

MEMO

TO	Canterbury City Council	FROM	Joanna Rochfort
DATE	14 December 2022	CONFIDENTIALITY	Restricted
SUBJECT	Air quality response to comments raised by Canterbury City Council		

INTRODUCTION

This memo has been prepared in response to comments made by Canterbury City Council (CCC)¹ following their review of WSP's air quality assessment (March 2022). The four questions raised have been addressed in turn below.

RESPONSE

Question 1 – “We haven’t seen the ‘Preliminary Transport Appraisal to define the study area for the assessment’, but there are sections of Blean Complex SAC to the north that are also very close to the A290 but which haven’t made it into the AQ modelling scope – presumably this is because predicted AADT was under 1000?”

The study area of the Preliminary Transport Appraisal was agreed with Kent County Council (KCC), as the Highway Authority. The study area focused attention on the areas likely to witness the greatest increase in traffic flow resulting from the Proposed Development. At the time of preparation of the assessment it was anticipated that the development would be an allocated site and therefore any wider impacts would be considered as part of strategic modelling being led by KCC.

Section 3.7 of the air quality report (February 2022) acknowledges the limitations and assumptions upon which the assessment is based. Notably, Paragraph 3.7.3 states:

“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.”

. It was therefore expected that wider impacts on Habitats sites and other national/locally designated ecological sites would have been considered within the Habitats Regulations Assessment (HRA) and Sustainability Appraisal (SA) for the Local Plan, respectively. At Local Plan level, assessment of air quality effects on designated ecological sites typically comprises a study area of 10km, taken from the local authority boundary².

At the time, the study area applied within the air quality assessment (March 2022) was considered sufficient to capture the ‘worst-case’ effects and proportionate to the stage of the Proposed Development (i.e. its

¹ Email from Andrew Gambrill of CCC to Colin Sinclair of Avison Young UK dated 01/09/22.

² This is supported by the JNCC's recent ‘Guidance on Decision-making Thresholds for Air Pollution’ published in December 2021 which states “For the purpose of decision-making, unless local circumstances support a wider zone, plan HRA should take account of the potential effects of traffic emissions on European sites located within 10 km of the plan boundary.”

promotion through the Local Plan process). The expectation was that the Local Plan level HRA would identify any potential effects within the wider (10km) study area.

The draft Canterbury District Local Plan 2020 – 2045³, which is currently out for consultation, does not include the Proposed Development as a strategic site allocation. It is therefore acknowledged that a further study will be required to fully assess the likely effects of the Proposed Development on the nearby designated ecological sites (Habitats sites and other national/local designations). This further study could be undertaken as part of further Local Plan work (should the site be allocated) or at planning application stage so that the latest information/data are accounted for within the assessment (e.g. information on nearby committed developments, background concentrations, details of the Proposed Development itself, baseline traffic flows etc). The further assessment would need to account for:

- Technical guidance published by the Institute of Air Quality Management⁴ and Natural England⁵, both of which advocate screening the traffic data against a 1,000 annual average daily traffic (AADT) criterion, both 'alone' and 'in-combination' with other plans and projects; and
- Decision Making Threshold's (DMT's) contained within JNCC's 'Guidance on Decision-making Thresholds for Air Pollution'⁶ below which changes in traffic (and associated effects on air quality) are considered to be de-minimis and consideration of changes in traffic 'in-combination' is not required.

This screening of the traffic data would determine the study area for further assessment .

- WSP's continued work with KCC including the micro-simulation model that has since been developed to test the impact of the Proposed Development on traffic in detail. The draft Local Plan also references the Canterbury Circulation Plan and the building of an eastern bypass, both of which could affect the distribution of traffic in and around Canterbury and which would need to be accounted for within any future assessment (most likely utilising outputs from CCC's strategic transport model).

In addition, CCC has published for consultation its draft Local Cycling and Walking Implementation Plan⁷. The plan sets out CCC's aims and aspirations to significantly increase the number of trips made by walking and cycling within the horizon period of the new Local Plan to 2045. If successful, these plans have the potential to reduce traffic on the local road network, thereby creating a degree of 'headroom' for future development without worsening the current position.

³ Draft Canterbury District Local Plan 2020 – 2045 [New Local Plan 2045 | Canterbury City Council](#)

⁴ Holman et al (2020). A guide to the assessment of air quality impacts on designated nature conservation sites – v1.1 Available online: <https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf>

⁵ Natural England (June 2018) Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations. Available online: <http://publications.naturalengland.org.uk/publication/4720542048845824>

⁶ JNCC Report No. 696: Main Report – Guidance on Decision-making Thresholds for Air Pollution. Available at: <https://jncc.gov.uk/our-work/deminimis-project/>

⁷ Canterbury City Council's Local Cycling and Walking Implementation Plan. Available at: <https://news.canterbury.gov.uk/wp-content/uploads/Local-Cycling-and-Walking-Implementation-Plan.pdf>

Question 2 – “The assessment relies on the predicted decline in background NO_x etc levels to 2040 due to changes in the UK vehicle fleet to effectively ‘offset’ the effects of the development – whilst this is ostensibly reasonable from purely technical perspective and consistent with the IAQM guidance on this point, it’s worth noting that this is not necessarily consistent with case-practice in other areas and is effectively relying on ‘unsecured’ future improvements to mitigate / offset the effects of the development. There’s a reasonably high degree of confidence regarding predicted future declines in NO_x (esp. as underpinned by the UK Clean Air Strategy) but this is not the same as having a guaranteed set of mitigation proposals over which there is certainty in delivery and effectiveness (and so could get caught up in some elements of Dutch Nitrogen*).”

In responding to this point, there is merit in separating out:

1. the predicted impacts on nitrogen oxide (NO_x) and ammonia (NH₃) concentrations and nutrient nitrogen (N) deposition; and
2. the relative certainty of future improvements in pollutant concentrations/N deposition.

1. Predicted impacts on NO_x and NH₃ concentrations and nutrient N deposition

NO_x Concentrations

At the following ecological sites, the Critical Level for NO_x is predicted to be met in all assessment scenarios (2019 Baseline, 2040 Do-Nothing and 2040 Do-Something):

- Blean Complex SAC;
- Ancient Woodland within Site B;
- Brethren Wood Ancient Woodland;
- Ancient Woodland by University Road (Transect 14); and
- Tyler Hill Meadow LNR.

The available ‘headroom’ at each of the receptor points within the above ecological sites has been calculated by subtracting the 2019 predicted concentration from the relevant Critical Level for NO_x of 30µg/m³). This has then been compared against the predicted change in NO_x concentration due to the Proposed Development. At all but one location (T9_0) the available ‘headroom’ is greater than the predicted change with the Proposed Development. At Receptor T9_0, which is at the road edge, the change is only marginally higher than the available headroom. Moving away from the road edge, by Receptor T9_10, which is at 10m into the Ancient Woodland, there is sufficient headroom so as not to be exceeded by the change. Therefore, even with no future improvement in NO_x concentrations (which is entirely unrealistic given current policy drivers and incentives in place) the Critical Level would be met and, thus, there is no reliance on future improvements to mitigate/offset the effects of the Proposed Development.

At the following ecological sites, annual mean NO_x concentrations exceed the relevant Critical Level (of 30µg/m³) in the 2019 baseline case:

- Park Wood Ancient Woodland (Transects 7 and 11 only);
- Ancient Woodland by Canterbury Hill (Transect 15);
- West Blean and Thornden Woods SSSI (Transects 18, 19 and 20 only); and
- Church/Bossenden Woods Ancient Woodland (Transects 21 and 22 only).

However, these exceedances are predicted to occur at 0m only (i.e. at the boundary of the identified ecological site). By 10m from the boundary of the ecological site concentrations are reduced so far as

exceedances of the Critical Level are not predicted. Additionally, from 10m the available 'headroom' is larger than the predicted change in NO_x concentration due to the Proposed Development. As such, within the above ecological sites, there is no reliance on future improvements to mitigate/offset the effects of changes in NO_x concentrations arising due to the Proposed Development.

NH₃ Concentrations

Concentrations of NH₃ are not predicted to exceed the relevant Critical Level of 3µg/m³ in any of the assessment scenarios (2019 Baseline, 2040 Do-Nothing and 2040 Do-Something).

Similar to NO_x, the available 'headroom' at each of the receptor points within each of the designated ecological sites has been calculated by subtracting the 2019 predicted concentration from the relevant Critical Level for NH₃ of 3µg/m³). This has then been compared against the predicted change in NH₃ concentrations due to the Proposed Development. At all locations the available 'headroom' is larger than the change predicted as a result of the Proposed Development. Therefore, even assuming no change in NH₃ concentrations between now (2019 baseline case) and 2040, the relevant Critical Level for NH₃ is predicted to be met, both without and with the Proposed Development.

It is important to note that both the background concentrations and emission factors applied for NH₃ within the assessment assume an increase year on year in line with the Business as Usual (BAU) case presented within Nitrogen Futures⁸ and Air Quality Consultants CREAM⁹, respectively. Even with these assumed increases, the Critical Level for NH₃ is predicted to be met in 2040, both without and with the Proposed Development.

N Deposition

At Tyler Hill Meadow LNR, the relevant upper and lower Critical Load values for neutral grassland (20 – 30 kg N/ha/yr) are predicted to be met in all scenarios (2019 Baseline and 2040 both without and with the Proposed Development). Thus, the available 'headroom' at each receptor point has been calculated by subtracting the 2019 predicted N deposition rate (in kg N/ha/yr) from the relevant lower Critical Load value of 20 kg N/ha/yr). This 'headroom' has then been compared to the predicted change in N deposition due to the Proposed Development.

At all locations within Tyler Hill Meadow LNR the available 'headroom' is greater than the change predicted as a result of the Proposed Development. Therefore, even with no future improvement in N deposition (which is entirely unrealistic given current policy drivers and incentives in place):

- The lower Critical Load value (of 20 kg N/ha/yr) would continue to be met within Tyler Hill Meadow LNR at all distances from the roads edge; and
- Because the lower Critical Load value will be met, there is no reliance on future improvements to mitigate/offset the effects of the Proposed Development.

For all other designated ecological sites within the study area, the identified upper and lower Critical Load values are predicted to be exceeded in all assessment scenarios. As these exceedances occur in the baseline (2019) and future year (2040), both without and with the Proposed Development, there is no 'headroom' available before which exceedances of lower Critical Load value are predicted to occur. Conversely, this means that the Proposed Development itself does not prevent the Critical Load from being met as these exceedances of the lower Critical Load value are predicted to occur all scenarios even allowing for future improvements in background concentrations and vehicle emissions.

⁸ JNCC Report No.665 (October 2020) Nitrogen Futures Available at: [Nitrogen Futures \(jncc.gov.uk\)](https://jncc.gov.uk/nitrogen-futures)

⁹ Air Quality Consultants Calculator for Road Emissions of Ammonia (CREAM). Available at: <https://www.aqconsultants.co.uk/resources/calculator-for-road-emissions-of-ammonia>

Paragraph 5.28 of Natural England's guidance states:

"In practice, where a site is already exceeding a relevant benchmark, the extent to which additional increments from plans and projects would undermine a conservation objective to 'restore' will involve further consideration of whether there is credible evidence that the emissions represent a real risk that the ability of other national or local measures and initiatives to otherwise reduce background levels will be compromised in a meaningful manner. This is a judgement to be taken by the competent authority which should be informed by, amongst others, the extent to which any declining national trends in air pollution or strategic work to tackle emissions affecting the site more locally might otherwise lead to improvements, the rate at which such improvement are anticipated to be delivered, any credible evidence on the extent of the impacts of a plan or project and whether those impacts can properly be considered temporary and reversible."

Whilst this paragraph relates interpreting likely effects on Habitats sites (e.g. Blean Complex SAC), the concept is also considered applicable to other ecological designations.

- At the following ecological sites, the changes in N deposition due to the Proposed Development equate to less than 1% of the relevant Critical Load when considered 'alone': Blean Complex SAC; Brethren Wood Ancient Woodland; Ancient Woodland (Transect 14); Tyler Hill Meadow LNR; West Blean and Thornden Woods SSSI. These minor increases are set against an overall trend of improvement in N deposition of up to 48.2%. As such, there is no credible evidence that the emissions (due to the Proposed Development) represent a real risk that the ability of other national or local measures and initiatives to otherwise reduce background levels will be compromised in a meaningful manner.
- At the following locations, the change in N deposition exceeds 1% of the relevant Critical Load as a result of the Proposed Development '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). However, 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 when considering the predicted increases due to the Proposed Development against the scale of the forecast improvements between the 2019 baseline case and 2040 'with Proposed Development' scenario.
- Both Transects 4 and 5 cover Ancient Woodland which falls within the Site itself. The impact of the Proposed Development at receptor points on these transects is reflective of their position within the Site and adjacent to the proposed site access road. Notwithstanding, there is still an overall reduction in N deposition between the 2019 baseline case and 2040 'with the Proposed Development' scenario and assumptions regarding the forecast improvements in air quality are considered to be conservative and robust (see below).

As 2030 background concentrations and emission factors were applied to all future scenarios, the modelling is equally reflective of likely impacts in 2030. It does not account for any improvements in vehicle emissions or background concentrations beyond 2030 including the likely acceleration of the proportion of electric vehicles within the vehicle fleet following the Government's ban on the sale of petrol and diesel vehicles from 2030. In this regard the assessment is robust and precautionary. Had emission factors for 2040 been applied, both total concentrations/deposition and the magnitude of change predicted would have been smaller. Any further assessment, whether undertaken as part of the Local Plan process or as part of a planning application will utilise the latest forecasts (for emission factors and background concentrations). This assessment will confirm the non-requirement for mitigation (or otherwise).

Acid Deposition

The relevant Critical Loads for acid deposition are predicted to be met within all the identified ecological sites, all the assessment scenarios (2019 Baseline, 2040 Do-Nothing and 2040 Do-Something).

Thus, the available 'headroom' at each receptor point has been calculated by subtracting the 2019 predicted acid deposition rate (in keq N/ha/yr) from the relevant Critical Load value. This 'headroom' has then been compared to the predicted change in acid deposition due to the Proposed Development.

At all locations the available 'headroom' is greater than the change predicted as a result of the Proposed Development. Therefore, even if there was no change in acid deposition between the 2019 baseline case and 2040 (highly unlikely), the Proposed Development would not trigger any exceedances of the relevant Critical Loads. As the relevant Critical Load values will be met, there is no reliance on future improvements to mitigate/offset the effects of the Proposed Development on acid deposition.

2. The relative certainty of future improvements in pollutant concentrations/N deposition

CCC's response acknowledges that the approach applied to the assessment is, *"ostensibly reasonable from a purely technical perspective and consistent with the IAQM guidance on this point"*. However, it states that, *"it's worth noting that this is not necessarily consistent with case-practice in other areas"*. WSP would welcome clarity regarding the case-practice being referred to in this statement so that we can address this point explicitly.

CCC's response also states that, *"there's a reasonably high degree of confidence regarding predicted future declines in NO_x (esp. as underpinned by the UK Clean Air Strategy) but this is not the same as having a guaranteed set of mitigation proposals over which there is certainty in delivery and effectiveness (and so could get caught up in some elements of Dutch Nitrogen)"*.

In the above regard, WSP published a position statement in June 2022¹⁰ which outlines, amongst other things, details regarding the assumptions applied within the modelling and why these are both robust and conservative. The position paper includes details regarding the forecast changes to the vehicle fleet, including the uptake of electric vehicles (considering data on EV sales and updates to the TAG databook that are due to be published in November 2022), and the mixture of policies, targets and grants and incentives in place to encourage uptake of EVs. It is unclear whether CCC reviewed WSP's Position Paper before preparing these comments and therefore it is appended to this technical memo.

CCC's air quality monitoring data supports an improvement in local air quality. Notably, data from CCC's Automatic Urban and Rural Network (AURN) monitoring site clearly demonstrates a reduction in concentrations between 2001 and 2021.

Question 3 – "The AQ info employs thresholds in line with IAQM, which are accepted under Dutch Nitrogen although it's worth noting that the DN thresholds were lower than 1% of critical load (i.e. there is still an obligation to ensure there is no risk of significant effects even if below the nominal 1% threshold). The NE Site Improvement Plan states that "Nitrogen deposition exceeds the site-relevant critical load for ecosystem protection" (i.e. currently at 24kg/ha/year vs. min of 15kg) and the target in NE's supplementary advice is "Restore as necessary, the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System" – it should be noted that this target is not predicted to be met."

To answer this point, our response has been split into two parts, firstly addressing the use of the 1% threshold criterion and, secondly, addressing the conservation objective for Blean Complex SAC to 'restore, as necessary'. *N.B. The second part of the response is relevant to Blean Complex SAC only as this is the only Habitats site identified within the study area.*

Use of the 1% Criterion

¹⁰ WSP (June 2022) Air Quality Position Paper for the University of Kent

Whilst the threshold applied within the Programma Aanpak Stikstof (PAS) equates to less than the 1% threshold for many habitat types, within the UK the 1% threshold is widely utilised and applied by air quality and ecology professionals, and is referenced within industry guidance documents including:

- Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001)¹¹ which advocates the 1% threshold both 'alone' (Step 4a) and 'in-combination' (Step 4b/c). Importantly, the document states:
 - o *"Widely accepted Environmental Benchmarks for imperceptible impacts are set at 1% of the critical load or level".*
 - o *"The AADT thresholds and 1% of critical load/level are considered by Natural England's air quality specialists (and by industry, regulators and other statutory nature conservation bodies) to be suitably precautionary, as any emissions below this level are widely considered to be imperceptible and, in the case of AADT, undetectable through the DMRB model. There can therefore be a high degree of confidence in its application to screen for risks of an effect."*
- The IAQM's guide to the assessment of air quality impacts on designated nature conservation sites (May 2020)¹² provides the following advice:
 - o *"In the case of Environment Agency permitting, an increment of 1% (or less) of the relevant long term critical level or critical load alone is considered inconsequential. A change of such magnitude, i.e. two orders below the criterion for harm to occur, is challenging to measure (even by the most precise air quality instrument) and difficult to distinguish from natural fluctuations in measured data (due to other variables such as variations in emissions and weather). For this reason, and others, it has been used as a precautionary screening criterion."* (Paragraph 5.5.16)
 - o *"The 1% threshold has become widely used throughout the air quality assessment profession to define a reasonable quantum of long term pollution which is not likely to be discernible from fluctuations in background/measurements⁶³. For example, for many habitats, 1% of the critical load for nitrogen deposition equates to a very small change of less than 0.1 kgN/ha/yr, well within the expected normal variation in deposition. Its use has not been challenged by the courts, but it should be used in the context of an in-combination assessment."* (Paragraph 5.5.17)
 - o *"Crucially, the 1% screening criterion is not a threshold of harm and exceeding this threshold does not, of itself, imply damage to a habitat."* (Paragraph 5.5.18)
 - o *"In March 2015, AQTAG clarified to the Planning Inspectorate that 'For installations other than intensive pig and poultry farms, AQTAG is confident that a process contribution (PC, as predicted by H1 or a detailed dispersion model) < 1% of the relevant critical level or load (CL) can be considered inconsequential and does not need to be included in an in-combination assessment'"* (Paragraph 5.5.2.3)
 - o *"It is important to remember that a change of more than 1% does not necessarily indicate that a significant effect (or adverse effect on integrity) will occur; it simply means that the change in concentration or deposition rate cannot in itself be described as numerically inconsequential or imperceptible and therefore requires further consideration."* (Paragraph 5.5.2.7)

¹¹ Natural England (June 2018) Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations. Available online: <http://publications.naturalengland.org.uk/publication/4720542048845824>

¹² Holman et al (2020). A guide to the assessment of air quality impacts on designated nature conservation sites – v1.1 Available online: <https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf>

- The CIEEM's Advisory Note: Ecological Assessment of Air Quality Impacts (January 2021)¹³ which states:
 - o *"The concept of critical loads and levels is long established and these thresholds are based on the best available scientific knowledge."*

Box 1 of CIEEM's Advisory Note also references the differences in approach applied between the Netherlands (and associated PAS programme) and the UK. Namely that:

- The Dutch have applied a strict scientific approach to the consequence of critical loads/level exceedance. This was reflected in the legal opinion in cases C-293/17 and C-294/17 at the Court of Justice of the European Union (CJEU) when Advocate General Kokott at paragraph 62 said '*... it seems difficult, if not impossible, to accept values that are higher than the critical loads.*'
- *"In the UK, the approach to assessing impacts is different. Assessment approaches, particularly at the screening stage of HRA, concentrate on the change in levels arising from a proposed plan or project (either alone or in combination) irrespective of whether critical loads or levels are currently being exceeded at a site. For example, Natural England guidance states that a project that will result in an increase of no more than 1% of critical loads or levels (either alone or in combination) can be regarded as insignificant from an air quality point of view. It is argued that such an approach can be supported by Advocate General Sharpston's Opinion in Case C-258/11 where at paragraph 48 she stated 'the requirement for an effect to be 'significant' exists in order to lay down a de minimis threshold. Plans and projects that have no appreciable effect on the site can therefore be excluded. If all plans and projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill."*
- *"There is clearly a distinction between approaches adopted in The Netherlands, where critical loads and levels are regarded as an environmental limit that cannot be exceeded, and the screening approach adopted in the UK, which regards small increments in pollution as de minimis even where critical loads and levels are exceeded."*
- Albeit that *"There may be further clarification on these differing approaches as case law comes forward and the findings are reflected in updated policy and guidance."*

Addressing the conservation objective for Blean Complex SAC

The conservation objective for Blean Complex SAC is to *"restore, as necessary, the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System"*. The phrase "as necessary" is important as whilst the relevant Critical Load for N deposition is exceeded across Blean Complex SAC, the SSSI units closest to the A290 (i.e. that comprise the part of Blean Complex SAC considered within the assessment) are in favourable condition (with only SSSI Unit 16 in 'favourable recovering' condition). In this regard, an improvement in air quality is not required to restore the SAC to favourable condition. Furthermore, the relevant Critical Levels and Load for NO_x, NH₃ and acid deposition are predicted to be met within Blean Complex SAC, both without and with the Proposed Development.

As the condition of the identified SSSI component units are favourable now and there will most likely be an overall improvement in both NO_x concentrations and N deposition between now and the end of the Local Plan period (even allowing for forecast growth under the Local Plan and traffic associated with the Proposed Development), there is no reason to expect the condition of the overlapping SSSI and SAC habitats to differ as result of changes in air quality.

¹³ CIEEM (January 2021) Advisory Note: Ecological Assessment of Air Quality Impacts. Available online: <https://cieem.net/resource/advisory-note-ecological-assessment-of-air-quality-impacts/#:~:text=Advisory%20Note%3A%20Ecological%20Assessment%20of%20Air%20Quality%20Impacts..of%20changes%20in%20pollution%20concentrations%20and%20deposition%20rates>

Furthermore, as referenced above, Natural England's guidance states: *"In practice, where a site is already exceeding a relevant benchmark, the extent to which additional increments from plans and projects would undermine a conservation objective to 'restore' will involve further consideration of whether there is credible evidence that the emissions represent a real risk that the ability of other national or local measures and initiatives to otherwise reduce background levels will be compromised in a meaningful manner"*. As discussed under Question 2, the change in N deposition due to the Proposed Development is small (maximum change of 0.49% of the relevant Critical Load¹⁴) and does not compromise 'in a meaningful manner' the other national or local measures and initiatives to otherwise reduce background levels.

Whilst we have identified differences in approach between the PAS and the UK approach, the PAS itself *"aims to conserve or where necessary to restore the Natura 2000 sites to favourable conservation status whilst also allowing economic growth."* In this regard, the Proposed Development is not considered to counteract the aims of the PAS nor be contrary to the conservation objectives for Blean Complex SAC.

Question 4 – *"There is a lot of reliance on CCC and its HRA to identify 'strategic mitigation' to reduce impacts on European sites if this is considered necessary – although it's difficult to see how this would work in practice."*

Whilst both the air quality assessment (March 2022) and associated Position Statement refer to strategic mitigation that may be proposed by CCC to reduce the effects of the emerging Local Plan on nearby Habitats sites, nowhere is it stated that the Proposed Development is reliant upon this mitigation in relation to Blean Complex SAC.

The results for Blean Complex SAC do not suggest the need/requirement for mitigation (strategic or otherwise) as:

- The relevant Critical Levels for both NO_x and NH₃ are predicted to be met within Blean Complex SAC in all years (2019 Baseline and 2040, without and with the Proposed Development). Furthermore, the changes in both pollutants equate to less than 1% of the relevant Critical Level when considered both 'alone' and 'in-combination'.
- The relevant Critical Load for N deposition is predicted to be exceeded in all years (2019 and 2040, both without and with the Proposed Development). However, the maximum change in N deposition within Blean Complex SAC equates to 0.49% of the relevant Critical Load when considered 'alone' (i.e. clearly below the 1% threshold, with circa 50% headroom within which cumulative development could occur before a breach of the 1% threshold is likely to occur). The effect of the Proposed Development on N deposition is, therefore, considered to be not significant.
- The relevant Critical Load for acid deposition is predicted to be met within Blean Complex SAC in all years (2019 Baseline and 2040, without and with the Proposed Development). Furthermore, the change in acid deposition equates to less than 1% of the Critical Load when considered both 'alone' and 'in-combination'.

CONCLUSION

To conclude:

- In relation to Question 1, the limitations with respect to extent of the study area were acknowledged within the air quality assessment. However, the assessment was considered proportionate to the stage of the Proposed Development (i.e. its promotion through the Local Plan process) and the

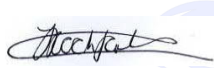
¹⁴ Which is considerably below the 1% threshold, with circa 50% headroom within which cumulative development could occur before a breach of the 1% threshold is likely to occur.

need for further assessment (and input into HRA) at a later point in the Local Plan process or at planning application is acknowledged.

- In relation to Question 2, the assessment is consistent with industry guidance and the results support that the delivery of the Proposed Development is not reliant on the future forecast improvements in vehicle emissions and background concentrations.
- In relation to Question 3:
 - o The use of the 1% criterion is widely documented within relevant industry guidance where it is considered a suitably precautionary threshold by Natural England's air quality specialists and by industry, regulators and other statutory nature conservation bodies. Furthermore, a change of more than 1% does not necessarily indicate that a significant effect (or adverse effect on integrity) will occur; rather the change in concentration or deposition rate cannot in itself be described as numerically inconsequential or imperceptible and therefore requires further consideration.
 - o The Proposed Development is not considered contrary to the conservation objective for Blean Complex SAC to, "restore, as necessary the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System" as the Critical Load for N deposition is exceeded and will continue to be exceeded both with and in the absence of the Proposed Development. Despite this, the condition of the relevant SSSI units which comprise the SAC as it borders the A290 are in favourable condition (with only SSSI Unit 16 in 'favourable recovering' condition).
- In relation to Question 4, whilst both the air quality assessment (March 2022) and associated position statement refer to strategic mitigation that may be proposed by CCC to reduce the effects of the emerging Local Plan on nearby Habitats sites, nowhere is it stated that the Proposed Development is reliant upon these measures in order to mitigate potential impacts on Blean Complex SAC. Furthermore, the results for Blean Complex SAC do not suggest the need/requirement for mitigation (strategic or otherwise).

We trust that the above response sufficiently answers CCC's outstanding comments following their review of WSP's air quality assessment (March 2022). Please do not hesitate to come back to me should you require anything further.

Best regards,


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14:25:12

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APPENDIX 1 – AIR QUALITY POSITION STATEMENT



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 report¹ 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 (NH₃)) 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 Roads²) 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>

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- Defra Local Air Quality Management Review and Assessment Technical Guidance³;
- Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations⁴; and
- The IAQM's guidance on the Assessment of Air Quality Impacts on Designated Nature Conservation Sites⁵.

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 (NH₃) due to changes within the vehicle fleet⁶, prior to the electrification of the vehicle fleet.

The assessment methodology is detailed in Chapter 3 of the Air Quality Report⁷.

Summary of Impacts

The results of the modelling indicate that in some locations the predicted increases in NO_x and NH₃ 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 NH₃ 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.

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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 sites⁹ 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 emissions¹⁰.

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>

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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.
- NH₃ emissions data for 2035 (as a proxy for 2040) were obtained from AQC Ltd CREAM, version 1A¹¹. 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)

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- 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 DfT¹² 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 EFT¹³. 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>

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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 announcement¹⁵ (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 CO₂ 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

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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 2035¹⁹.

- **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 - 2031²¹ 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 data²² 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 2020²³..."

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 years²⁴. 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-bckBvwOEvvzOhaY4I_/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

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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 rely on assumptions regarding future improvements within the vehicle fleet.

NO_x and NO₂ Trend

AQC's recent study (May 2022) on long-term NO_x and NO₂ trends across the UK²⁵ shows that NO₂ 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 NO₂ Concentration – May 2022 Update.
<https://www.aqconsultants.co.uk/CMSPages/GetFile.aspx?guid=4f51f53e-0e95-4e33-9523-05d705ffbd21>

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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

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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>