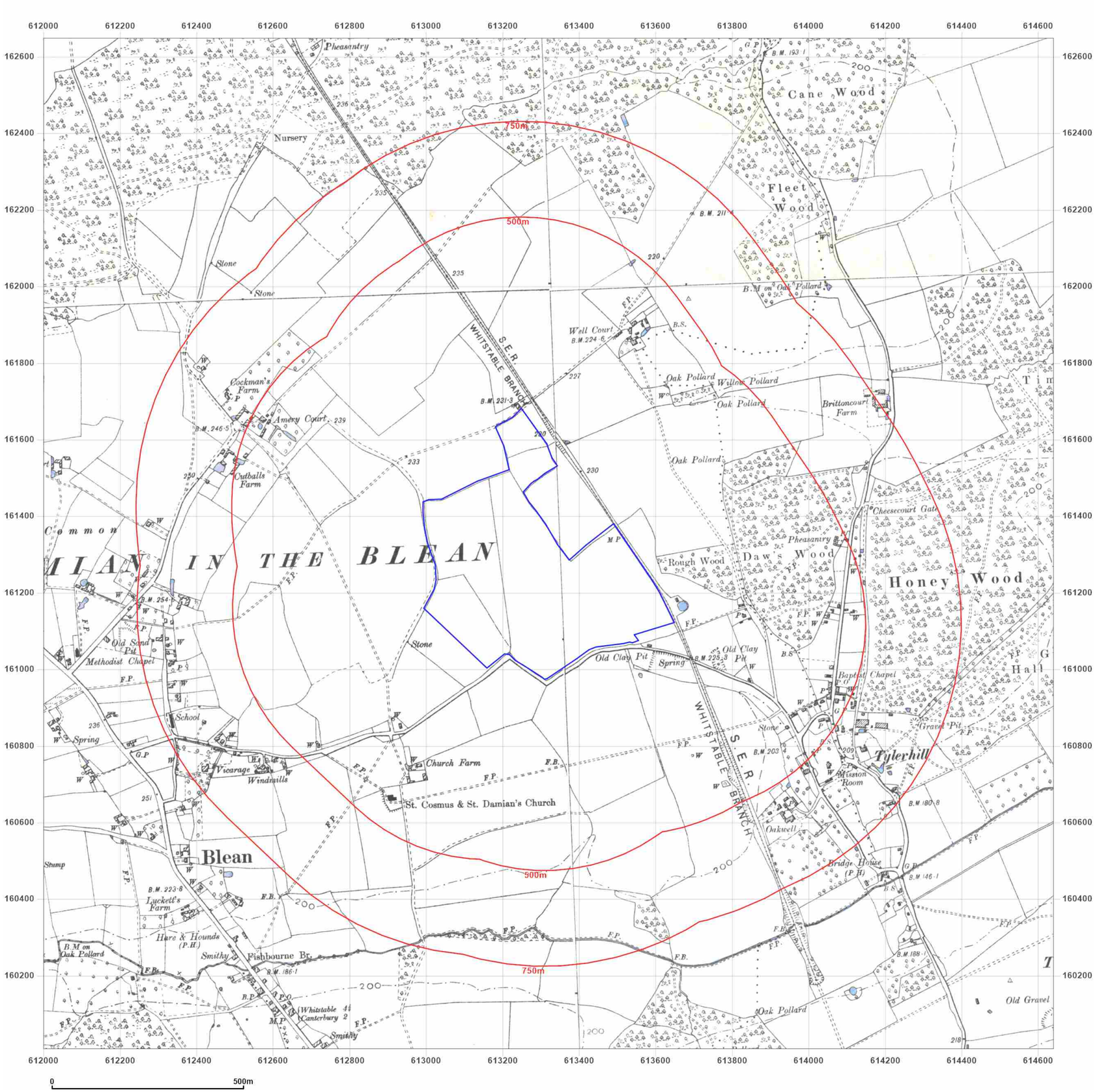
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: County Series

Map date: **1896**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1873
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

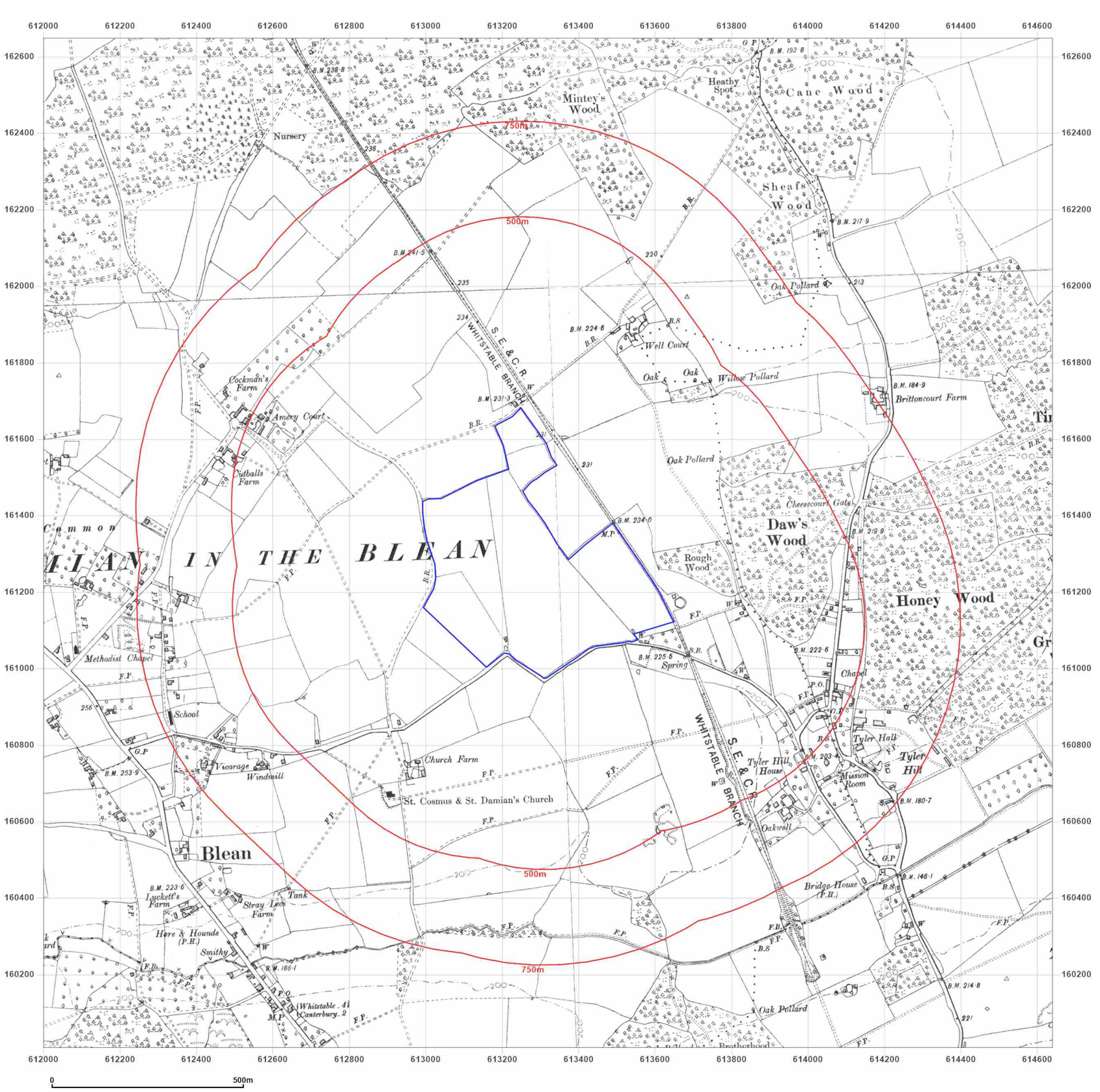
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: County Series

Map date: **1906**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

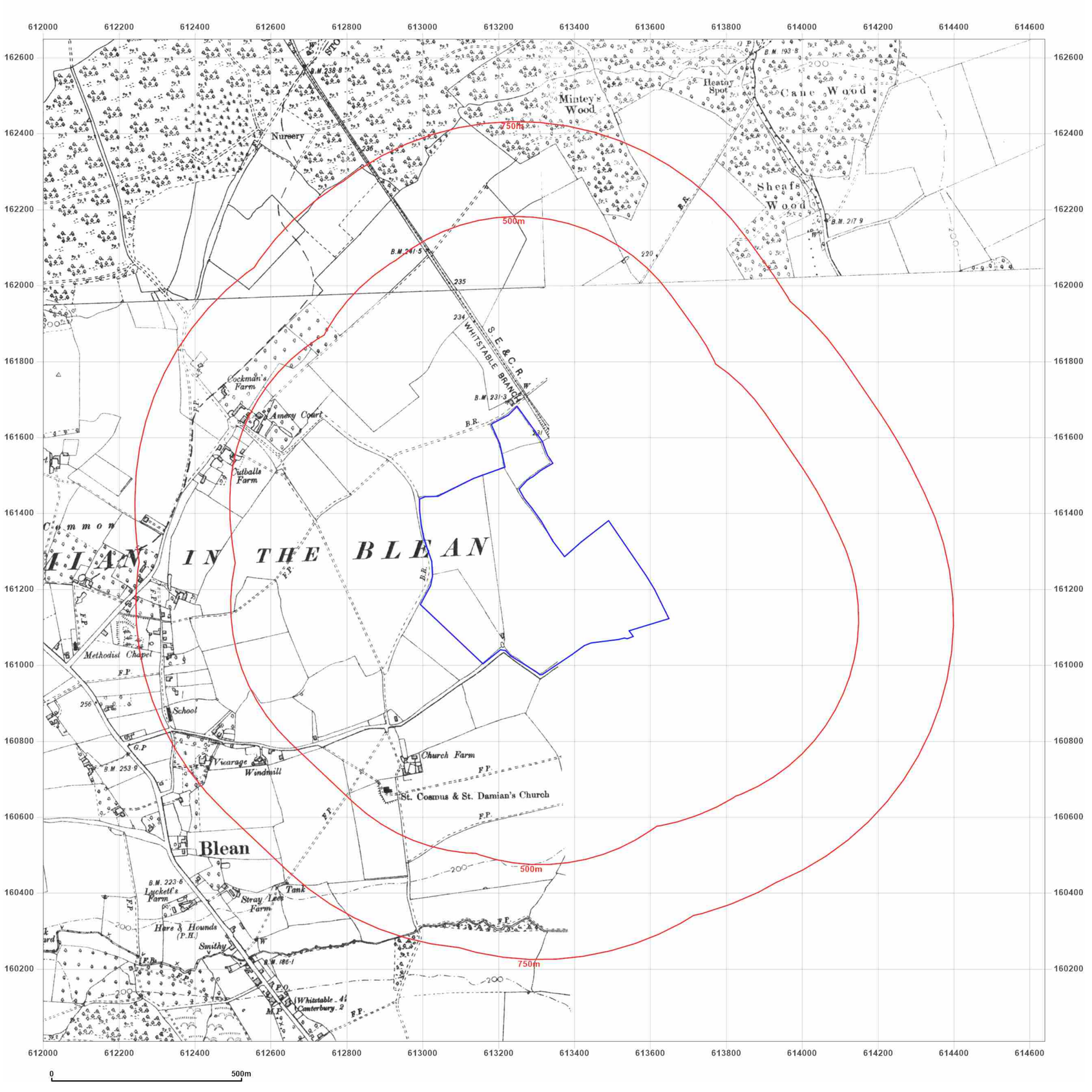
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: County Series

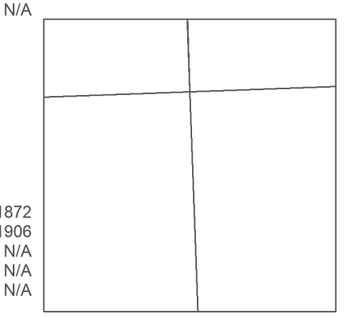
Map date: **1906**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

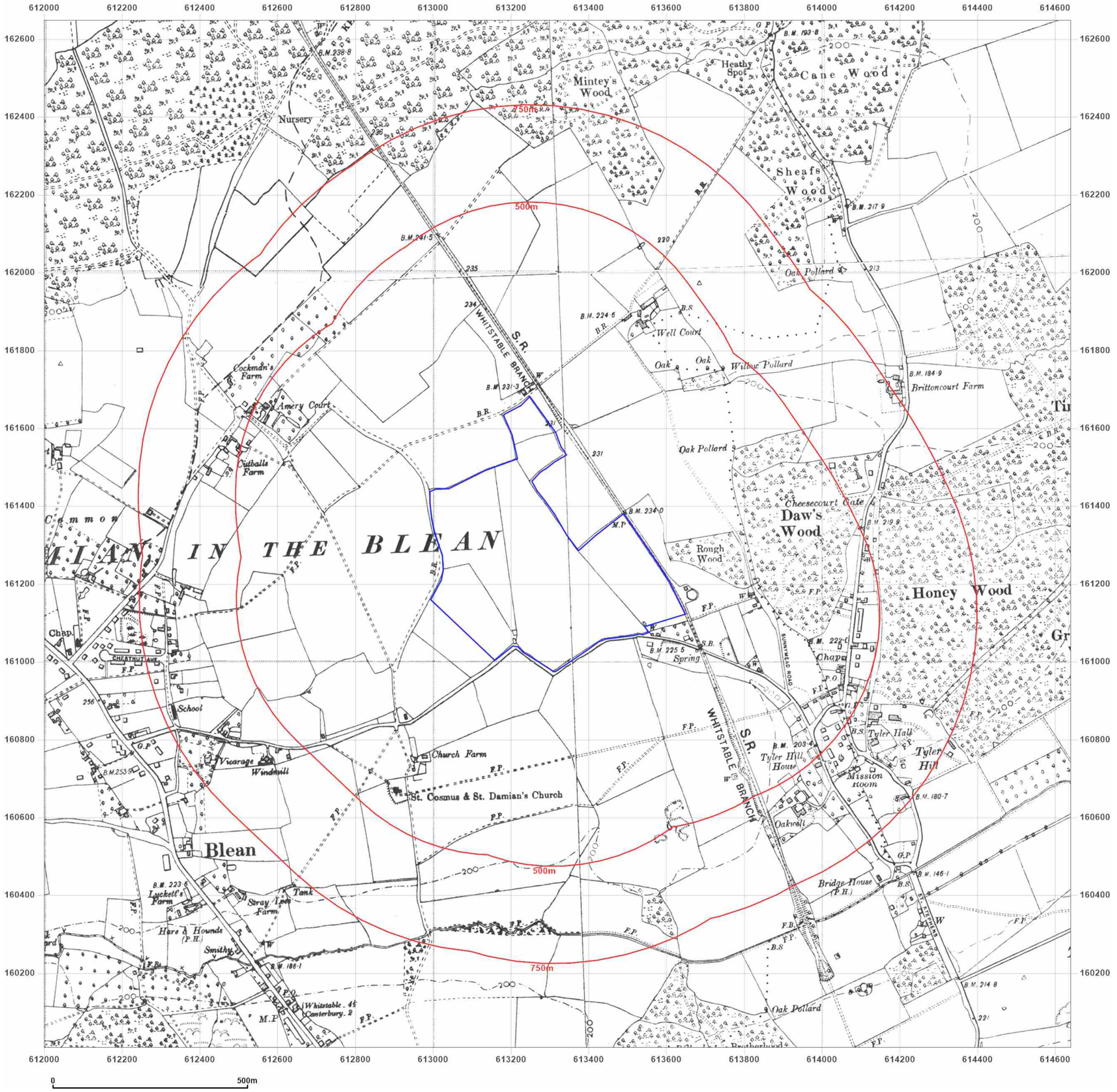
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

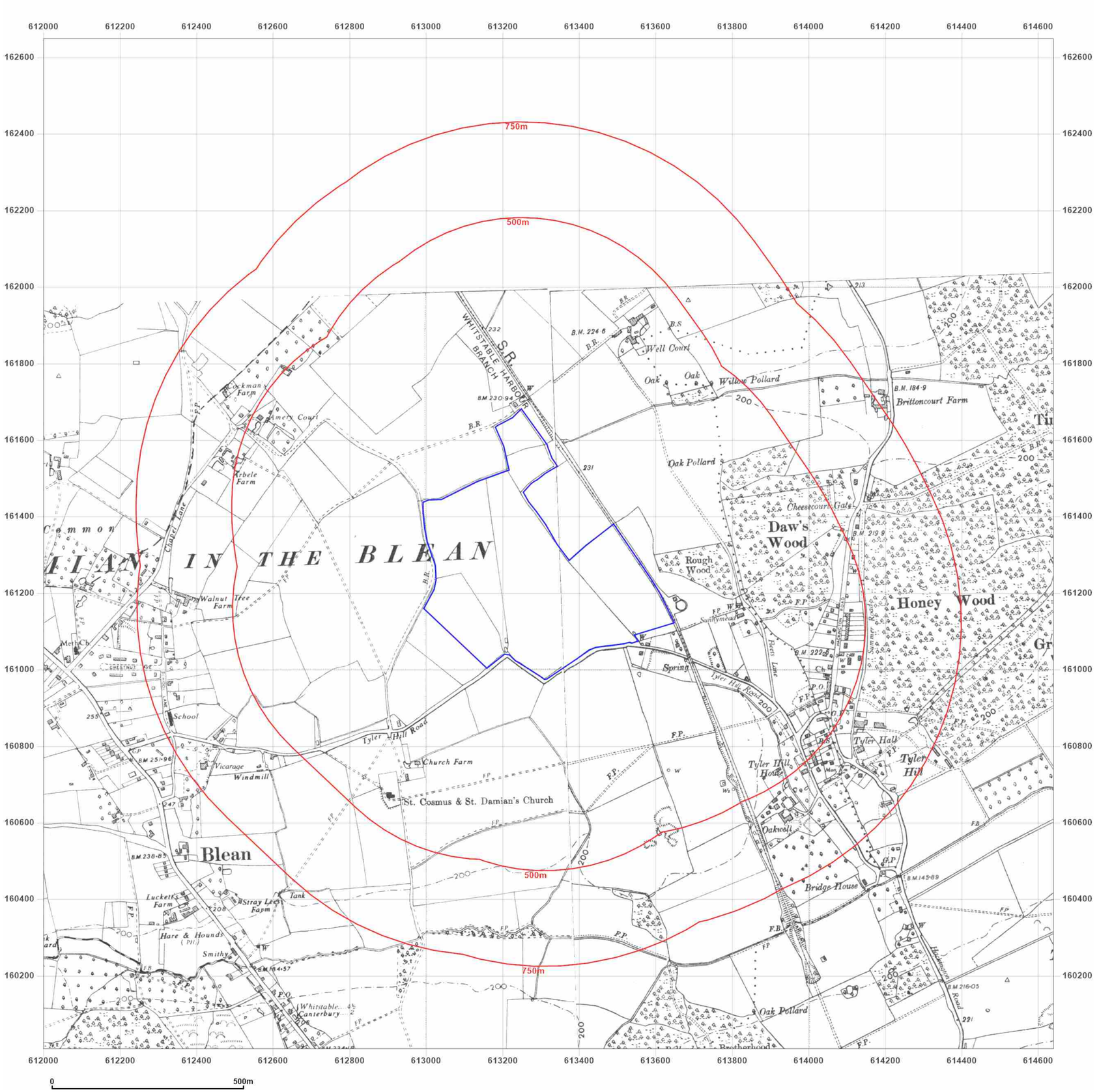
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

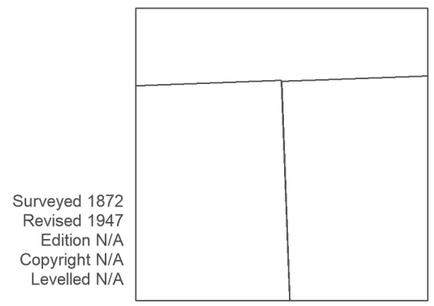
Map Name: County Series

Map date: **1947**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



Surveyed 1872
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

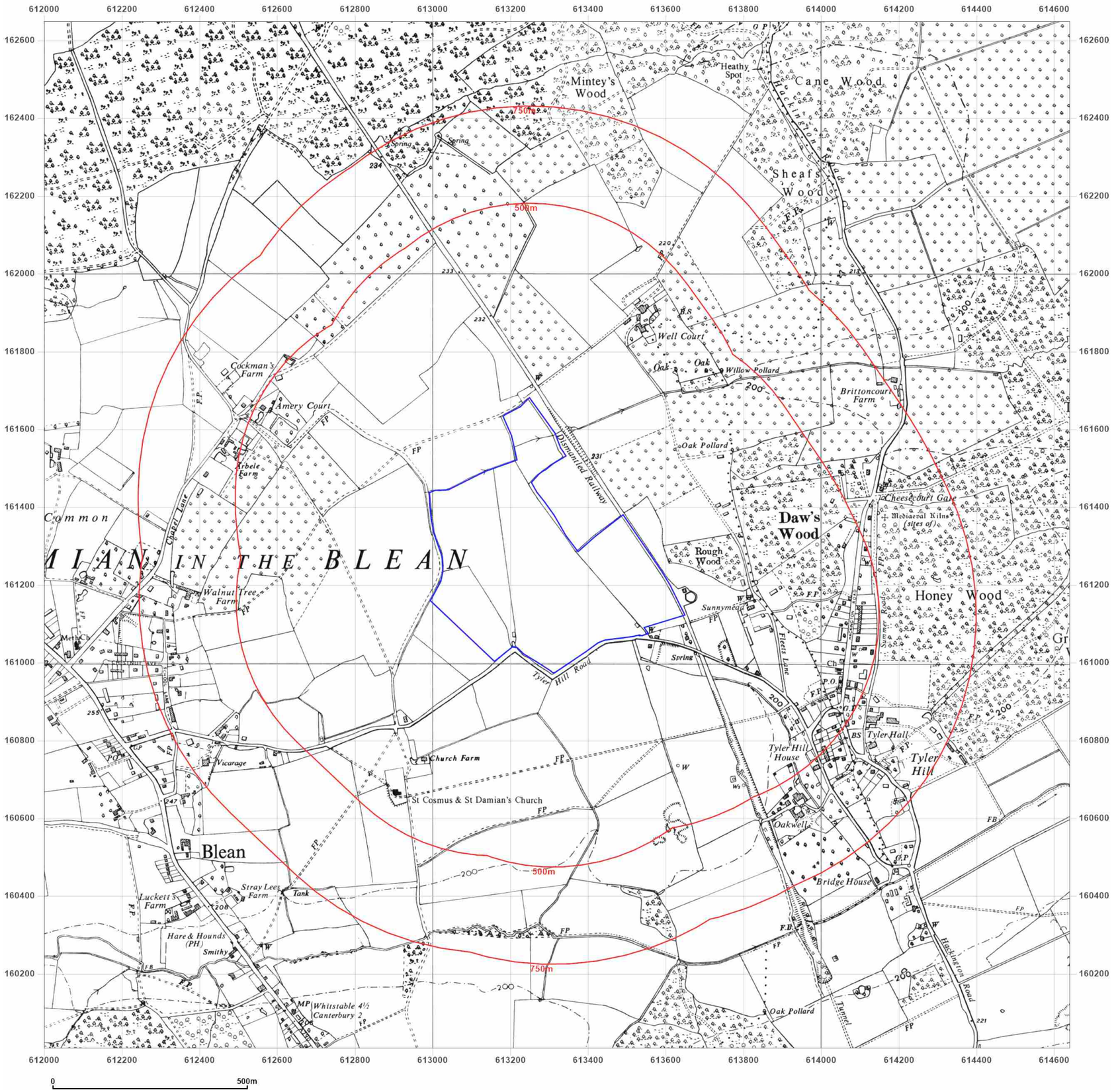
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



WSP

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: Provisional

Map date: **1957**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

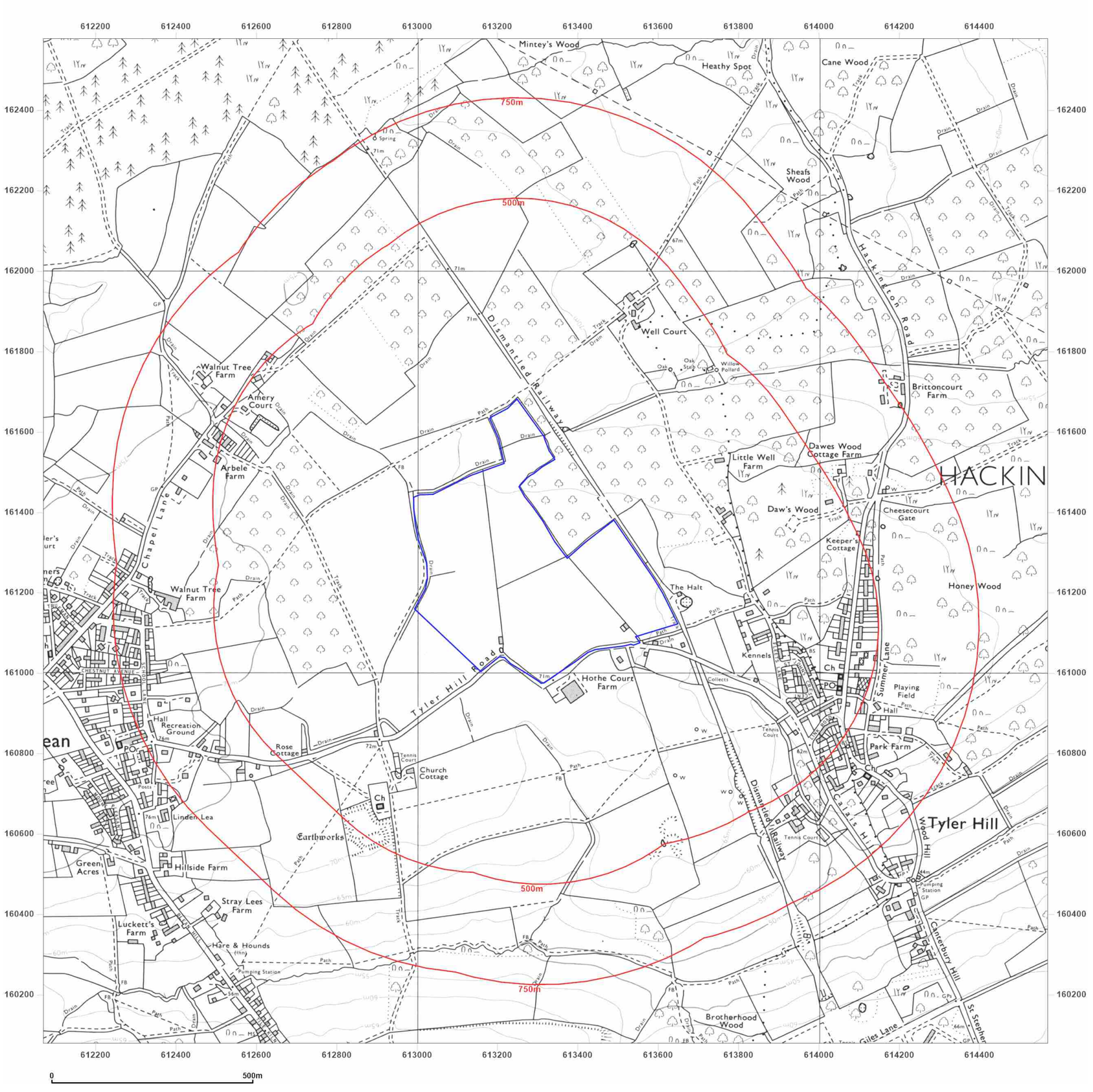
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: National Grid

Map date: **1974**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1972
Revised 1973
Edition N/A
~~Copyright 1974~~
Levelled N/A

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2001

Groundsure INSIGHTS

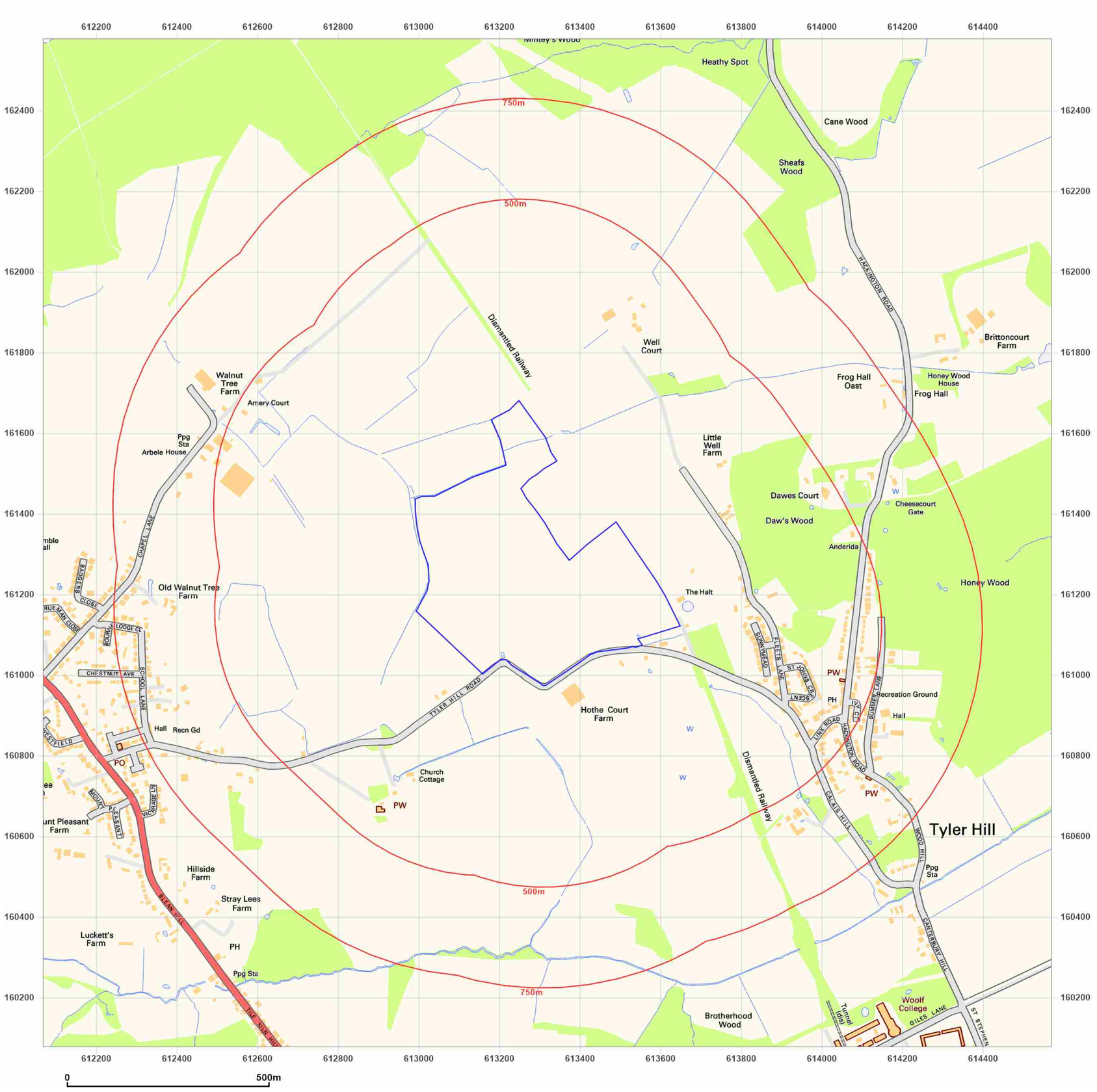
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2010

Groundsure INSIGHTS

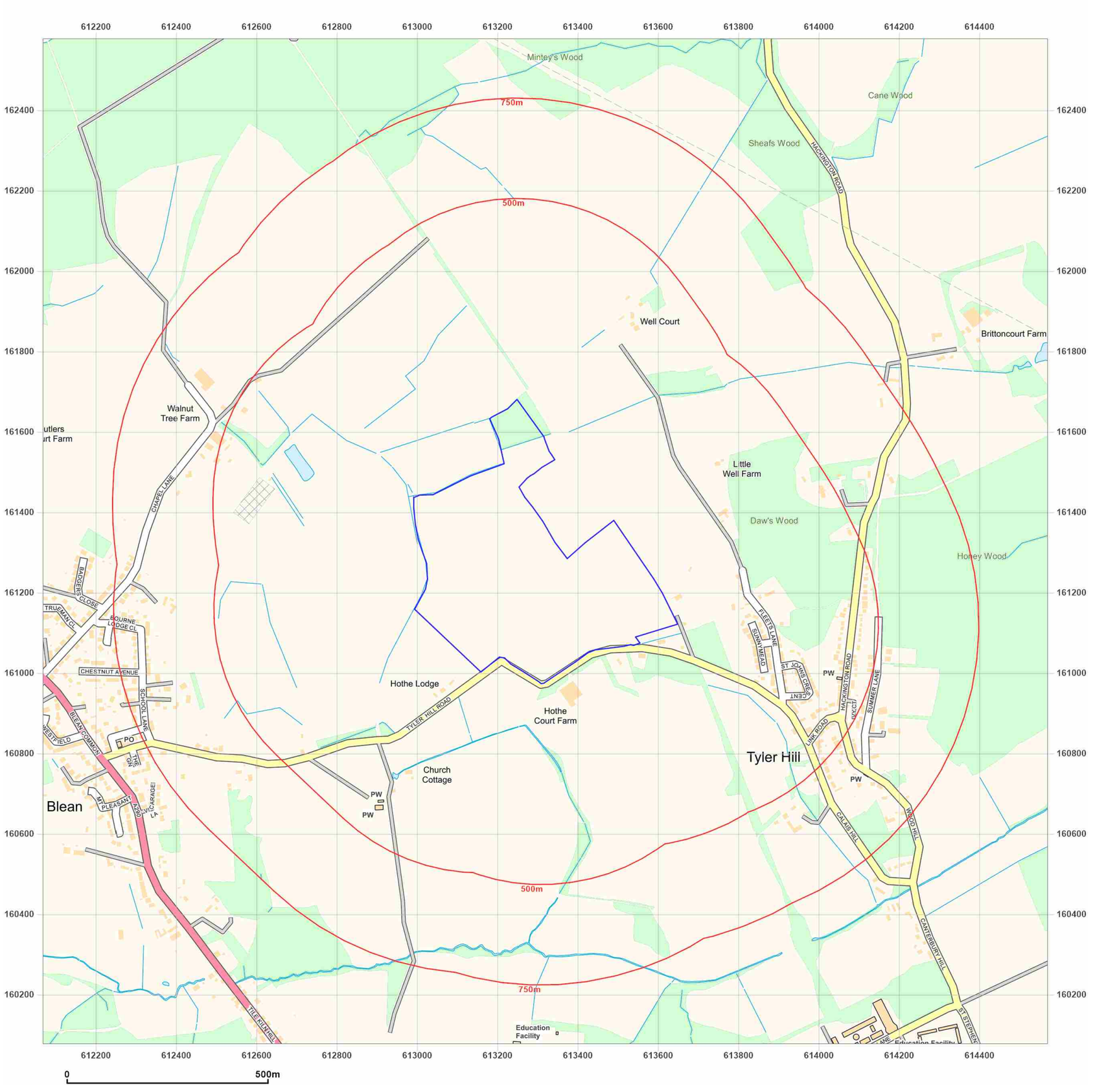
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

UNIVERSITY OF KENT AT CANTERBURY, THE REGISTRY, GILES LANE, CANTERBURY, CT2 7NZ

Client Ref: Uni_of_Kent_D
Report Ref: WSP-7710187
Grid Ref: 613319, 161328

Map Name: National Grid

Map date: **2021**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2021

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2021 Ordnance Survey 100035207

Production date: 01 April 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Appendix F

ENVIRONMENT AGENCY RESPONSE

CONFIDENTIAL

Harris, Callum

From:	KSL Enquiries <KSLE@environment-agency.gov.uk>
Sent:	03 June 2021 09:28
To:	Harris, Callum
Subject:	KSL 215292 CM - University of Kent
Attachments:	215292 CM D pollution incidents.xlsx; 215292 CM E pollution incidents.xlsx; 215292 CM F pollution incidents.xlsx; 215292 CM A pollution incidents.xlsx; 215292 CM B pollution incidents.xlsx; 215292 CM C pollution incidents.xlsx

Dear Callum Harris

Thank you for your request for information that was received on 13 April 2021.

I apologise for the delay in replying and for any inconvenience caused. Thank you for your patience at this time.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

Regarding the sites A-F located at: University of Kent, Canterbury and as shown on your plan, we hold the following information;

Are there any environmental issues associated with the above named site?

Please find attached 6 summaries of pollution incidents within approximately 500m of each site A-F. With respect to incident 38382 found near site F, the Environment Agency visited the address and gave advice and guidance to the Landowner as to the cause of the pollution to their private water supply. As far as we are aware the Landowner acted upon our advice. We have received no further reports from the Landowner as to the private water supply being continually affected to date. As the water supply was private we had no statutory or regulatory concerns at the time and the incident was closed.

We are specifically interested in anything that could have led to contamination of soil or groundwater either beneath the site or within a 500m radius?

Land that may be affected by contamination is dealt with by Local Authorities, you should contact the Contaminated Land officer in the Environmental health Department in the first instance. The Environment Agency has no record of any sites being determined as Contaminated Land under **S78** of the Environmental protection act in this vicinity and is not dealing with any designated Special Sites under that Regime at this location.

Do you hold any records of water quality within 1km of the site?

Water quality data is available online, in the first instance please visit https://data.gov.uk/dataset/water-quality-archive

Are you aware of the presence of above ground storage tanks/gas meters on adjacent sites

We hold no record

and are you aware of any spills or leaks associated with these?

Please refer to the 6 summaries of pollution incidents within approximately 500m of each site A-F.

Are there any records of landfill ……. Within (approximately) **500m of the site**

A - no authorised or historic landfills
B - no authorised or historic landfills
C - no authorised or historic landfills
D - no authorised or historic landfills

E - no authorised or historic landfills
F - Authorised landfill site (PAS Active IPPC Authorisation) - Shelford Landfill Site - EPR/XP3434HX (WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE) Permission status: Effective. Current PAS no: DP3536DC.
Historic landfill sites - Shelford Quarry and Shelford Sandpit

Historic landfill site information can be obtained from the following links
https://data.gov.uk/dataset/17edf94f-6de3-4034-b66b-004ebd0dd010/historic-landfill-sites (for individuals and consultants)
https://environment.data.gov.uk/DefraDataDownload/?mapService=EA/HistoricLandfill&Mode=spatial (for consultants Arcgis users only)
Any available further information can be obtained from the local authority who hold records for historic landfill sites.

or waste transfer activities within 500m of the site?
For information on permitted waste activities and exemptions please visit https://www.gov.uk/guidance/access-the-public-register-for-environmental-information where you can conduct a distant search

Have there been any soil or groundwater remedial works carried out at the site or within 500m of the site?
Any available information about site investigations carried out at your site of interest may be held on the public register related to planning and development at the Local Authority Planning Department.

Please refer to the Open Government Licence which explains the permitted use of this information.

If you have any further queries or if you'd like us to review the information we have provided under the Freedom of Information Act 2000 and Environmental Information Regulations 2004 please contact us within two months and we will happily do this for you.

Kind Regards,

Claire McConchie
Customers & Engagement Officer
Kent, South London & East Sussex

Environment Agency | 0208 4746848 | Orchard House | Endeavour Park | London Road | West Malling | Kent | ME19 5SH

From: Harris, Callum [mailto:callum.harris@wsp.com]
Sent: 30 April 2021 09:41
To: KSL Enquiries <KSLE@environment-agency.gov.uk>
Subject: RE: KSL 215292 CM - University of Kent - Environment Agency - Request for information

Hi Claire,

Apologies for the ambiguous map, the attached should be a better guide. If we can have searches covering Sites A through to F that would be great,

Kind regards,

Callum Harris

Callum Harris Msci FGS
Assistant Geo-environmental Consultant

Mobile: +447385463185

wsp.com

Confidential
This message, including any document or file attached, is intended only for the addressee and may contain privileged and/or confidential information. Any other person is strictly prohibited from reading, using, disclosing or copying this message. If you have received this message in error, please notify the sender and delete the message. Thank you.

WSP UK Limited, a limited company registered in England & Wales with registered number 01383511. Registered office: WSP House, 70 Chancery Lane, London, WC2A 1AF.

From: KSL Enquiries <KSLE@environment-agency.gov.uk>
Sent: 30 April 2021 09:38
To: Harris, Callum <callum.harris@wsp.com>
Subject: KSL 215292 CM - University of Kent - Environment Agency - Request for information

Dear Callum Harris,

Re: KSL 215292 CM - University of Kent - Environment Agency - Request for information

Thank you for your enquiry of 13 April 2021.

We have received your site map, however please could you clarify which is the site that you require information.
(i.e. Which is the relevant boundary for us to use in our search?)

Until we receive this your request will be placed on hold.

Kind regards,

Claire McConchie
Customers & Engagement Officer
Kent, South London & East Sussex

Environment Agency | Orchard House | Endeavour Park | London Road | West Malling | Kent | ME19 5SH

From: Enquiries, Unit
Sent: 21 April 2021 11:52
To: 'callum.harris@wsp.com' <callum.harris@wsp.com>
Subject: FW: 210421/SSR27 - University of Kent - Environment Agency - Request for information

Dear Callum,

I have passed your e-mail to the local customer team who will deal with your request.

The Freedom of Information Act and Environmental Information Regulations state that a public authority must respond to requests for information within 20 working days.

However due to the ongoing COVID-19 pandemic affecting staff and resources we may take longer than the 20 working days to reply. We will aim to provide an answer as soon as we can.

You can find more information about our service commitment by clicking on the link below:

https://www.gov.uk/government/publications/environment-agency-customer-service-commitment

You can contact our customer team directly on the contact details below, or call the National Customer Contact Centre on 03708 506506 who will transfer you to the area team.

Please quote your enquiry reference 210421/SSR27 in any correspondence with us regarding this matter.

Customers & engagement team
Environment Agency - Kent,South London & East Sussex Area - KSLE@environment-agency.gov.uk

Kind Regards

Simone Roberts
National Customer Contact Centre
Environment Agency

☎ Tel: 03708 506 506
💻 Web Site: www.gov.uk/environment-agency

Click an icon to keep in touch with us:-

From: Harris, Callum [mailto:callum.harris@wsp.com]
Sent: 13 April 2021 13:52
To: Enquiries, Unit <enquiries@environment-agency.gov.uk>
Subject: 210421/SSR27 - University of Kent - Environment Agency - Request for information

Dear Enquiries Team,

I am currently undertaking environmental consultancy work on a site located at the below address and would like to ask if you have any information relevant to this site in your database.

The site is located at: University of Kent, Canterbury, CT2 7NZ. A map showing the location of the site is attached.

I would like to ask if you hold any pertinent records on your database regarding the site including:

- Are there any environmental issues associated with the above named site? We are specifically interested in anything that could have led to contamination of soil or groundwater either beneath the site or within a 500m radius?
- Do you hold any records of water quality within 1km of the site?
- Are you aware of the presence of above ground storage tanks/gas meters on adjacent sites and are you aware of any spills or leaks associated with these?
- Are there any records of landfill or waste transfer activities within 500m of the site?
- Have there been any soil or groundwater remedial works carried out at the site or within 500m of the site?

I understand that there may be a charge for an information search, if this is the case please advise me and I will arrange for a purchase order to be issued.

Any advice or information you can provide on this site will be most gratefully received. If you need any further information or have any queries regarding this request please do not hesitate to contact me.

Kind regards

Mr. Callum Harris Msci FGS
Assistant Geo-environmental Consultant

Mobile: +447385463185

wsp.com

Confidential
This message, including any document or file attached, is intended only for the addressee and may contain privileged and/or confidential information. Any other person is strictly prohibited from reading, using, disclosing or copying this message. If you have received this message in error, please notify the sender and delete the message. Thank you.

WSP UK Limited, a limited company registered in England & Wales with registered number 01383511. Registered office: WSP House, 70 Chancery Lane, London, WC2A 1AF.

NOTICE: This communication and any attachments ("this message") may contain information which is privileged, confidential, proprietary or otherwise subject to restricted disclosure under applicable law. This message is for the sole use of the intended recipient(s). Any unauthorized use, disclosure, viewing, copying, alteration, dissemination or distribution of, or reliance on, this message is strictly prohibited. If you have received this message in error, or you are not an authorized or intended recipient, please notify the sender immediately by replying to this message, delete this message and all copies from your e-mail system and destroy any printed copies.

-LAEmHhHzdJzBlTWfa4Hgs7pbKl

Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.
Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.

2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

wsp.com

CONFIDENTIAL

APPENDIX K

Nutrient Neutrality Report

University of Kent Nutrient Neutrality Assessment

DATE:	21 November 2023	**CONFIDENTIALITY:**	Confidential
SUBJECT:	University of Kent Canterbury Disposal Sites BCD: Nutrient Neutrality Assessment		
PROJECT:	70080896	**AUTHOR:**	James Ellaway
CHECKED:	James Ellaway	**APPROVED:**	Justin Sherlock

INTRODUCTION

WSP has been appointed by the University of Kent (UoK) to provide transport and environmental advice for the development of proposals at various sites in and around their Canterbury Campus.

Initial masterplanning has identified the potential to promote 92.1 hectares of land for a housing allocation for 2,000 homes on land referred to as Site BCD. The land is located within the catchment of the River Stour and is therefore hydrologically connected with the Stodmarsh Lakes, which are designated as a Special Protection Area (SPA), a Special Area of Conservation (SAC) and a Ramsar site. The Stodmarsh Lakes are at risk of deterioration caused by eutrophication from elevated nitrogen and phosphorus levels in the River Stour.

The November 2018 European Court of Justice decision regarding the Habitats Directive has resulted in Natural England (NE) requiring all new developments containing overnight accommodation, and which are located in catchments affecting SPAs and SACs that are deteriorating because of nutrients, to demonstrate nutrient neutrality. In March 2022, NE issued updated generic technical guidance and an updated nutrient neutrality calculator for the Stodmarsh catchment[1] to be used to assess whether developments are nutrient neutral.

The local planning authority (LPA) for the development, Canterbury City Council, is unable to issue decisions for new residential development in the catchment unless NE has been consulted and confirmed that they have no objection to the proposed development. NE will not provide this approval unless it can be demonstrated that the development is both phosphorus and nitrogen neutral.

The nutrient neutrality assessment detailed below establishes that the proposed development can achieve both nitrogen and phosphorus neutrality.

SITE LOCATION

The proposed allocation site of 92.1ha consists of three land parcels, B, C and D.

Additional University land holdings, including land parcel F, could be converted from agricultural use into a permanent low nutrient land use (conservation meadow or woodland) as part of the mitigation strategy for the phosphorus and nitrogen loads that would be generated by the development. Land parcel E has been excluded from consideration as it is proposed for alternative uses (potential renewable energy land use) whilst the access road corridor within the University campus is also excluded from the calculations used in this assessment.

WASTEWATER TREATMENT WORKS

Based on Southern Water's wastewater treatment works (WWTW) catchment mapping[2] the proposed development would discharge foul flows to Southern Water's Canterbury WWTW. NE's guidance indicates that Canterbury WWTW will, until upgraded by 2030:

1 Nutrient Neutrality Generic Method Issue 1 dated February 2022 and issued March 2022 and the Nutrient Neutrality Budget Calculator for the Stodmarsh SAC and Ramsar, issued March 2022.
2 Drainage and Wastewater Management Plan (DWMP) – River Stour Catchment

- Have a total phosphorus (TP) discharge consent limit of 2 mg/l; and
- Have no total nitrogen (TN) discharge consent limit.

NE's nutrient load calculation method requires a precautionary approach to be taken for calculation of nutrient loads. This is achieved, where the relevant WWTW has a consent limit, by calculating the wastewater nutrient load based on the WWTW discharging at 90% of its consent limit. A value of 1.8 mg/l has therefore been used to calculate the wastewater phosphorus load generated by the proposed housing allocation.

In the absence of a consent limit for nitrogen, NE specifies that a *concentration* of 27 mg/l should be adopted. The 90% value does not apply to this value, and 27 mg/l has therefore been used in the calculations.

The Levelling Up and Regeneration Bill (LURB) received Royal Assent on 26 October 2023 and is now referred to as the Levelling Up and Regeneration Act (LURA). LURA imposes a statutory requirement on water companies to upgrade large WWTWs (defined as having a population equivalent >2,000) to consent limits of 0.25mg/l for TP and 10mg/l for TN. Canterbury WWTW must be upgraded to achieve these consent limits by 2030, and the LPA can now rely upon this being achieved when taking planning decisions. The 90% value has been applied to both consent limits in the nutrient load calculations for the post-2030 scenario.

ON-SITE WWTW

An alternative to Canterbury WWTW would be to treat foul flows through an on-site WWTW. Such a system could achieve discharge consent limits as low as 0.15mg/l for TP and 5mg/l for TN.

An on-site WWTW would be operated by a company approved by Ofwat under the New Appointments and Variations (NAV) process[3]. Severn Trent Connect[4] and other companies can fulfil the NAV role, which would include designing, permitting, building and operating & maintaining the works in perpetuity (defined as the 80 – 125 year design life of the development).

An indicative cost for a system serving 1,800 homes is £5.5 – 6.0M. This includes feasibility studies, environmental assessment, planning, design and construction, but excludes costs for a discharge pipeline.

Operating and maintenance costs would be recovered through the standard sewerage charges levied on each property and would provide financial sustainability, in perpetuity.

INPUT DATA FOR NUTRIENT LOAD CALCULATIONS

The nutrient load calculations have been based on NE's revised nutrient load calculator and method issued in March 2022. This method includes assessment of both total phosphorus (TP) and total nitrogen (TN).

The revised method requires the use of site-specific input data for the river catchment, rainfall, soil drainage type and the presence (or absence) of a Nitrate Vulnerable Zone (NVZ). These are used by the calculator to derive site-specific nutrient export rates for the existing and proposed land uses.

The existing land use area has been based on the total area of land parcels B, C & D (92.1 ha) and the classification as arable / cereal has been taken from paragraph 2.1 of the Agricultural Land Classification and Soil Resources Report.

The areas of each future non-urban land use in parcels B, C and D have been based on Scenario 1 detailed in the University of Kent Canterbury Design Team Meeting document dated 27 May 2021. The urban land use has been assumed as the balance of the 92.1 ha area of land parcels B, C & D. The land use areas are presented in **Table 1**.

[3] https://www.ofwat.gov.uk/regulated-companies/markets/nav-market/
[4] https://www.st-connect.co.uk/

Table 1 – Current and Future Land Use Areas (Ha) for the Development (Land Parcels B, C and D)

Land Use	Current (ha)	Future (ha)
Arable / Cereal	92.1*	0.00
Residential Urban Land	0.00	51.70
Greenspace (Parks and Garden)	0.00	1.40
Greenspace (Green Corridors)	0.00	6.08
Greenspace (Amenity Space)	0.00	6.08
Greenspace (Natural & Semi Natural Open Space)	0.00	19.44
Green Space (Sports Pitches)	0.00	4.07
Greenspace (Play)	0.00	1.40
Community Food Growing (Allotments)	0.00	1.82
Total Site Area (Ha)	**92.10**	**92.10**

Note: * This area is likely to include some non-arable land, such as drainage channels etc, and all values will need to be refined as the project progresses and georeferenced masterplans become available for detailed GIS analysis.

Additional input data includes the:

- Number of residential units proposed for the development: 2,000.
- Number of residents per residential unit: 2.3 (advised by Canterbury City Council for other projects).
- Volume of wastewater generated: 120 litres per person per day.

NITROGEN & PHOSPHORUS LOAD CALCULATIONS

Nutrient load calculations have been undertaken for three scenarios:

1. Occupation of all properties prior to Canterbury WWTW's upgrade in 2030 (Pre-2030).
2. Occupation of all properties after Canterbury WWTW's upgrade in 2030 (Post-2030).
3. The use of an on-site WWTW (On-site WWTW).

The calculations have been optimised by taking into account:

- The use of a site-specific percentage impermeable area (PIMP) value of 49.5% for future urban residential land use, rather than NE's default values of 80% for TP and 100% for TN. This significantly reduces the nutrient export rate for this land use and reduces the overall nutrient loads from the development.
- The application of sustainable drainage system (SuDS) nutrient removal efficiencies estimated at 48.2% for TP and 30% for TN in accordance with CIRIA C808[5] and C815[6]. This assumes the SuDS consist of lined dry grassed swales conveying surface water to lined wet ponds for treatment, prior to discharging to a watercourse. These values have been applied to the surface water nutrient load components and have been deducted from the final development nutrient loads.

A summary of the load calculations is provided in Tables 2, 3 and 4 with a comparison of the nutrient loads in Table 5. The full calculations are presented in **Appendix A**.

[5] https://www.ciria.org/ItemDetail?iProductCode=C808F&Category=FREEPUBS
[6] https://www.ciria.org/ItemDetail?iProductCode=C815F&Category=FREEPUBS

Table 2 – Nitrogen and Phosphorus Loads – Canterbury WWTW Pre-2030

Load Element	TP Load (kg/year)	TN Load (kg/year)
Wastewater load (A)	362.91	5,443.69
Future land use load (B)	35.00	389.20
Existing land use load (C)	29.31	1,691.50
Future nutrient load (= A + (B - C)	368.60	4,141.39
Precautionary buffer (20%)	73.72	828.28
Unmitigated future nutrient load	442.32	4,969.66
SuDS nutrient load removal	16.87	116.76
Residual future nutrient load	**425.45**	**4,852.90**

Table 3 – Nitrogen and Phosphorus Loads – Canterbury WWTW Post-2030

Load Element	TP Load (kg/year)	TN Load (kg/year)
Wastewater load (A)	45.36	1,814.56
Future land use load (B)	35.00	389.20
Existing land use load (C)	29.31	1,691.50
Future nutrient load (= A + (B - C)	51.05	512.26
Precautionary buffer (20%)	10.21	102.45
Unmitigated future nutrient load	61.26	614.71
SuDS nutrient load removal	16.87	116.76
Residual future nutrient load	**44.39**	**497.95**

Table 4 –Nitrogen and Phosphorus Loads – On-Site WWTW

Load Element	TP Load (kg/year)	TN Load (kg/year)
Wastewater load (A)	27.22	907.28
Future land use load (B)	35.00	389.20
Existing land use load (C)	29.31	1691.50
Future nutrient load (= A + (B - C)	32.90	-395.02
Precautionary buffer (20%)	6.58	0.00
Unmitigated future nutrient load	39.48	-395.02
SuDS nutrient load removal	16.87	116.76
Residual future nutrient load	**22.61**	**-511.78**

Table 5 – Summary of Residual Nitrogen & Phosphorus Loads for the Three WWTW Scenarios

WWTW Scenario	TP Load (kg/year)	TN Load (kg/year)
Canterbury WWTW Pre-2030	425.45	4,852.90
Canterbury WWTW Post-2030	44.39	497.95
On-site WWTW	22.61	-511.78

The calculations confirm that the proposed development would generate a very large residual nutrient load should all houses be occupied prior to 2030.

However, the development programme indicates that all properties will be occupied after 2030. The upgrade of Canterbury WWTW would therefore reduce the development's nutrient load by around 90%. The residual nutrient loads would still require additional mitigation in the post-2030 scenario.

The use of an on-site WWTW would deliver nitrogen neutrality for the proposed development, and further reduce the residual phosphorus load that would require additional mitigation.

MITIGATION OPTIONS

Additional mitigation would be required to fully mitigate each of the three WWTW scenarios. Potential options are outlined below.

Agricultural Land Conversion – Land Parcel F

Land parcel F may be available for conversion to a low nutrient land use such as woodland or conservation meadow. This would partially mitigate the nutrient loads that would be generated from the proposed development. Using Google imagery and GIS we have estimated that land parcel F consists of, approximately:

- 13.5 ha of lowland grazing.
- 4.7 ha of arable / cereal.

As detailed in the calculations provided in Appendix A, if converted to a low nutrient land use, land parcel F could provide:

- Phosphorus mitigation of 8.16 kg/year.
- Nitrogen mitigation of 145.23 kg/year.

This would not be sufficient to deliver nutrient neutrality for any of the three scenarios. However, it would provide partial mitigation, and would reduce the on-site WWTW scenario residual phosphorus load to 14.45kg/year.

Agricultural Land Conversion – Other Land

The residual nutrient loads requiring additional mitigation, after deducting the mitigation from land parcel F, are detailed in Table 6. This table also presents the area of additional arable land conversion that would be required to mitigate the remaining TP loads (which are much more difficult to mitigate than the TN load). The areas have been based on a typical arable TP export rate of 0.32kg/ha/year, from which is deducted the low nutrient land use TP export rate (0.02kg/ha/year) to derive a beneficial export rate reduction of 0.30kg/ha/year. The residual TP loads for each scenario have been divided by 0.30kg/ha/year to calculate the area of arable land required to be converted to mitigate each scenario.

Table 6 – Areas of Arable Land Conversion required to Mitigate the Three WWTW Scenarios

WWTW Scenario	TP Load (kg/year)	TN Load (kg/year)	Required Area of Arable Conversion to Mitigate Residual TP Load (ha)
Canterbury WWTW Pre-2030	417.29	4,707.67	1,391
Canterbury WWTW Post-2030	36.23	352.72	121
On-site WWTW	14.45	-657.01	48

At a typical cost of approximately £27,000/ha of arable land[7], the mitigation of residual nutrient loads by converting arable land to a low nutrient land use would have a land purchase cost of £1.3M – £37.6M. Additional costs would be incurred for the low nutrient land use creation process and the in-perpetuity management.

Treatment of Existing Foul Flows through an On-site WWTW

The use of an on-site WWTW offers the opportunity to potentially treat existing foul flows from the University campus through the on-site system rather than through Canterbury WWTW. The lower discharge consent limits of an on-site WWTW generate a beneficial differential in nutrient loads compared to Canterbury WWTW.

The per person nutrient loads generated by the three WWTW scenarios are summarised in Table 7 together with the nutrient benefits of diverting existing foul flows from Canterbury WWTW to the on-site WWTW. Detailed calculations are provided in **Appendix A**.

Table 7 – Per Person WWTW Nutrient Loads and Nutrient Benefits of Treating Existing Flows through the On-site WWTW (kg/person/year)

WWTW Scenario	TP Load (kg/person/year)	TN Load (kg/person/year)	TP Benefit (kg/person/year)	TN Benefit (kg/person/year)
On-site WWTW	0.006	0.197	-	-
Canterbury WWTW Pre-2030	0.079	1.183	0.073	0.986
Canterbury WWTW Post-2030	0.010	0.394	0.004	0.197

Diverting existing foul flows that are currently discharged to Canterbury WWTW to an on-site WWTW could generate considerable nutrient benefits of 0.073kgTP/person/year and 0.986kgTN/person/year but only before the upgrade of Canterbury WWTW by 2030. The nutrient benefit of this approach is negligible after Canterbury WWTW is upgraded.

Table 8 presents the on-site WWTW residual nutrient loads requiring additional mitigation, after deducting the mitigation provided by land parcel F. This table also presents the number of existing occupants on the University campus whose (pre-2030) foul flows would be required to be diverted from Canterbury WWTW to the on-site WWTW to fully mitigate the on-site WWTW scenario. This has been calculated by dividing the TP load of 14.45kg/year by 0.073kgTP/person/year.

[7] https://rural.struttandparker.com/article/english-estates-farmland-market-review-spring-2023/ One hectare is 2.47 acres.

Table 8 – Number of Existing Occupants' Pre-2030 Foul Flows Diverted to On-Site WWTW to Mitigate the On-Site WWTW Scenario

WWTW Scenario	TP Load (kg/year)	TN Load (kg/year)	Number of Existing Occupants' Foul Flows Diverted to the On-site WWTW
On-site WWTW	14.45	-657.01	198

Diverting the existing foul flows from just 200 occupants to the on-site WWTW would fully mitigate the on-site WWTW scenario. Diverting additional foul flows could deliver a significant nutrient surplus that may be traded with other developers in the catchment, or used to mitigate future additional development on the campus or other University landholdings in the catchment.

Nutrient Mitigation Credits

Natural England is developing a nutrient mitigation scheme (NMS) in the Stodmarsh catchment. Given the difficulty and expense of mitigating TP in any other way, the NMS is likely to consist of construction of a wetland. A procurement process has been undertaken for an initial feasibility stage. Assuming that a suitable site (or sites) has been identified, the detailed design and construction stage is likely to take upwards of 18 to 24 months. Mitigation credits may therefore be available in 2025 or later.

In other catchments where phosphorus mitigation credits have been generated (primarily by the private sector), they have ranged in price from £14,000/kgTP to £75,000/kgTP, with a typical price of £50,000/kgTP.

As the number of mitigation credits is often limited, and usually significantly exceeded by demand, NE is likely to sell them using a prioritisation system. In NE's NMS in the Tees catchment, priority has been given to small and medium enterprises, smaller sites and those schemes that are more progressed through the planning process. The likelihood of a large development obtaining the required number of mitigation credits is therefore reduced.

The mitigation cost could vary widely depending on the cost per credit, estimated below at £14k – £50k/kgTP:

- Canterbury WWTW Pre-2030: £5.9M – £20.9M.
- Canterbury WWTW Post-2030: £0.5M – £1.8M.
- On-site WWTW: £0.2M – £0.7M.

The cost of mitigating the Canterbury WWTW post-2030 scenario is low compared to the indicative £5.5M – £6.0M cost of an on-site WWTW plus the extra mitigation of up to £0.7M. However, the benefit of the on-site WWTW scenario is the potential to generate additional credits that could be used to mitigate other University developments.

CONCLUSIONS

The first occupation of all homes will occur after Canterbury WWTW is upgraded by 2030 (although this could be earlier). As detailed in Table 5, this scenario would generate residual nutrient loads of 44.39kgTP/year and 497.95kgTN/year.

These would be mitigated through the delivery of one or more of the following mitigation approaches:

1. The purchase of Natural England Nutrient Mitigation Scheme credits, at a cost of £2.22M (based on a credit cost of £50,000 per kilogram of TP). Typically, the mitigation of a scheme through the purchase of TP credits would also fully mitigate the TN load although this would need to be confirmed once the scheme is operational.

2. The conversion of existing agricultural land to a low nutrient land use, potentially in conjunction with Options No 1 and/or 3.
3. The use of an on-site WWTW with the residual TP and TN loads fully mitigated in conjunction with Options 1 and/or 2.

Based upon the strategy identified and options presented above the proposed development can achieve nutrient neutrality.

APPENDIX A – NUTRIENT LOAD CALCULATIONS

Existing Landuse Areas

Parcel	Area (ha)	Existing Landuse	Future Landuse
A	5.5	Amenity Grassland and Woodland	Amenity Grassland and Woodland
B, C & D	92.1	Arable	Proposed Development Site
E	7.9	Arable	University Sports Pitches - Open Urban
F	4.7	Arable / Cereal	Phosphorus Mitigation Area
	13.5	Lowland Grazing / Permanent Grass	Phosphorus Mitigation Area
Total	123.7		

2 Site and climatic conditions

General features, land form and drainage

2.1 The areas surveyed collectively extend to around 123.5ha of agricultural land primarily in arable use. Area A is under permanent grass and is cut for hay annually.

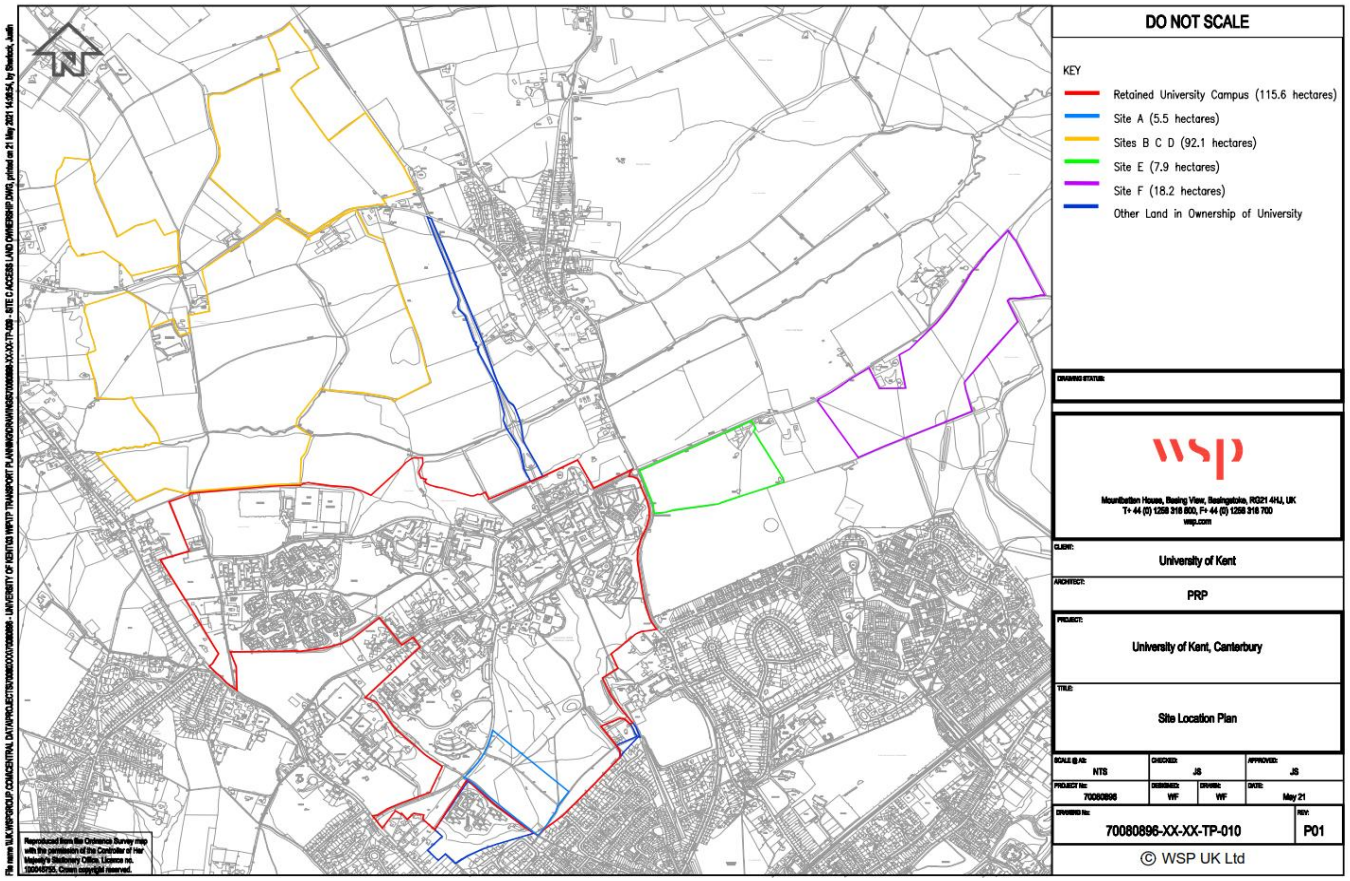
READING AGRICULTURAL CONSULTANTS

April 2021

WSP UK Limited
Agricultural Land Classification and Soil Resources

at
University of Kent, Canterbury Campus

Beechwood Court,
Long Toll, Woodcote,
RG8 0RR
01491 684 233
www.reading-ag.com



Future Landuse based on Scenario 1

Landuse	Landuse Classification	Area (ha)
Urban	Residential Urban Land	51.79
Sports Pitches	Greenspace	4.07
Parks and Garden	Greenspace	1.40
Green Corridors	Greenspace	6.08
Amenity Space	Greenspace	6.08
Natural and Semi Natural Open Space	Greenspace	19.44
Play	Greenspace	1.40
Allotments	Community Food Growing	1.82
Total Area		92.10

Totals	Residential Urban Land	51.79
	Greenspace	38.49
	Community Food Growing	1.82
	Total	92.10

The University of Kent Canterbury

Open Space Layout and Provision
SCENARIO 1 -on site sports

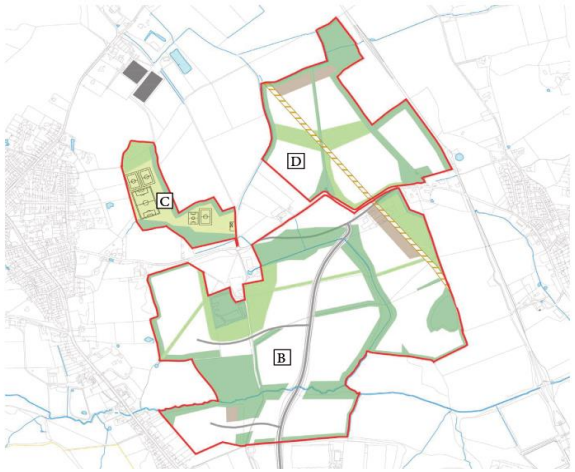
Key

- Site Boundary
- Natural and Semi Natural Green Spaces and Green Corridors Retained
- Amenity Space, Parks & Gardens, Play Areas
- Allotments
- Sport
- Proposed Roads

Assumptions:
- 2000 Homes (4680 people)
- Site C used for sports
- gas easement excluded from open space calculations

Note: Diagram has been prepared to test the potential to accomodate spacial requirements and should not be considered a design

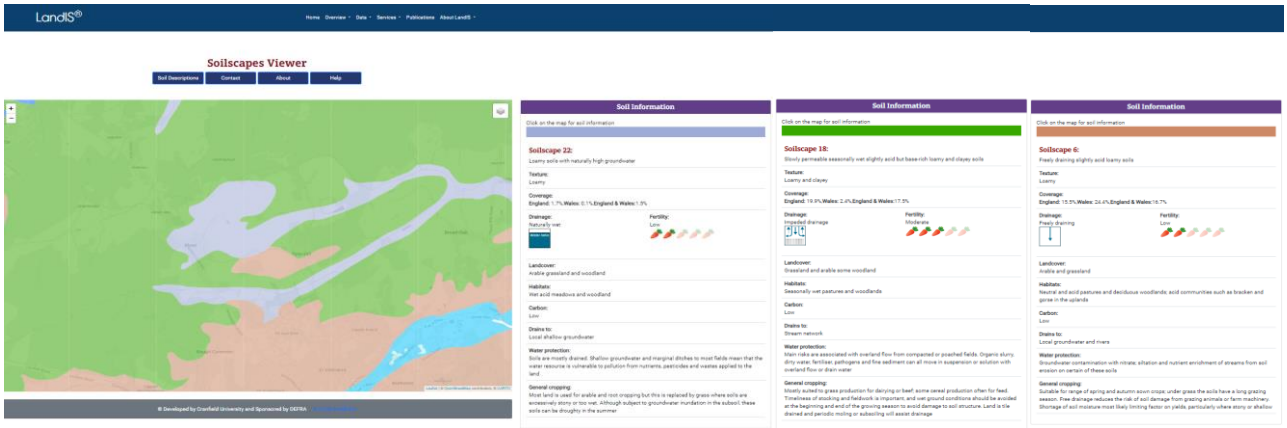
TYPE	Option 1	Minimum required area
Parks and Gardens	1.404Ha	1.404Ha
Green corridors	6.084Ha	6.084Ha
Amenity Space	6.084Ha	6.084Ha
Natural and semi natural open space	19.440Ha	19.440Ha
Sports pitches	4.070Ha	4.070Ha
Allotments	1.820Ha	1.820Ha
Play	1.404Ha	1.404Ha
TOTAL on site	40.306Ha	40.306Ha

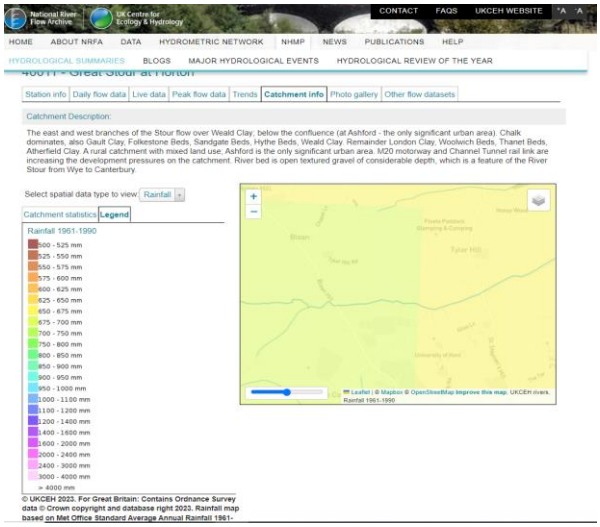


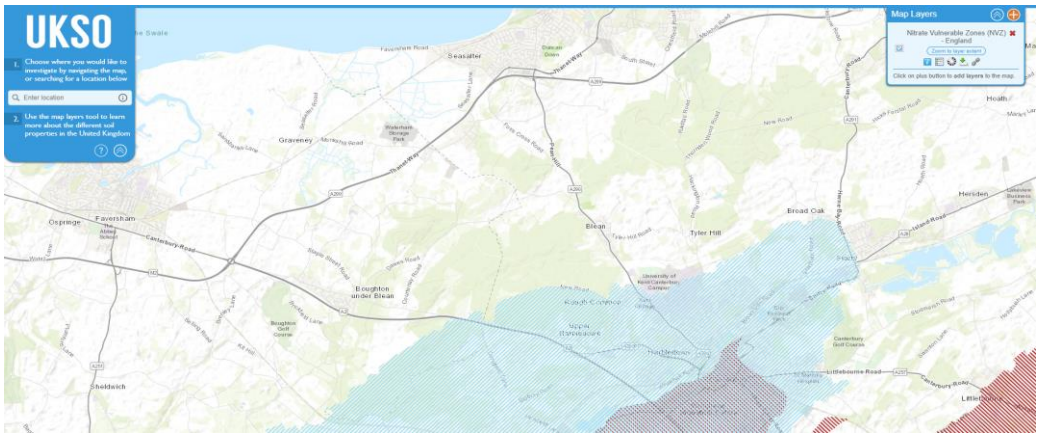
Scenario 1 - Illustrative diagram

Catchment. Soils. Rainfall & NVZ Data

Catchment: Stour Lower
Soils: Impeded drainage to naturally wet, with a small area of free draining. Natural England classification is 'variable'.
Rainfall: 675 - 700mm
NVZ: No







Urban P Export Rate & PIMP - Derivation of Site-Specific Total Phosphorus Export Coefficients for Three Urban Landuses

Table A.3: EMCs for nitrogen and phosphorus for three key types of urban land use.

Land use	Nitrogen event mean concentration (mg N/l)	Phosphorus event mean concentration (mg P/l)
Residential	2.85	0.41
Commercial/industrial	1.52	0.30
Open urban land	1.68	0.22

The EMCs were combined with a standard method for calculating urban runoff which requires only rainfall as an input. The HR Wallingford Modified Rational Method was used, as shown in equation 1.

Equation 1

$$L = R * Pr$$

Where:

L = annual average runoff (mm)

R = annual average rainfall (mm)

Pr = percentage runoff (%)

$$Pr = 0.829 * PIMP + 0.078 * U - 20.7$$

$PIMP$ = the percentage of land that is impervious (whole number)

U = catchment wetness index. Calculated by (use 41 if rainfall over 760 mm):

$$U = -129.5 + (0.424 * R) - (2.28 * 10^{-4} * R^2) - (4.56 * 10^{-8} * R^3)$$

For phosphorus, the value for PIMP was set as 80%, as this has been suggested as the proportion of impervious surfaces once urban creep (the paving over of pervious surfaces) reaches a maximum. The use of an 80% PIMP value, while high, accounts for the potential increases in impervious surfaces that may occur over the lifetime of a development. Research has also suggested that non-paved gardens account for between 19-27% of the entire urban area. As gardens are the primary type of permeable surface within residential areas, the use of an 80% PIMP value is considered to be precautionary as an area with 19% coverage by non-paved gardens would indicate that around 80% of the remaining urban residential area would be impermeable surfaces.

Values based on 80% PIMP specified by Natural England

Variable	Residential Urban			Commercial/Industrial			Open Urban		
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
L - Annual average runoff (mm)	328.36	341.15		328.36	341.15		328.36	341.15	
R - Annual average rainfall (mm)	675	700		675	700		675	700	
Pr - Percentage runoff (%)	48.65	48.74		48.65	48.74		48.65	48.74	
PIMP - Percentage of land that is impervious (%)	80.00	80.00		80.00	80.00		80.00	80.00	
U - Catchment wetness index (use 41 if rainfall > 760mm)	38.79	39.94		38.79	39.94		38.79	39.94	
Annual runoff (mm)	328.36	341.15		328.36	341.15		328.36	341.15	
Annual runoff (m)	0.33	0.34		0.33	0.34		0.33	0.34	
Volume per hectare (m3/ha/yr)	3283.60	3411.47		3283.60	3411.47		3283.60	3411.47	
TP EMC (mg/l)	0.41	0.41		0.3	0.3		0.22	0.22	
TP EMC (kg/l)	0.0004	0.0004		0.0003	0.0003		0.0002	0.0002	
TP Export Rate (kg/ha/yr)	1.35	1.40	1.37	0.99	1.02	1.00	0.72	0.75	0.74

Site-specific values

The development consists of 2,000 homes in a developable area of 51.79ha gives a development density of 39units/ha.	
The development density of 39units/ha is considered to be medium density, which has typical PIMP of 45%.	
Urban creep is accounted for by addition of 10% of the total PIMP to the site-specific value.	
Site-specific PIMP:	45.00%
10% urban creep uplift:	4.5%
Site specific mean PIMP for the residential landuse:	49.50%

Variable	Residential Urban			Commercial/Industrial			Open Urban		
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
L - Annual average runoff (mm)	157.69	164.16		328.36	341.15		328.36	341.15	
R - Annual average rainfall (mm)	675	700		675	700		675	700	
Pr - Percentage runoff (%)	23.36	23.45		48.65	48.74		48.65	48.74	
PIMP - Percentage of land that is impervious (%)	49.5	49.5		80	80		80	80	
U - Catchment wetness index (use 41 if rainfall > 760mm)	38.79	39.94		38.79	39.94		38.79	39.94	
Annual runoff (mm)	157.69	164.16		328.36	341.15		328.36	341.15	
Annual runoff (m)	0.16	0.16		0.33	0.34		0.33	0.34	
Volume per hectare (m3/ha/yr)	1576.89	1641.55		3283.60	3411.47		3283.60	3411.47	
TP EMC (mg/l)	0.41	0.41		0.3	0.3		0.22	0.22	
TP EMC (kg/l)	0.0004	0.0004		0.0003	0.0003		0.0002	0.0002	
TP Export Rate (kg/ha/yr)	0.65	0.67	0.66	0.99	1.02	1.00	0.72	0.75	0.74

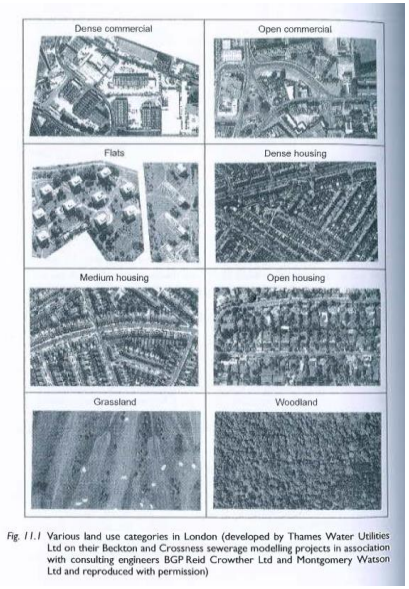


Fig. 11.1 Various land use categories in London (developed by Thames Water Utilities Ltd on their Beckton and Crossness sewerage modelling projects in association with consulting engineers BGP Reid Crowther Ltd and Montgomery Watson Ltd and reproduced with permission)

Table 11.2 Approximate percentage imperviousness of land-use types in London

Land-use category	*PIMP*
Dense commercial	100
Open commercial	65
Dense housing	55
Flats	50
Medium housing	45
Open housing	35
Grassland	<10
Woodland	<10

Urban N Export Rate & PIMP - Derivation of Site-Specific Total Nitrogen Export Coefficients for Three Urban Landuses

Table A.3: EMCs for nitrogen and phosphorus for three key types of urban land use.

Land use	Nitrogen event mean concentration (mg N/l)	Phosphorus event mean concentration (mg P/l)
Residential	2.85	0.41
Commercial/industrial	1.52	0.30
Open urban land	1.68	0.22

The EMCs were combined with a standard method for calculating urban runoff which requires only rainfall as an input. The HR Wallingford Modified Rational Method was used, as shown in equation 1.

Equation 1

$$L = R * Pr$$

Where:

L = annual average runoff (mm)

R = annual average rainfall (mm)

Pr = percentage runoff (%)

$$Pr = 0.829 * PIMP + 0.078 * U - 20.7$$

$PIMP$ = the percentage of land that is impervious (whole number)

U = catchment wetness index. Calculated by (use 41 if rainfall over 760 mm):

$$U = -129.5 + (0.424 * R) - (2.28 * 10^{-4} * R^2) - (4.56 * 10^{-8} * R^3)$$

For phosphorus, the value for PIMP was set as 80%, as this has been suggested as the proportion of impervious surfaces once urban creep (the paving over of pervious surfaces) reaches a maximum. The use of an 80% PIMP value, while high, accounts for the potential increases in impervious surfaces that may occur over the lifetime of a development. Research has also suggested that non-paved gardens account for between 19-27% of the entire urban area. As gardens are the primary type of permeable surface within residential areas, the use of an 80% PIMP value is considered to be precautionary as an area with 19% coverage by non-paved gardens would indicate that around 80% of the remaining urban residential area would be impermeable surfaces.

Values based on 100% PIMP specified by Natural England

Variable	Residential Urban			Commercial/Industrial			Open Urban		
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
L - Annual average runoff (mm)	440.27	457.21		440.27	457.21		440.27	457.21	
R - Annual average rainfall (mm)	675	700		675	700		675	700	
Pr - Percentage runoff (%)	65.23	65.32		65.23	65.32		65.23	65.32	
PIMP - Percentage of land that is impervious (%)	100.00	100.00		100.00	100.00		100.00	100.00	
U - Catchment wetness index (use 41 if rainfall > 760mm)	38.79	39.94		38.79	39.94		38.79	39.94	
Annual runoff (mm)	440.27	457.21		440.27	457.21		440.27	457.21	
Annual runoff (m)	0.44	0.46		0.44	0.46		0.44	0.46	
Volume per hectare (m3/ha/yr)	4402.75	4572.07		4402.75	4572.07		4402.75	4572.07	
TN EMC (mg/l)	2.85	2.85		1.52	1.52		1.68	1.68	
TN EMC (kg/l)	0.0029	0.0029		0.0015	0.0015		0.0017	0.0017	
TN Export Rate (kg/ha/yr)	12.55	13.03	12.79	6.69	6.95	6.82	7.40	7.68	7.54

Site-specific values

The development consists of 2,000 homes in a developable area of 51.79ha gives a development density of 39units/ha.	
The development density of 39units/ha is considered to be medium density, which has typical PIMP of 45%.	
Urban creep is accounted for by addition of 10% of the total PIMP to the site-specific value.	
Site-specific PIMP:	45.00%
10% urban creep uplift:	4.5%
Site specific mean PIMP for the residential landuse:	49.50%

Variable	Residential Urban			Commercial/Industrial			Open Urban		
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
L - Annual average runoff (mm)	157.69	164.16		328.36	341.15		328.36	341.15	
R - Annual average rainfall (mm)	675	700		675	700		675	700	
Pr - Percentage runoff (%)	23.36	23.45		48.65	48.74		48.65	48.74	
PIMP - Percentage of land that is impervious (%)	49.5	49.5		80	80		80	80	
U - Catchment wetness index (use 41 if rainfall > 760mm)	38.79	39.94		38.79	39.94		38.79	39.94	
Annual runoff (mm)	157.69	164.16		328.36	341.15		328.36	341.15	
Annual runoff (m)	0.16	0.16		0.33	0.34		0.33	0.34	
Volume per hectare (m3/ha/yr)	1576.89	1641.55		3283.60	3411.47		3283.60	3411.47	
TN EMC (mg/l)	2.85	2.85		1.52	1.52		1.68	1.68	
TN EMC (kg/l)	0.0029	0.0029		0.0015	0.0015		0.0017	0.0017	
TN Export Rate (kg/ha/yr)	4.49	4.68	4.59	4.99	5.19	5.09	5.52	5.73	5.62

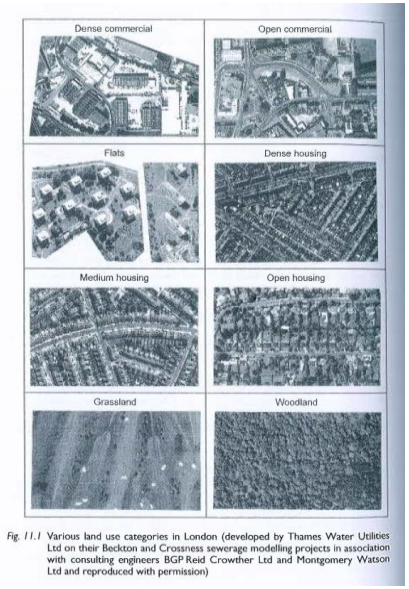


Fig. 11.1 Various land use categories in London (developed by Thames Water Utilities Ltd on their Beckton and Crossness sewerage modelling projects in association with consulting engineers BGP Reid Crowther Ltd and Montgomery Watson Ltd and reproduced with permission)

Table 11.2 Approximate percentage imperviousness of land-use types in London

Land-use category	*PIMP*
Dense commercial	100
Open commercial	65
Dense housing	55
Flats	50
Medium housing	45
Open housing	35
Grassland	<10
Woodland	<10

CIRIA C808 SuDS P Removal Analysis

1. CIRIA C808 states that 100% removal can be achieved for all runoff that can be infiltrated. A small area of the development has freely draining soils that may support this approach, but it has not been included in this assessment.

2. As the majority of the site is underlain by naturally wet soils, or those with impeded drainage, the analysis is based on an assumption that the SuDS treatment train will consist of dry grassed swales (lined, to prevent nitrogen infilration as required by CIRIA C815) leading to lined wet ponds prior to offsite discharge to a watercourse.

3. C808 states that total phosphorus consists of 55% particulate P and 45% dissolved P and provides removal efficiencies for a range of SuDS features.

4. A nominal TP load of 1kg/year has been analsyed to calculated the TP removal efficiency of a swale leading to a wet pond. The removal efficiency could be increased if the SuDS treatment train consists of additional treatment features.

Phosphorus Form	**Nominal P Load (kg/year)**	**SuDS P Removal (%) Wet Pond**	**Output P Load (kg/year)**	**SuDS P Removal (%) Dry Grassed Swale**	**Output P Load (kg/year)**
Particulate P	0.55	38	0.341	14	0.293
Dissolved P	0.45	50	0.225	0	0.225
Total P	1.00				0.518
TP Removal Efficiency					**48.2%**

CIRIA C815 SuDS N Removal Analysis

1. CIRIA C815 states that nitrogen can not be removed through infiltration. All SuDS treatment features must therefore be lined to prevent infiltration.

2. The analysis is based on an assumption that the SuDS treatment train will therefore consist of dry grassed swales leading to lined wet ponds prior to offsite discharge to a watercourse.

3. CIRIA C815 specifies that this SuDS treatment train can achieve an N removal efficiency of **30%** if the features are designed and constructed in accordance with CIRIA C753 The SuDS Manual.

University of Kent Nutrient Neutrality Calculation - Pre-2030

Notes

1. The development will discharge foul flows to Canterbury WWTW.
2. Canterbury WWTW has a current total phosphorus discharge consent limit of 2mg/l. It does not have a total nitrogen discharge consent limit and so a default value of 27mg/l has been used as required by Natural England's guidance.
3. Natural England's nutrient neutrality calculation guidance specifies the use of 90% of a WWTW permit consent limit and this has been applied to the TP permit limit.
4. The existing land use areas have been taken from the Reading Agricultural Consultants report summarised in the Existing Landuse tab.
5. The future land use areas have been taken from the illustrative Masterplan Scenario 1 detailed in the Future Landuse tab.
6. A SUDS total phosphorus removal efficiency of 48.2% and a total nitrogen removal efficiency of 30% have been adopted in general accordance with CIRIA C808 and CIRIA C815 based on a SuDS treatment train of lined grassed swales leading to lined wet ponds then offsite discharge to a watercourse.
7. The future urban land use nutrient export rates have been optimised based on a site-specific PIMP value for a medium density development (39 units/hectare) as detailed in the Urban P and N Export Rate & PIMP tabs
8. The occupancy rate of 2.3/unit has been previously advised by Canterbury City Council for other projects in the city.
9. The wastewater volume has been increased to 120lppd based on Natural England's revised calculation method. There may be an opportunity to reduce this to 110lppd with agreement from CCC.

10. The underlying drainage ranges from naturally wet to impeded drainage with a small area of freely draining. The calculations have been assessed on Natural England's classification as 'variable' which generates a TP export rate of 0.32kg/ha/year for cereals. The export rate is 0.55kg/ha/year for areas that have impeded drainage, and just 0.05kg/ha/year for freely draining. Once the masterplan is finalised it may be beneficial to accurately map soil drainage to calculate more accurate existing land use nutrient loads to offset against the development's loads.

LOAD CALCULATION

Site Characteristics

Total site area (ha)	92.10
Number of homes	2000
No. of residents per unit (No.)	2.30
Wastewater volume (litres/person/day)	120
Wastewater generated (litres/day)	552000

Wastewater Load

	Total Phosphorus	Total Nitrogen
WWTW consent limit (mg/l)	2.00	27.00
90% of WWTW consent limit (mg/l)	1.80	
Total nutrient load from wastewater (mg/day)	993600	14904000
Total nutrient load from wastewater (mg/yr)	362912400	5443686000
Total nutrient load from wastewater (kg/yr)	**362.91**	**5443.69**

Existing Landuse Load

		Nutrient Export Rate (kg/ha/year)		Total Nutrient Load (kg/year)	
Existing Landuse	**Area (ha)**	**Total Phosphorus**	**Total Nitrogen**	**Total Phosphorus**	**Total Nitrogen**
Arable / cereal	92.10	0.32	18.37	29.31	1691.50
Total	**92.10**	**-**	**-**	**29.31**	**1691.50**

Future Landuse Load

		Nutrient Export Rate (kg/ha/year)		Total Nutrient Load (kg/year)	
Future Landuse	**Area (ha)**	**Total Phosphorus**	**Total Nitrogen**	**Total Phosphorus**	**Total Nitrogen**
Residential Urban Land	51.79	0.66	4.59	34.17	237.54
Greenspace	38.49	0.02	3.00	0.77	115.46
Community Food Growing	1.82	0.03	19.89	0.05	36.20
Total	**92.1**	-	-	**35.00**	**389.20**

Unmitigated Future Nutrient Load

Load Contribution	**Total Phosphorus Load (kg/year)**	**Total Nitrogen Load (kg/year)**
Wastewater load (A)	362.91	5443.69
Future landuse load (B)	35.00	389.20
Existing landuse load (C)	29.31	1691.50
Future nutrient load (= A + (B - C)	368.60	4141.39
Precautionary buffer (20%)	73.72	828.28
Unmitigated future nutrient load	**442.32**	**4969.66**

SUDS Mitigation (refer CIRIA C808 C815 SuDS Removal tab for details)

	Total Phosphorus	Total Nitrogen
Total nutrient load from urban land draining to the SUDS (kg/year)	35.00	389.20
Calculated SUDS removal efficiency (%)	48.2%	30.0%
Total nutrient reduction (kg/year)	16.87	116.76

Mitigated Future Nutrient Load

Load Contribution	**Total Phosphorus Load (kg/year)**	**Total Nitrogen Load (kg/year)**
Unmitigated future nutrient load	442.32	4969.66
SUDS nutrient reduction	16.87	116.76
Mitigated future nutrient load	**425.45**	**4852.90**

University of Kent Nutrient Neutrality Calculation - Post-2030

Notes

1. The development will discharge foul flows to Canterbury WWTW.
2. Canterbury WWTW will have a post-2030 total phosphorus discharge consent limit of 0.25mg/l and a total nitrogen discharge consent limit of 10mg/l as required by the Levelling Up and Regeneration Act (LURA).
3. Natural England's nutrient neutrality calculation guidance specifies the use of 90% of a WWTW permit consent limit and this has been applied to the TP and TN permit limits.
4. The existing land use areas have been taken from the Reading Agricultural Consultants report summarised in the Existing Landuse tab.
5. The future land use areas have been taken from the illustrative Masterplan Scenario 1 detailed in the Future Landuse tab.
6. A SUDS total phosphorus removal efficiency of 48.2% and a total nitrogen removal efficiency of 30% have been adopted in general accordance with CIRIA C808 and CIRIA C815 based on a SuDS treatment train of lined grassed swales leading to lined wet ponds then offsite discharge to a watercourse.
7. The future urban land use nutrient export rates have been optimised based on a site-specific PIMP value for a medium density development (39 units/hectare) as detailed in the Urban P and N Export Rate & PIMP tabs
8. The occupancy rate of 2.3/unit has been previously advised by Canterbury City Council for other projects in the city.
9. The wastewater volume has been increased to 120lppd based on Natural England's revised calculation method. There may be an opportunity to reduce this to 110lppd with agreement from CCC.

10. The underlying drainage ranges from naturally wet to impeded drainage with a small area of freely draining. The calculations have been assessed on Natural England's classification as 'variable' which generates a TP export rate of 0.32kg/ha/year for cereals. The export rate is 0.55kg/ha/year for areas that have impeded drainage, and just 0.05kg/ha/year for freely draining. Once the masterplan is finalised it may be beneficial to accurately map soil drainage to calculate more accurate existing land use nutrient loads to offset against the development's loads.

LOAD CALCULATION

Site Characteristics

Total site area (ha)	92.10
Number of homes	2000
No. of residents per unit (No.)	2.30
Wastewater volume (litres/person/day)	120
Wastewater generated (litres/day)	552000

Wastewater Load

	Total Phosphorus	Total Nitrogen
WWTW consent limit (mg/l)	0.25	10.00
90% of WWTW consent limit (mg/l)	0.23	9.00
Total nutrient load from wastewater (mg/day)	124200	4968000
Total nutrient load from wastewater (mg/yr)	45364050	1814562000
Total nutrient load from wastewater (kg/yr)	**45.36**	**1814.56**

Existing Landuse Load

		Nutrient Export Rate (kg/ha/year)		Total Nutrient Load (kg/year)	
Existing Landuse	**Area (ha)**	**Total Phosphorus**	**Total Nitrogen**	**Total Phosphorus**	**Total Nitrogen**
Arable / cereal	92.10	0.32	18.37	29.31	1691.50
Total	**92.10**	**-**	**-**	**29.31**	**1691.50**

Future Landuse Load

		Nutrient Export Rate (kg/ha/year)		Total Nutrient Load (kg/year)	
Future Landuse	**Area (ha)**	**Total Phosphorus**	**Total Nitrogen**	**Total Phosphorus**	**Total Nitrogen**
Residential Urban Land	51.79	0.66	4.59	34.17	237.54
Greenspace	38.49	0.02	3.00	0.77	115.46
Community Food Growing	1.82	0.03	19.89	0.05	36.20
Total	**92.1**	-	-	**35.00**	**389.20**

Unmitigated Future Nutrient Load

Load Contribution	**Total Phosphorus Load (kg/year)**	**Total Nitrogen Load (kg/year)**
Wastewater load (A)	45.36	1814.56
Future landuse load (B)	35.00	389.20
Existing landuse load (C)	29.31	1691.50
Future nutrient load (= A + (B - C)	51.05	512.26
Precautionary buffer (20%)	10.21	102.45
Unmitigated future nutrient load	**61.26**	**614.71**

SUDS Mitigation (refer CIRIA C808 C815 SuDS Removal tab for details)

	Total Phosphorus	Total Nitrogen
Total nutrient load from urban land draining to the SUDS (kg/year)	35.00	389.20
Calculated SUDS removal efficiency (%)	48.2%	30.0%
Total nutrient reduction (kg/year)	16.87	116.76

Mitigated Future Nutrient Load

Load Contribution	**Total Phosphorus Load (kg/year)**	**Total Nitrogen Load (kg/year)**
Unmitigated future nutrient load	61.26	614.71
SUDS nutrient reduction	16.87	116.76
Mitigated future nutrient load	**44.39**	**497.95**

University of Kent Nutrient Neutrality Calculation - On-site WWTW

Notes

1. The development will discharge foul flows to an on-site WWTW.
2. the on-site WWTW will have a total phosphorus discharge consent limit of 0.15mg/l and a total nitrogen discharge consent limit of 5mg/l.
3. Natural England's nutrient neutrality calculation guidance specifies the use of 90% of a WWTW permit consent limit and this has been applied to the TP and TN permit limits.
4. The existing land use areas have been taken from the Reading Agricultural Consultants report summarised in the Existing Landuse tab.
5. The future land use areas have been taken from the illustrative Masterplan Scenario 1 detailed in the Future Landuse tab.
6. A SUDS total phosphorus removal efficiency of 48.2% and a total nitrogen removal efficiency of 30% have been adopted in general accordance with CIRIA C808 and CIRIA C815 based on a SuDS treatment train of lined grassed swales leading to lined wet ponds then offsite discharge to a watercourse.
7. The future urban land use nutrient export rates have been optimised based on a site-specific PIMP value for a medium density development (39 units/hectare) as detailed in the Urban P and N Export Rate & PIMP tabs
8. The occupancy rate of 2.3/unit has been previously advised by Canterbury City Council for other projects in the city.
9. The wastewater volume has been increased to 120lppd based on Natural England's revised calculation method. There may be an opportunity to reduce this to 110lppd with agreement from CCC.

10. The underlying drainage ranges from naturally wet to impeded drainage with a small area of freely draining. The calculations have been assessed on Natural England's classification as 'variable' which generates a TP export rate of 0.32kg/ha/year for cereals. The export rate is 0.55kg/ha/year for areas that have impeded drainage, and just 0.05kg/ha/year for freely draining. Once the masterplan is finalised it may be beneficial to accurately map soil drainage to calculate more accurate existing land use nutrient loads to offset against the development's loads.

LOAD CALCULATION

Site Characteristics

Total site area (ha)	92.10
Number of homes	2000
No. of residents per unit (No.)	2.30
Wastewater volume (litres/person/day)	120
Wastewater generated (litres/day)	552000

Wastewater Load

	Total Phosphorus	Total Nitrogen
WWTW consent limit (mg/l)	0.15	5.00
90% of WWTW consent limit (mg/l)	0.14	4.50
Total nutrient load from wastewater (mg/day)	74520	2484000
Total nutrient load from wastewater (mg/yr)	27218430	907281000
Total nutrient load from wastewater (kg/yr)	**27.22**	**907.28**

Existing Landuse Load

		Nutrient Export Rate (kg/ha/year)		Total Nutrient Load (kg/year)	
Existing Landuse	**Area (ha)**	**Total Phosphorus**	**Total Nitrogen**	**Total Phosphorus**	**Total Nitrogen**
Arable / cereal	92.10	0.32	18.37	29.31	1691.50
Total	**92.10**	**-**	**-**	**29.31**	**1691.50**

Future Landuse Load

		Nutrient Export Rate (kg/ha/year)		Total Nutrient Load (kg/year)	
Future Landuse	**Area (ha)**	**Total Phosphorus**	**Total Nitrogen**	**Total Phosphorus**	**Total Nitrogen**
Residential Urban Land	51.79	0.66	4.59	34.17	237.54
Greenspace	38.49	0.02	3.00	0.77	115.46
Community Food Growing	1.82	0.03	19.89	0.05	36.20
Total	**92.1**	-	-	**35.00**	**389.20**

Unmitigated Future Nutrient Load

Load Contribution	**Total Phosphorus Load (kg/year)**	**Total Nitrogen Load (kg/year)**
Wastewater load (A)	27.22	907.28
Future landuse load (B)	35.00	389.20
Existing landuse load (C)	29.31	1691.50
Future nutrient load (= A + (B - C)	32.90	-395.02
Precautionary buffer (20%)	6.58	0.00
Unmitigated future nutrient load	**39.48**	**-395.02**

SUDS Mitigation (refer CIRIA C808 C815 SuDS Removal tab for details)

	Total Phosphorus	Total Nitrogen
Total nutrient load from urban land draining to the SUDS (kg/year)	35.00	389.20
Calculated SUDS removal efficiency (%)	48.2%	30.0%
Total nutrient reduction (kg/year)	16.87	116.76

Mitigated Future Nutrient Load

Load Contribution	**Total Phosphorus Load (kg/year)**	**Total Nitrogen Load (kg/year)**
Unmitigated future nutrient load	39.48	-395.02
SUDS nutrient reduction	16.87	116.76
Mitigated future nutrient load	**22.61**	**-511.78**

Nutrient Mitigation Available from Land Parcel F

Soilscape 18 impeded drainage

Existing Nutrient Loads

Landuse	Area (ha)	P Export Rate (kg/ha/yr)	N Export Rate (kg/ha/yr)	P Load (kg/yr)	N Load (kg/yr)
Arable/ Cereal	4.7	0.55	20.17	2.59	94.80
Lowland Grazing / Permanent Grass	13.5	0.44	7.78	5.94	105.03
Total				**8.53**	**199.83**

Future Nutrient Loads

Landuse	Area (ha)	P Export Rate (kg/ha/yr)	N Export Rate (kg/ha/yr)	P Load (kg/yr)	N Load (kg/yr)
Woodland / Conservation Meadow	18.2	0.02	3.00	**0.364**	**54.60**

Available Nutrient Mitigation

	TP	TN
Existing Nutrient Load (kg/year)	8.53	199.83
Future Nutrient Load (kg/year)	0.36	54.60
Available Nutrient Mitigation (kg/year)	**8.16**	**145.23**

Nutrient Mitigation Available from Treating Existing Foul Flows through an On-site WWTW

Notes

1. This analysis calculates the mitigation that could be generated by connecting existing residential properties into an on-site WWTW.
2. The analysis is based on a per person approach so that student halls of residence with varying occupancy rates can be considered - but the void rate would need to be applied.
3. The analysis indicates that connecting existing foul flows into the on-site WWTW prior to 2030 would deliver mitigation of 0.073kgTP/person/year and 0.986kgTN/person/year.

4. Connecting existing foul flows into the on-site WWTW after 2030 would deliver lower mitigation of 0.004kgTP/person/year and 0.197kgTN/person/year.

Occupancy	1
Wastewater generated (litres/person/day)	120
Wastewater generated (litres/day)	120

Pre-2030 and Post-2030 Wastewater Nutrient Loads

	Canterbury WWTW Pre-2030		Canterbury WWTW Post-2030	
	Total Phosphorus	**Total Nitrogen**	**Total Phosphorus**	**Total Nitrogen**
WWTW consent limit (mg/l)	2.00	27.00	0.25	10.00
90% of WWTW consent limit (mg/l)	1.80		0.23	9.00
Total nutrient load from wastewater (mg/person/day)	216	3240	27	1080
Total nutrient load from wastewater (mg/person/yr)	78894	1183410	9862	394470
Total nutrient load from wastewater (kg/person/yr)	**0.079**	**1.183**	**0.010**	**0.394**

On-site WWTW Nutrient Loads

	On-site WWTW	
	Total Phosphorus	**Total Nitrogen**
WWTW consent limit (mg/l)	0.15	5.00
90% of WWTW consent limit (mg/l)	0.135	4.500
Total nutrient load from wastewater (mg/person/day)	16	540
Total nutrient load from wastewater (mg/person/yr)	5917	197235
Total nutrient load from wastewater (kg/person/yr)	**0.006**	**0.197**

Available Nutrient Mitigation

	Canterbury WWTW Pre-2030		Canterbury WWTW Post-2030	
	Total Phosphorus	**Total Nitrogen**	**Total Phosphorus**	**Total Nitrogen**
Existing nutrient load from wastewater (kg/person/yr)	0.079	1.183	0.010	0.394
On-site WWTW nutrient load(kg/person/yr)	0.006	0.197	0.006	0.197
Available mitigation (kg/person/year)	**0.073**	**0.986**	**0.004**	**0.197**

Mountbatten House
Basing View
Basingstoke, Hampshire
RG21 4HJ

wsp.com

PUBLIC

Mountbatten House
Basing View
Basingstoke, Hampshire
RG21 4HJ

wsp.com

PUBLIC