University of Kent, Canterbury Campus

Regulation 18 - Transport Appraisal

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University of Kent, Canterbury Campus

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WSP

2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

Phone: +44 148 352 8400

WSP.com

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Authorised by	J Sherlock			
Signature	Justin.Sherlock@wsp.com Digitally signed by Justin.Sherlock@wsp.com DN: cn=Justin.Sherlock@wsp.com Date: 2024.05.31 20:45:18 +01'00'			
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Executive Summary

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. Included as part of this submission was a Transport Strategy[1] that identified how land to the north of the University's Campus could be unlocked to facilitate a residential led new community.

Kent County Council (KCC), as highway authority reviewed the Transport Strategy and requested further information regarding the likely impacts of the Proposed Development on the transport network with a focus on likely highway impacts.

To understand the deliverability of the Proposed Development a Preliminary Transport Appraisal (PTA)[2] was prepared and submitted to KCC in February 2022. Following feedback from KCC the PTA was updated to include the outputs from a micro-simulation model developed for the road network immediately surrounding the site which was submitted in January 2023[3].

The 2023 PTA demonstrated that the Proposed Development sites benefit from access by a range of modes of transport and provisional strategies for access by sustainable modes would deliver a sustainable development which would benefit from the critical mass afforded by the neighbouring University Campus.

In order to show how the Proposed Development aligns with the work commissioned by CCC to deliver a public transport led transport strategy for the Local Plan, a Transport Strategy Note (TSN)[4] was prepared and submitted to KCC in November 2023.

The Proposed Development site benefits from access by a range of modes of transport and provisional strategies have been developed to ensure that access by sustainable modes is prioritised above that of the private car.

Access onto Whitstable Road was initially focused on a new access in the far south of the University's Campus. However, following initial testing of the access strategy and feedback from KCC further options were explored with the proposed access strategy now incorporating

[1] University of Kent, Canterbury Campus: Transport Strategy August 2021
[2] University of Kent, Preliminary Transport Appraisal: Disposal Sites BCD, February 2022
[3] University of Kent, Preliminary Transport Appraisal: Disposal Sites BCD, January 2023
[4] University of Kent, Transport Strategy Summary, November 2023

two points of access to A290 Whitstable Road. The initial point of access would be delivered onto Whitstable Road in the far south of the University Campus with a second point of access under continued review, of which 'one current illustrative option' being the option to utilise the Blean Primary School, which would be delivered at an appropriate point in the development's build out to provide additional permeability to the site. In this option, the Blean Primary School would be reconfigured on land within its existing site and surrounding land owned by the University.

The trip generation for the Proposed Development had been developed using person trip rates and split down by land use and journey purpose allowing for consideration of internalisation. The original trip generation was submitted to the relevant parties, including KCC under the 2023 TPA and was accepted. Since this, CCC have released an updated Transport Strategy which looks to reduce car dependency within Canterbury, therefore this Regulation 18 Transport Appraisal document considers the impacts of this on the site trip generation. WSP have considered the potential changes to the vehicle trip generation at the site taking into account the draft transport strategy proposals. It should be noted, that whilst an updated trip generation has been prepared this has not been fed through to a highway network assessment at this stage. Instead, for the purposes of this Regulation 18 submission the traffic modelling undertaken to date within the 2023 PTA is still considered to be a robust position to assess the impacts of the scheme. Updates to traffic modelling will be undertaken at the development proposals progress through the local plan process.

1 Introduction

1.1 Introduction

1.1.1. 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.

1.2 Background

1.2.1. The UoK's submission to Canterbury City Council's (CCC) Local Plan Call for Sites 2021 identified the delivery of six UoK land parcels (A to F) that were suitable for future redevelopment. Since the original Call for Sites submission in June 2020, it was decided that Site A would form part of the Retained University Campus. It was proposed that the main disposal sites (BCD) would accommodate a new residential-led community. Sites E and F propose no built development, but can provide an area for landscape, open space, mitigation and the potential relocation of the university sports pitches.

1.2.2. UoK originally submitted representations in support of an allocation for Sites BCD to CCC in August 2021 as part of the preferred options Local Plan Consultation (Regulation 18). Included as part of this submission was a Transport Strategy[5] that identified how land to the north of the University's Campus could be unlocked to facilitate a residential led new community. The 2021 Transport Strategy is provided at **Appendix A**.

1.2.3. Kent County Council (KCC), as highway authority reviewed the Transport Strategy and requested further information regarding the likely impacts of the Proposed Development on the transport network with a focus on likely highway impacts.

1.2.4. To understand the deliverability of the Proposed Development a Preliminary Transport Appraisal (PTA)[6] was prepared and submitted to KCC in February 2022. Following feedback from KCC the PTA was updated to include the outputs from a micro-simulation model developed for the road network immediately surrounding the site which was submitted in January 2023[7]. The 2022 and 2023 PTAs are provided at **Appendix B** and **Appendix C** respectively.

1.2.5. The 2023 PTA demonstrated that the Proposed Development sites benefit from access by a range of modes of transport and provisional strategies for access by sustainable modes would

[5] University of Kent, Canterbury Campus: Transport Strategy August 2021
[6] University of Kent, Preliminary Transport Appraisal: Disposal Sites BCD, February 2022
[7] University of Kent, Preliminary Transport Appraisal: Disposal Sites BCD, January 2023

deliver a sustainable development which would benefit from the critical mass afforded by the neighbouring University Campus.

1.2.6. In order to show how the Proposed Development aligns with the latest work commissioned by CCC to deliver a public transport led transport strategy for the Local Plan, a Transport Strategy Summary (TSS)[8] was prepared and submitted to KCC in November 2023. The 2023 TSS is provided at **Appendix D**.

1.3 Regulation 18 Consultation

1.3.1. CCC published the revised Regulation 18 version of the Draft Local Plan (DLP) for public consultation on 12th March 2024.

1.3.2. The DLP includes the following policies which are particularly relevant to the UoK:

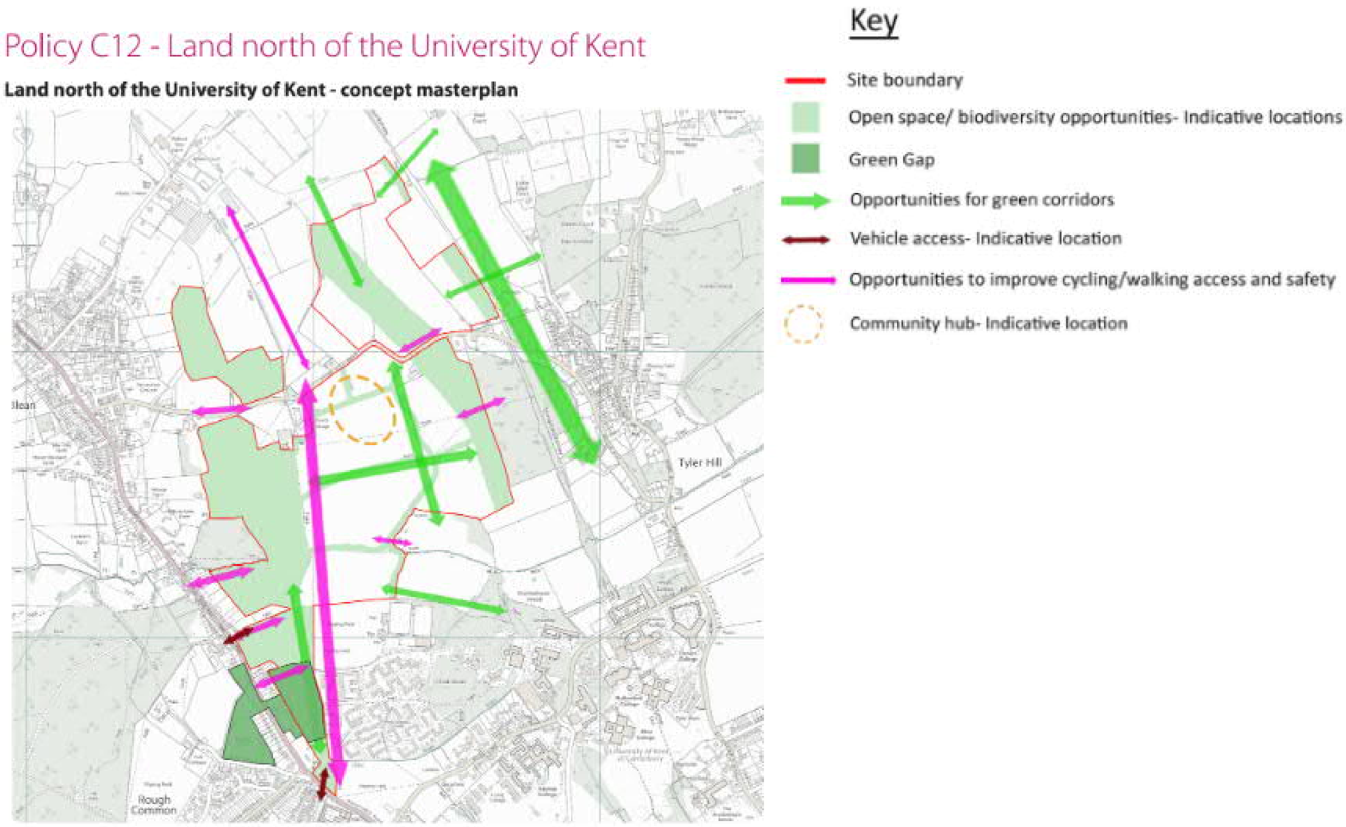
- Policy C12 – allocates land to the north of the UoK (Sites BCD) (the 'Site') for comprehensive mixed-use development (standalone new settlement) comprising approximately 2,000 homes, a community hub (retail, community, offices, and a mobility hub), up to 2 primary schools (one of which is to be a replacement for the existing Blean School), waste water treatment works, and open space.
- Policy DS9 – supports proposals for education buildings, business/commercial accommodation, and hotel/conference facilities within the UoK's existing campus boundary.

1.3.3. The concept masterplan for the site, taken from the DLP is shown in **Figure 1-1**.

1.3.4. Consultation on the DLP to 2040 is currently taking place. Once approved, the document will form Canterbury City Council's official planning blueprint until 2040.

[8] University of Kent, Transport Strategy Summary, November 2023

Figure 1-1 - Policy C12 - Concept Masterplan



1.4 Scope

1.4.1. Following the publication of the Reg. 18 version of the DLP in March 2024, and the draft allocation of the site, the transport appraisal work has been updated to reflect the latest Transport Strategy for the district which has been prepared as part of the DLP, alongside the Bus Strategy and Local Cycle and Walking Implementation Plan (LCWIP).

1.5 Report Structure

1.5.1. Following this introduction, the remainder of this Transport Appraisal is set out as follows:

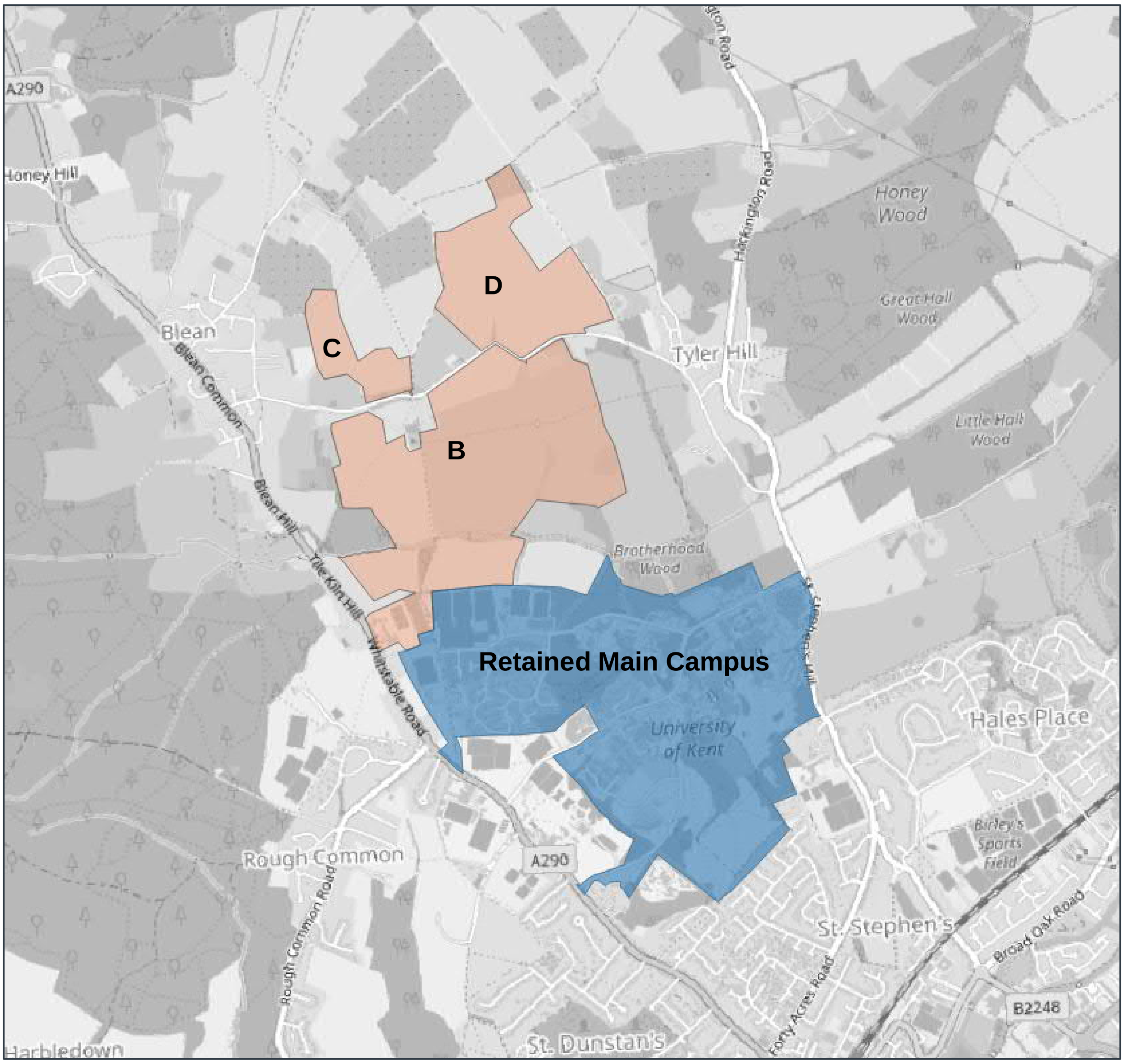
- Section 2 considers the existing site and transport conditions
- Section 3 sets out the policy context
- Section 4 summarises the walking and cycling audit undertaken
- Section 5 provides an overview of the development proposals and transport strategy, detailing how the development proposals accord with the DLP
- Section 6 considers the trip generation and distribution for the development proposals;
- Section 7 provides a summary, conclusion and considers next steps.

2 Existing Conditions

2.1 Introduction

2.1.1. The UoK Canterbury Campus is located to the north of the centre of Canterbury on the urban fringe of the City, covering an area of approximately 92 hectares. The location of Sites BCD in the context of the wider transport network is shown in **Figure 2-1**.

Figure 2-1 - BCD Site Location Plan



2.2 Pedestrian Network

2.2.1. The area benefits from a network of footways, bridleways, byways and shared use routes which provide pedestrian connectivity to the University and across the wider area.

2.2.2. Footpath CB24A (The Crab and Winkle Way) provides a strategic walking connection between Canterbury in the south and Whitstable in the north via the University campus. In the vicinity of Sites BCD the Crab and Winkle Way consists of a dedicated off-road shared use pedestrian and cycle route. To the south the route joins with Whitstable Road where an off-road pedestrian/cycle route is provided adjacent to the carriageway before it joins the main carriageway and footway provision into the City Centre. To the north the route continues via farmland to Site B before reaching Tyler Hill Road and connecting with the boundary of Site C via a byway and footpath.

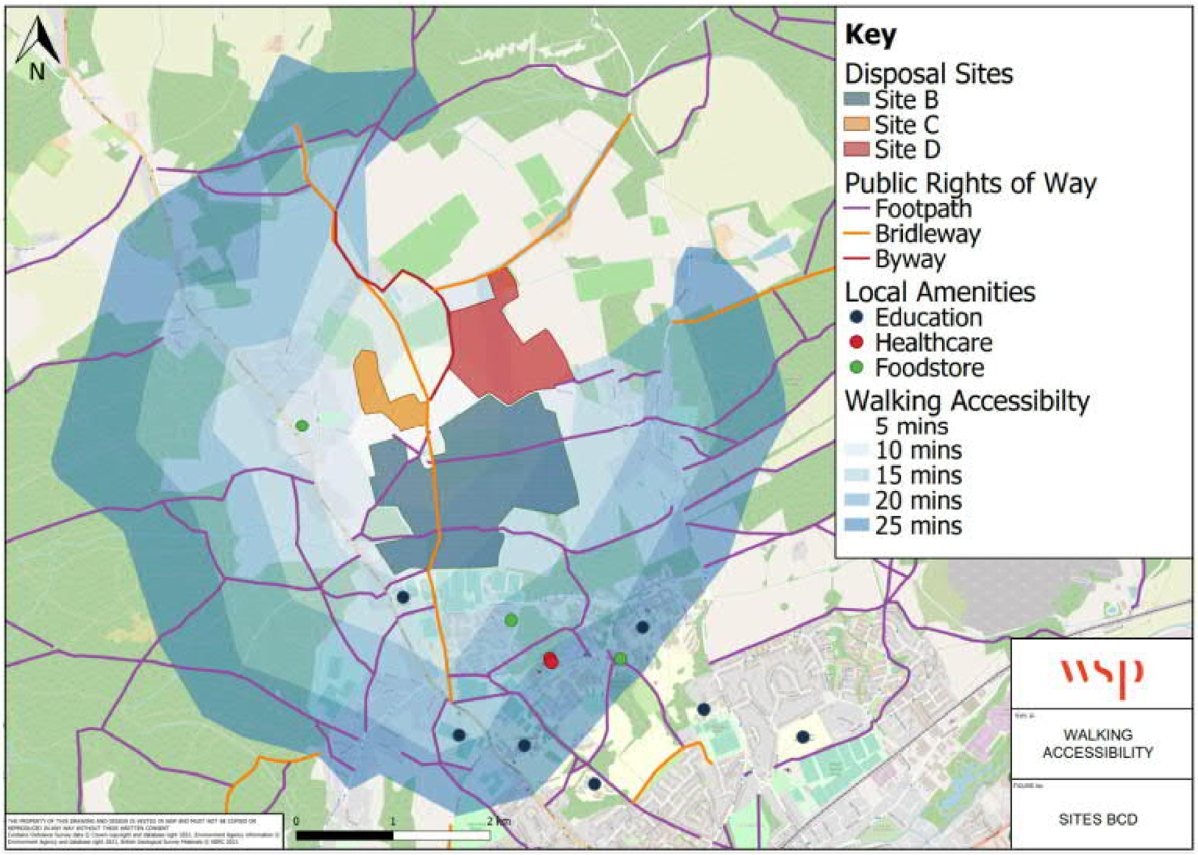
2.2.3. Site D is bound in the west by byway CB27 and in the north by bridleway CB24.

2.2.4. Between the Campus and the Sites are further connections to the wider area via various footpaths and byways including CB12 (follows the alignment of the watercourse and connects to Blean in the west), CB13 (connects into the University Campus and Giles Lane), CB14 (runs east west between Tyler Hill Road and Tyler Hill), CB27 and CB16 (which form part of the Crab and Winkle Way) and CB18A (boarders Site C to the north and connects with Blean in the west).

2.2.5. The location of the site, within a rural area means that a number of the PROWs connecting with the site are off-road and unsurfaced however the Crab and Winkle Way provides a high-quality paved route for both pedestrians and cyclists which connects with the University Campus and wider City.

2.2.6. The pedestrian network in the vicinity of the site along with local amenities are shown in **Figure 2-2**. Regarding amenities accessible by walking, Tyler Hill, Blean, the University Campus and much of northern Canterbury is accessible within a two-kilometre distance (equivalent to a 25 minute walk) where a range of amenities are accessible.

Figure 2-2 - Sites BCD Pedestrian Isochrone

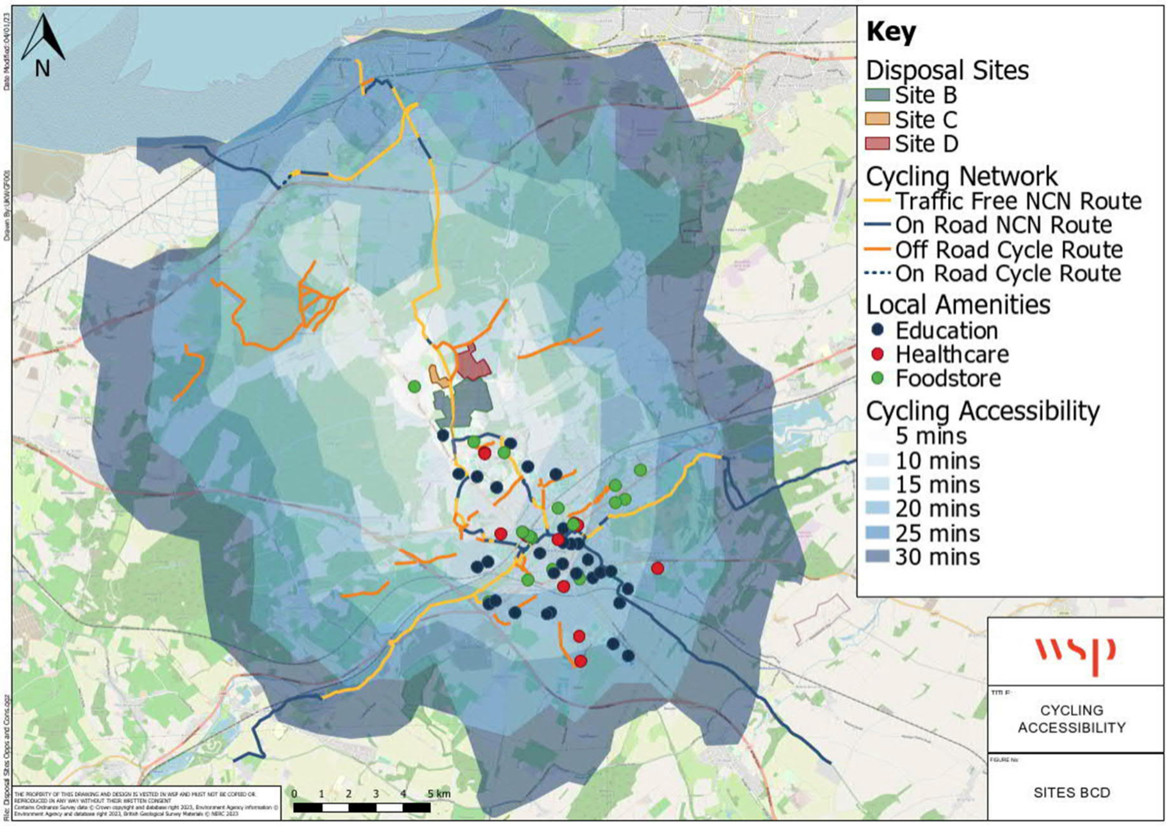


2.3 Cycle Network

2.3.1. The National Cycle Network (NCN) Route 1 runs along the Crab and Winkle Way and provides a north-south connection part on carriageway and part traffic free through the University Campus and Site B and bounds Site C to the east. In addition to the NCN route, there are several off-road cycle routes that run through the University Campus east to west.

2.3.2. The cycle network in the vicinity of the site along with isochrones measured from the edge of the site are shown in **Figure 2-3**.

Figure 2-3 - Sites BCD Cycling Isochrone



2.3.3. As demonstrated in **Figure 2-3**, the connectivity of the cycle network is such that the whole of Canterbury and areas to the north including Whitstable are all accessible within a five-mile (30 minute) cycle of Sites BCD.

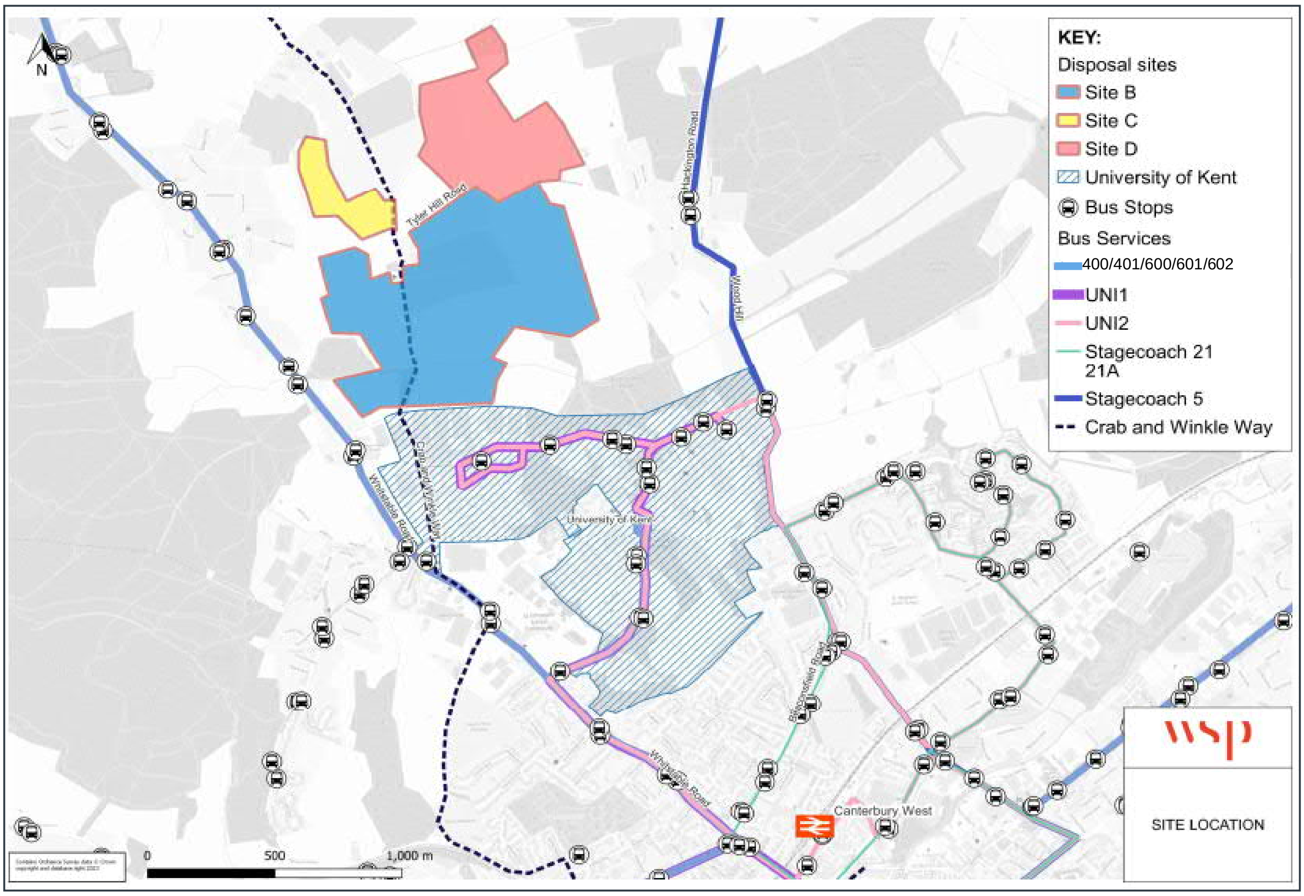
2.3.4. The sites are located within a maximum 25 minutes cycling of a range of amenities and facilities including schools, convenience retail and healthcare.

2.4 Public Transport - Buses

2.4.1. The University Campus and surrounding land benefits from access to a range of public transport services that primarily connect the University with wider Canterbury and destinations further afield.

2.4.2. **Figure 2-4** illustrates the bus stops and bus routes that are accessible from the bus stops in the vicinity of the University Campus and surrounding area.

Figure 2-4 - Local Bus Stops and Routes



2.4.3. **Figure 2-4** demonstrates that the University is served directly by four bus services (UNI1, UNI2, 5, 400/401/600/601/602) whilst further services are accessible from both Whitstable Road in the west and St Stephen's Hill in the east.

2.4.4. **Table 2-1** provides a summary of the bus services accessible from the University Campus, Whitstable Road and St Stephen's Hill that could be utilised by users of Sites BCD.

Table 2-1 - Local Bus Services

Bus Service	Route	First Bus	Last Bus	Frequency			Nearest Bus Stop
				Mon – Fri	Sat	Sun	
5	Canterbury – Chestfield – Whitstable - Seasalter	06:33	20.09	Hourly	Hourly	2 hours	UoK, Alcroft Grange
21/21A	City Centre - St. Dunstan's - Hales Place - City Centre	07:01	22:35	20 mins	20 mins	Hourly	Hales Place, Downs Road
UNI1	UoK – Westgate Towers – Canterbury City Centre	08:32	18:32	10 mins	10-15 mins	30 mins	UoK, Keynes College (Stop A)
UNI2	Canterbury –Westgate Towers - UoK – Hales Place	09:04	04:05	30 mins (hourly night service)	30 mins	N/A	UoK, Park Wood Road
400	Canterbury – Whitstable	05:22	23:08	30 mins	60 mins	Hourly	UoK, Keynes College (Stop A)

Bus Service	Route	First Bus	Last Bus	Frequency			Nearest Bus Stop
				Mon – Fri	Sat	Sun	
401	Canterbury – Whitstable	07:38	23:38	30 mins	20-60 mins	20-40 mins	Canterbury Bus Station
601	Canterbury – Herne Bay	08:00	18:00	30 mins	30 mins	Hourly	Canterbury Bus Station
602	Canterbury – Herne Bay	07:00	23:30	Hourly	Hourly	Hourly	Canterbury Bus Station

2.4.5. **Table 2-1** demonstrates that a range of services are available in the area surrounding the sites that operate on a range of frequencies up to every 10 minutes. Key destinations served include Canterbury City Centre, Canterbury West Railway Station, Sittingbourne, Whitstable and Herne Bay.

2.4.6. From 5th May 2024 the Triangle buses were renamed with route numbers. Buses between Canterbury and Whitstable are now numbered 400 and 401. Buses between Canterbury and Herne Bay are numbered 600 and 601, with the 602 serving Broomfield, Beltinge and Herne Bay.

2.4.7. The 400 and 401 services alternate along the same route out of Canterbury, so Monday – Friday one comes ever 15 minutes, Saturday – Sunday one comes every 20 minutes. Also, the 600 and 601 services alternate along the same route out of Canterbury, so Monday – Saturday one comes every 15 minutes, and every 30 minutes on Sundays.

2.4.8. Stagecoach currently offer Student Bus Passes and Travel Cards, offering savings on regular ticket prices and unlimited travel which equates to less than £2 per day. The national £2 bus fare cap introduced on 1st January 2023 across England is also applicable to travel in Canterbury and wider Kent bus network.

2.4.9. It is noted that the frequency of the services set out in **Table 2-1** is lower than pre-Covid frequencies, due to a reduction in bus travel. During discussions with Stagecoach on 10th May 2024, it was understood that an increase in bus travel has occurred and is continuing to take place, with usage starting to return to pre-covid levels. The intention is therefore to increase the frequency of services back to pre-covid levels in the near future, once the demand arises.

2.5 Public Transport – Rail

2.5.1. Canterbury West Railway Station is located approximately 3.7 km from the centre of Sites BCD. Canterbury West Railway Station is located beyond a reasonable walking distance but could reasonably be accessed by bicycle.

2.5.2. **Table 2-2, Table 2-3** and **Table 2-4** provide details of the rail services from Canterbury West Station from Monday to Friday and Saturday and Sunday respectively. All timings are from Canterbury West Station.

Table 2-2 - Rail Services (Monday to Friday)

Direct Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West – London Charing Cross	06:29	20:37	30 mins	108 mins
Margate – Canterbury West – London St Pancras	05:17	22:23	Hourly	54 mins
Canterbury to Ashford International	05:17	23:23	Hourly	15 mins

Table 2-3 - Rail Services (Saturday)

Direct Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West – London Charing Cross	06:12	21:37	30 mins	108 mins
Margate – Canterbury West – London St Pancras	05:20	22:23	Hourly	55 mins
Canterbury to Ashford International	05:20	23:23	Hourly	15 mins

Table 2-4 - Rail Services (Sunday)

Direct Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West – London Charing Cross	08:37	21:37	30 mins	111 mins
Margate – Canterbury West – London St Pancras	07:24	22:23	Hourly	55 mins
Canterbury to Ashford International	07:24	23:23	Hourly	15 mins

2.5.9. **Table 2-2, Table 2-3** and **Table 2-4** demonstrate that Canterbury West Station provides train services to a range of locations including Margate, Ramsgate, London Charing Cross, London St Pancras and Ashford International.

2.5.10. Though Canterbury West Railway Station is located beyond a reasonable walking distance it could reasonably be accessed by bicycle. Space for 134 cycles is provided at the station. The railway station is also accessible by bus from the University Campus.

2.6 Highway Network

2.6.1. The local highway network in the vicinity of Sites BCD is characterised by a series of north south radial routes that converge on Canterbury City Centre in the south and connect with the settlements of Herne Bay and Whitstable in the north. In the west the A290 Whitstable Road provides a connection between the City Centre Ring Road, the University, Blean and north towards the A299 and Whitstable. This road also connects in the vicinity of the University with Rough Common Road which provides a connection to the A2050 and A2 in the west.

2.6.2. In the east St Stephen's Hill connects the City Centre and areas to the east of Canterbury along the A28 corridor with the University and north towards the A299 and Herne Bay.

2.6.3. The University Campus itself is accessible from either Whitstable Road or St Stephen's Hill. Giles Lane provides a continuous east-west connection through the University Campus between Whitstable Road and St Stephen's Hill. However, its width is constrained within part of the University resulting in an informal priority working system.

2.6.4. University Road provides a connection between Whitstable Road in the west and Giles Lane in the centre of the University Campus. The road forms a priority junction with Giles Lane. Within the centre of the University Campus both Giles Lane and University Road are subject to a 20mph speed limit.

2.6.5. Park Wood Road is a private internal university road that connects Giles Lane with areas in the north of the University.

2.6.6. Tyler Hill Road provides an east-west connection between the villages of Blean and Tyler Hill and runs between Sites BCD. The road is a rural country lane which whilst subject to national speed limit (60mph speed limit) features constrained geometry which limits the speed of vehicles.

2.6.7. As demonstrated above the proposed Sites are well placed to enjoy ample opportunities via local and strategic routes to key destinations near and further afield.

2.7 Summary

2.7.1. This Section has provided a summary of the existing transport conditions in the vicinity of the site. It is evident from this that Sites BCD benefit from access to a range of modes of transport. The proposed transport strategy responds to these existing conditions and is outlined in Section 5.

3 Policy Context

3.1 Introduction

3.1.1. The current CCC Local Plan was adopted in July 2017 and set out the plans to develop Canterbury district until 2031. Local Planning Authorities are required to review Local Plans at least every five years from adoption, and update where necessary.

3.1.2. The Draft Canterbury District Local Plan was prepared in March 2024, and is currently at the Regulation 18 stage of consultation. Once approved by a government appointed Planning Inspector, and formally adopted by the Council, the new Canterbury District Local Plan will form CCC's official planning blueprint until 2040.

3.1.3. The Draft Canterbury District Local Plan also has several supporting documents, relating to transport as follows:

- Draft Canterbury District Transport Strategy
- Draft Bus Strategy
- Draft LCWIP

3.1.4. A full review of the policy is set out at **Appendix E,** however this section sets out the clear changes from the current Local Plan in regards to transport**.**

3.2 Changes

3.2.1. The key differences proposed between this draft Local Plan and the previous document, relating to transport and development planning are as follows:

- A change in the Plan period from 2045 to 2040
- A fall in the number of new homes proposed by a total of 4,149 – from 13,495 to 9,346 over the life of this updated plan compared to the previous draft plan.
- Removal of the proposal for an Eastern Movement Corridor, better known as the Eastern Bypass, in Canterbury
- Removal of the proposed Canterbury Circulation Plan which contained the suggestion that the city should be zoned to remove 'rat runs' and force active travel opportunities
- Removal of the proposed strategic sites to the east of Canterbury which provided land for a part of the Eastern Movement Corridor and funding.

3.2.2. The following proposals relating to the proposed development site have been added or strengthened:

- A transport strategy that now focuses on better bus services as well as the promotion of walking and cycling to help to persuade people to leave their cars at home, rather than building additional road capacity. This is discussed in greater detail within Section 5.
- A new freestanding settlement on land to the north of the University of Kent in Canterbury.

3.3 Policy Review

3.3.1. This Transport Appraisal takes account of the following documents:

- Draft Canterbury District Local Plan (2024)
- Draft Canterbury District Transport Strategy (2024)
- Draft Bus Strategy (2024)
- Draft Local Cycling and Walking Implementation Plan (2024)

3.3.2. A review of the policy is set out at **Appendix E**, and a summary is provided in the following paragraphs.

Draft Canterbury District Local Plan (2040)

3.3.3. The current Canterbury District Local Plan was finalised in 2017 and established a strategy to 2031. This new draft Local Plan was prepared in March 2024 in response to a number of factors.

3.3.4. The vision for the district is supported by 12 strategic objectives, the following of which relate to transport:

- Create a transport network with a focus on district-wide public transport and low-carbon travel to improve air quality and people's health while ensuring excellent access to city and town centres on foot, cycle and by public transport.
- Take advantage of and improve our links to and from London and the Continent, while creating a transport network which enables most residents, particularly those in urban areas, to access their day-to-day needs locally through healthy, environmentally friendly journeys.

3.3.5. Policy SS4 sets out the movement and transportation strategy for the District. This places a focus on a new bus-led transport strategy, which will be supported by the provision of easy and safe pedestrian and cycle connectivity, with high levels of connectivity to the wider network, including within and between neighbourhoods.

3.3.6. Paragraph 2.15 states *"Development of a new rural settlement on land to the north of the University of Kent's Canterbury campus provides an opportunity to deliver a highly sustainable, freestanding settlement which reflects the council's spatial strategy for development."*

3.3.7. Paragraph 2.16 states *"Significant investment in movement and transportation is needed to support delivery of the new rural settlement, including in respect of a high frequency bus service which can connect the site to Canterbury West rail station and the city centre. Improvements will also be required at the A2 Harbledown junction and upgrading at Rough Common Road alongside a range of measures to maximise walking and cycling."*

3.3.8. Policy C12 – Land north of the University of Kent sets out the key development principles. This policy includes for the provision of a transport hub within the site, alongside the delivery of safe and convenient pedestrian and cycle connectivity. This will be facilitated through the creation of a complete, compact and well-connected neighbourhood, where everyday needs can be met within a 15-minute walk or short cycle.

3.3.9. Policy DS14 – Active and sustainable travel sets out the approach to active and sustainable travel across the District. This focuses on maximising high quality walking and cycling connectivity both within the site and to local facilities, and also covers the provision of cycle parking at new developments.

3.3.10. Policy DS15 – Highways and Parking sets out the approach to vehicle parking, which should be provided in line with the council's Parking Standards.

Draft Canterbury District Transport Strategy

3.3.11. The current Canterbury District Transport Strategy (CDTS) was written to support the current Local Plan and was adopted in 2017.

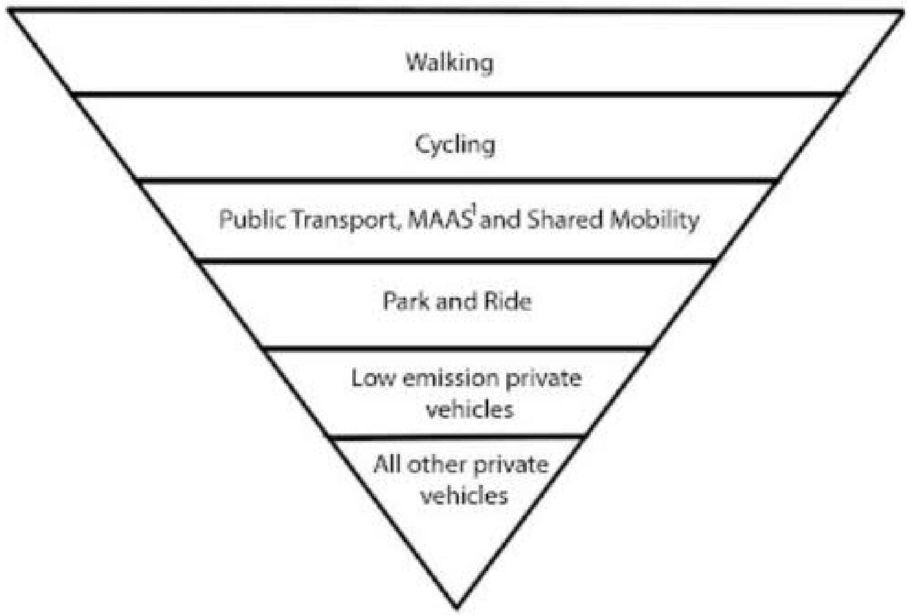
3.3.12. The Draft Canterbury District Transport Strategy was prepared in March 2024, and is an umbrella document which also contains a bus strategy and a Local Cycling and Walking Implementation Plan (LCWIP).

3.3.13. The vision of the Draft Transport Strategy to support the Local Plan is that by 2040:

- More journeys in the district will be made by sustainable transport than by the private car.
- Every person who needs to travel has access to a sustainable mode of transportation.
- The district has absorbed all of the additional trips associated with planned development without increasing congestion.

3.3.14. In accordance with Policy DS13 of the Draft Local Plan, the development will align with the council's Movement Hierarchy which seeks to prioritise active and sustainable travel options in all new developments, to minimise additional trips made by private vehicle, contribute to improvements in air quality and carbon emissions and support active and healthy lifestyles, as shown in **Figure 3-1**.

Figure 3-1 - Canterbury District Council – Movement Hierarchy



3.3.15. As shown in the movement hierarchy, active travel modes (walking and cycling) should be given the greatest priority, followed by public transport, with private transport modes having the least priority.

3.3.16. The Draft Transport Strategy provided mode share targets for future years of 2031 and 2040. A summary of these, alongside the 2011 and 2021 census mode shares is provided in **Table 3-1** below.

Table 3-1 - Census Mode Shares and Mode Share Targets

Mode	2011 census mode share	2021 census mode share	2031 target mode share	2040 target mode share	% Change from 2011 census mode share
Driving a car or van	55.0%	46.3%	42.3%	35.5%	-53%
On foot	14.7%	10.8%	18.0%	20.0%	+43%
Bicycle	2.7%	1.7%	4.0%	5.0%	+85%
Bus, minibus or coach	4.9%	2.9%	6.5%	7.0%	+43%
Train	5.0%	2.3%	6.5%	6.0%	+20%
Working mainly at home	11.6%	30.4%	14.0%	18.0%	+55%
Passenger in a car or van	4.7%	3.8%	6.5%	6.5%	+38%
Other	1.5%	1.8%	2.2%	2.0%	+33%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	

3.3.17. **Table 3-1** shows that by 2040, it is anticipated that private car use will have fallen by 53% compared to the 2011 census mode share. This reduction will be facilitated by an increase in trips by bus, cycle and on foot. The location of the UoK site on the urban edge of Canterbury within proximity to good public transport, walk and cycle links in part due to the location of the University fully aligns with the current transport policy.

Canterbury District Bus Strategy

3.3.18. The Canterbury District Bus Strategy (CDBS) was prepared by Steer in February 2024.

3.3.19. The CDBS was developed to identify measures and actions that could be taken to reduce delays to bus services, encourage significant mode shift to bus and provide local consideration of what further proposals could be brought forward.

3.3.20. The proposed measures included within the CDBS seek to prioritise sustainable modes of transport which will allow for planned growth without increasing traffic flows and without compromising the climate change action plan.

3.3.21. The bus strategy includes a target to at least double the bus mode share in the built up areas of Canterbury, Herne Bay and Whitstable to achieve a 16% mode share.

3.3.22. As set out in the CDBS, the City Council will require developers to pay to provide bus routes to new developments or to increase the service if the development is already served by bus routes. In addition to this, the City Council will use funding that has been collected from developments through Community Infrastructure Levy to enhance the bus network and bus infrastructure if not directly related to a development to improve the service across the district.

Canterbury District Draft Local Cycling and Walking Implementation Plan (LCWIP) 2025 – 2040

3.3.23. The Draft LCWIP was prepared in March 2024.

3.3.24. The LCWIP sets out the aims and the aspirations of the Council to significantly increase the number of trips made by walking and cycling within the horizon period of the new Local Plan to 2040.

The LCWIP identifies proposed routes and improvements. Those of relevance to the site are as follows:

- CS2: Install traffic signals and advanced stop line at the junction of St Stephens Hill / Downs Road, and allow cycling to be permitted on the footway up to the UoK storage facility. This will create a link between the large residential area of Downs Road / Hales Place and the University, and traffic signals will also benefit the bus service. The estimated cost of this is £250,000, and it is proposed that it would be funded via CIL.
- CS3: On road link to Alcroft Grange. This would require consent from the landowners, but no further works would be required, and there is therefore no associated cost.
- CS4: Upgrade the surface and install lighting to the existing bridlepath to provide a link from the UoK to Stephenson Road with cycle contraflow to the mini roundabout and provide

traffic calming on the link to St Stephen's Road. The bridlepath is well used by pedestrians and cyclists, but consists of trodden earth and is difficult to cycle on. The estimated cost of this is £200,000, and it is proposed that it would be funded via CIL.

- CS5: Provide waymarking to Park Wood Road and cycle lanes on the carriageway. The estimated cost of this is £1,000, and it is proposed that it would be funded via CIL.

3.3.25. Proposal CS2 will enable buses to turn right out of Downs Road onto St Stephen's Hill. At present, this movement is not possible due to safety concerns related to cyclists travelling at speed down St Stephen's Hill. The proposal is supported by both Stagecoach and UoK and would support the wider Canterbury transport strategy.

3.4 Bus Led Strategy

3.4.1. The Canterbury District Transport Strategy[9] and the Kent County Council Bus Service Improvement Plan (BSIP)[10] provide an insight into the local authority bus plans for the wider area and propose initiatives to enhance the bus network that would be aligned with the delivery of new development at this site. The focal point for both documents is to expand and improve the current bus provision, including improving the infrastructure and the reliability of services, two important factors in growing patronage both for existing and potential new passengers.

3.4.2. The bus strategy proposes a shortlist and longlist of interventions which focus on three specific themes: Customer Experience; Operations; and Infrastructure. A number of these interventions would improve the bus network around the UoK specifically, meaning that the new development could be effectively and sustainably served by the existing network or incremental changes to it.

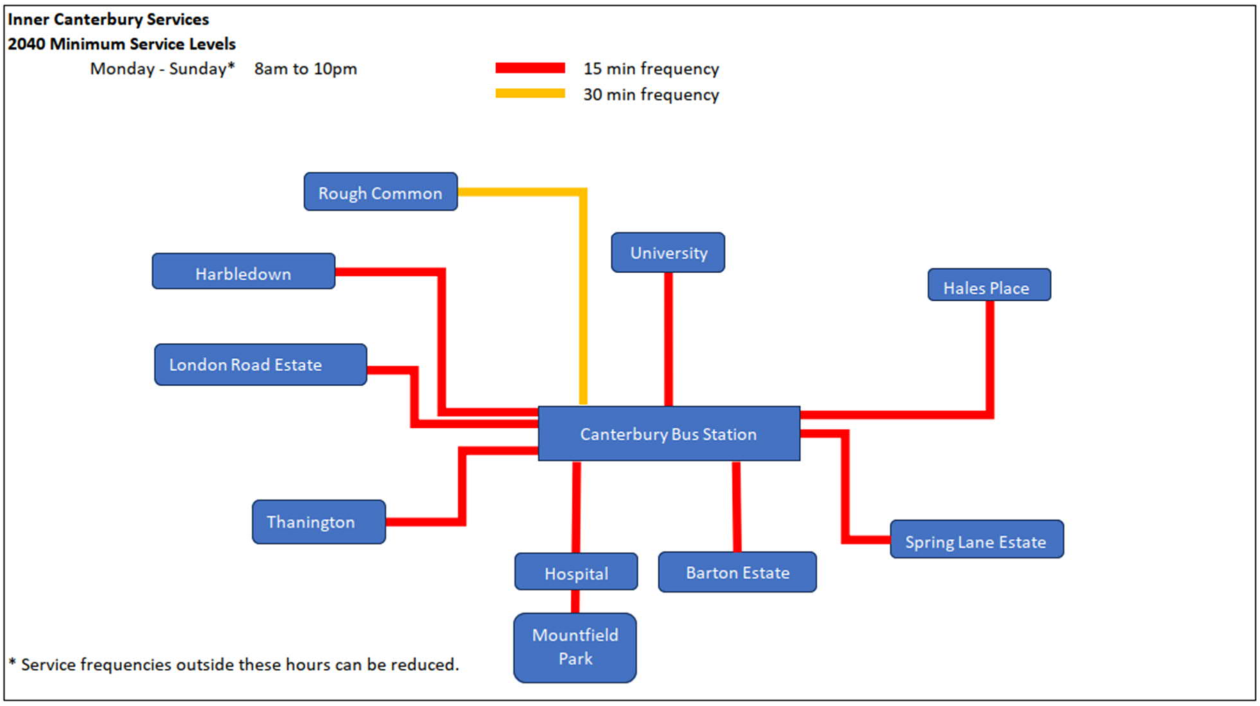
3.4.3. Specifically, Intervention G3 proposes a 24-hour bus service serving the UoK. The recent changes to the Stagecoach network, on 5 May 2024, show that upgrades are already taking place as the last bus is already after 04:00 and therefore in the longer-term, such a round-the-clock service level could be possible, based on adjoining development which has a different land use and therefore a different demographic with other trip rates and possibly wider distribution across the day.

3.4.4. **Figure 3-2** shows the minimum service levels that the district will aspire to by 2040. As shown, the University is served as part of the core bus network, as well as Rough Common and Hales Place. Each of these locations have the potential to connect to the new development site. The strategy aspires to a bus service between the UoK and Canterbury City Centre at a 15-minute frequency, Monday to Sunday, by 2040 which would be complementary to the wider interventions which will reduce the reliance of car use. It is however already noted in **Table**

[9] Canterbury City Council: Canterbury District Bus Strategy, February 2024
[10] Kent County Council: Kent Bus Service Improvement Plan (BSIP), October 2021

2-1 that the current service frequency is already more frequent than that, demonstrating the existing viability of the service provision and the potential to develop the network further around it, particularly for contiguous development rather than a standalone site which would be harder to incorporate within the core bus network.

Figure 3-2 - Inner Canterbury Services, Canterbury District Transport Strategy



KENT COUNTY COUNCIL BUS SERVICE IMPROVEMENT PLAN (BSIP) 2021

3.4.5. The BSIP undertook stakeholder engagement to collect feedback on the existing bus network, to understand where improvements are most wanted by the public and by those using the existing services. A key piece of feedback was the desire for services running longer hours, which is aligned with the Canterbury District Bus Strategy described above. Achieving this will further improve the bus service levels in Canterbury, facilitating the delivery of a bus service that serves the new development site. Another theme from the public engagement was a desire for better environmental standards.

3.4.6. One of the six targets in the BSIP is to reduce vehicle emissions through a fleet upgrade to zero emission buses, directly working to address the feedback for improved environmental performance of the bus network. A number of related initiatives within the overall BSIP all support this target, by promoting the bus network, seeking funding to achieve the fleet upgrade, and working towards increasing bus mode share. Given that zero emission buses still cost more than the equivalent diesel, the transition of the fleet will depend on solidly investable routes, such as the high-frequency ones operated commercially by Stagecoach.

3.4.7. Another of the six targets is to increase passenger numbers, which fell 66% in 2020/2021 because of the Covid-19 pandemic. Increasing bus patronage would imply success in improvements to the quality, frequency, and reliability of the bus services. As a new development site with 2,000 new homes being served by relatively small changes to the existing network, this transport strategy could help to achieve this target.

4 Walking and Cycling Audit

4.1 Introduction

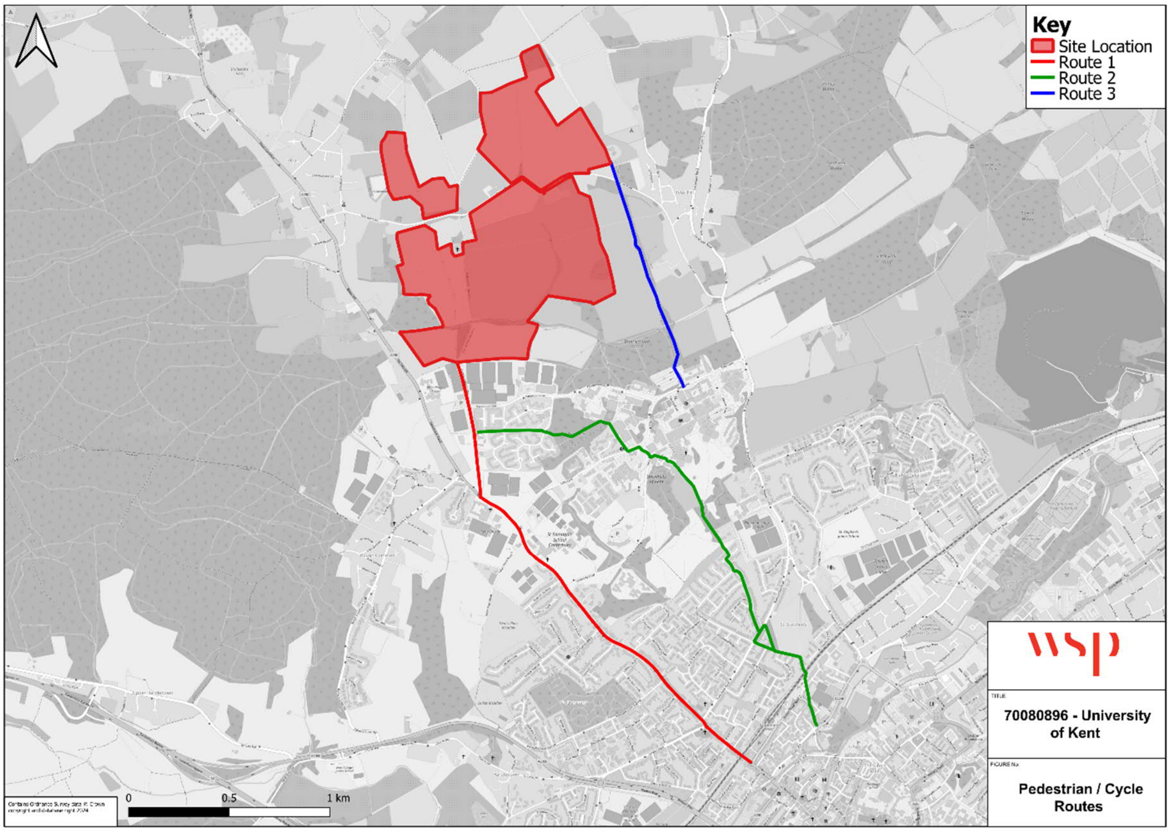
4.1.1. A site visit, which included a review of the local walking and cycling network was undertaken on Thursday 16th May 2024. The audit review considered three key movement corridors within close proximity to the Site (shown in **Figure 4-1**):

- Route 1: Crab and Winkle Way and Whitstable Road (south to the junction with B2248 Station Road W).
- Route 2: Through the centre of UoK via St Michael's Road to roundabout junction of B2248 / North Lane / St Stephen's Road.
- Route 3: Aspirational route via Crab & Winkle Line from point 100m north of Tyler Hill Road and Giles Lane.

4.1.2. The three routes selected follow the main desire lines between the proposed development and Canterbury City Centre, via the UoK campus.

4.1.3. The audit was undertaken to identify and assess the key safety and accessibility issues for pedestrians and cyclists. The audit assessed route widths and any route obstructions, available crossing points and lighting provision. This then allowed for the identification of any potential improvements that might be needed to maximise opportunities for walking and cycling associated with trips to and from the Proposed Development.

Figure 4-1 - Pedestrian and Cycle Audit Routes



4.2 Route 1 (Whitstable Road / Crab and Winkle Way)

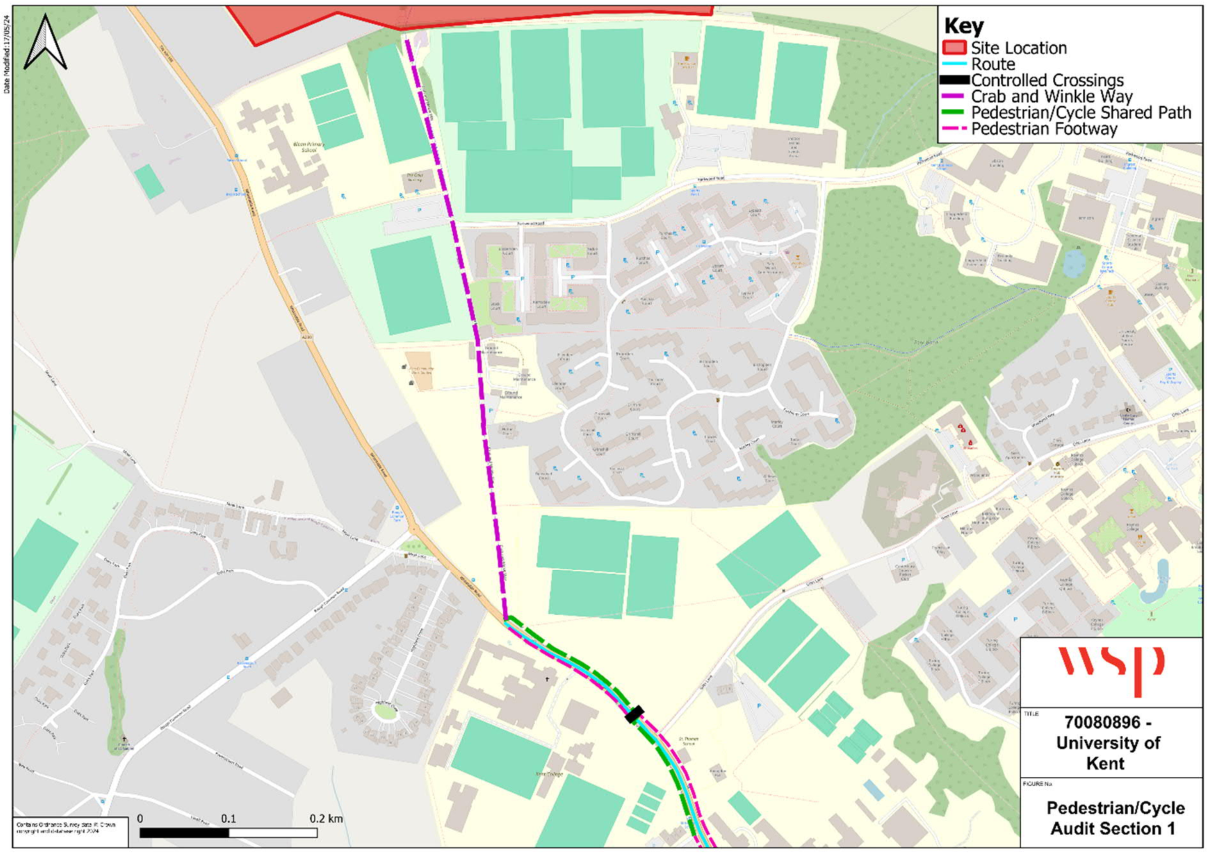
4.2.1. Route 1 runs from the southernmost point of Site B, along the Crab and Winkle Way and A290 to the centre of Canterbury. The route is approximately 2.6km in length.

4.2.2. The Crab and Winkle Way (where it passes through the University Campus) is a shared facility for pedestrians and cyclists. The route width extends to approximately 5m, providing a comfortable experience to both pedestrians and cyclists. The shared facility extends onto Whitstable Road (via shared foot / cycleway provision) until Neal's Place Road, where it terminates and cyclists are expected to join the highway along Whitstable Road or continue along the national cycle route on Neal's Place. There is one more section of segregated pedestrian/cycle path along Whitstable Road, a short (100m) section that runs between Cherry Drive and Clifton Gardens. Aside from these sections, there is no other formal cycle provision along the A290, and cyclists would be required to cycle on the carriageway with general traffic.

4.2.3. The A290 is a two-way single lane carriageway, with a width of approximately 6.5-7m. The speed limit on the route varies from 20 to 30 mph. Footways of approximately 2m run down either side for the majority of the route for pedestrians, and there are no defined cycle paths (aside from the short section mentioned above).

4.2.4. The following figures outline the pedestrian/cycle infrastructure. The route has been split into three sections for ease of observation (**Figure 4-2**, **Figure 4-5**, **Figure 4-8**).

Figure 4-2 - Route 1: Section 1



4.2.5. The first section of Route 1 (**Figure 4-2**) runs along the Crab and Winkle Way, a public shared facility for pedestrians and cyclists. Along a short section through the middle of this part of the Crab and Winkle Way is shared access for motor vehicles, to allow access to the Oaks Nursery and for Landscape and Grounds Management. Traffic volumes were observed to be low and in this section, however pedestrians and cyclists would need to remain vigilant.. Where the route is intersected by Park Wood Road, there are footways provided on the eastern side of the highway and a dropped kerb crossing provided (**Figure 4-3**).

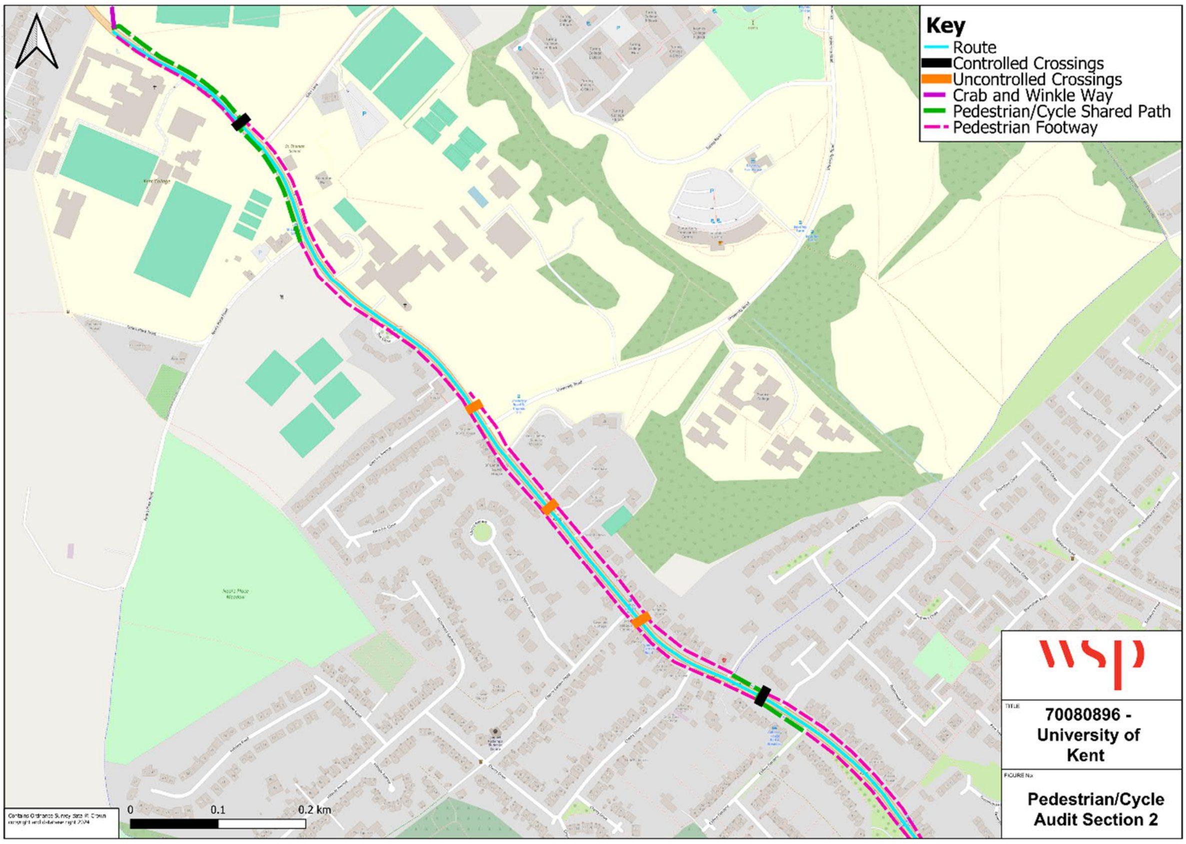
4.2.6. It should be noted that as part of the proposed access arrangement, this section of the Crab and Winkle way will see a new road corridor and the segregation of vehicles from pedestrians and cyclists, removing this existing conflict.

Figure 4-3 - Park Wood Road Junction

4.2.7. The southern section of the Crab and Winkle Way that connects to Whitstable Road is only accessible for pedestrians/cyclists and provides a wide (5-6m) paved surface well suited for active travel. The existing route in this section does not have any lighting and in places the vegetation is overgrown (**Figure 4-12**). The Crab and Winkle Way connects seamlessly onto the shared pedestrian/cyclist path on Whitstable Road. As seen in **Figure 4-2**, for users of this shared path there is a mandatory crossing to continue southbound, which takes the form of a toucan crossing (**Figure 4-4**).

Figure 4-4 - Whitstable Road Toucan Crossing

Figure 4-5 - Route 1: Section 2



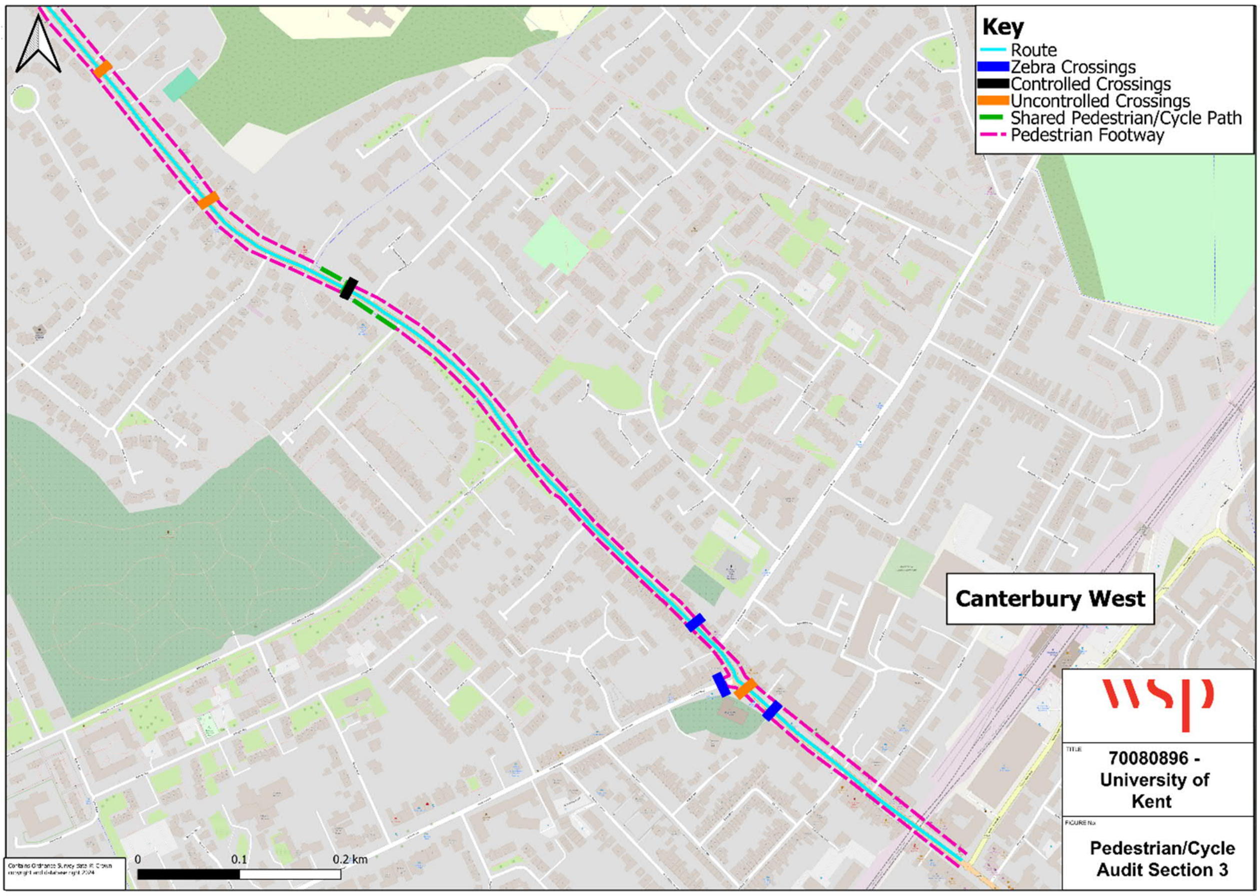
4.2.8. The second section of Route 1 (**Figure 4-5**), continues southeasterly towards Canterbury City Centre along Whitstable Road. Whitstable Road is 30mph in this section with two lanes of traffic (one in each direction). After the mandatory crossing for users of the shared cycle path, the route continues along the southern side of the highway with there being a short section on the northern side of the highway where there is no footway present. A single uncontrolled crossing south of this section allows the footway to resume on both sides of the road (**Figure 4-6**).

Figure 4-6 - Uncontrolled Crossing (St Thomas Hill)

4.2.9. There are two more uncontrolled crossings with dropped kerbs, maintaining footways on both sides of the carriageway. There is a small section of share pedestrian/cycle path (100m) along this section of the route, which connects to a bridleway that runs northeasterly by Cherry Drive into the university campus and Archbishops school. There is a mandatory crossing here in the form of a Toucan crossing for users of the shared path (**Figure 4-7**). The speed limit remains at 30mph for the majority of this section, turning into 20mph at the point the shared pedestrian/cycle path ends.

Figure 4-7 - Toucan Crossing

Figure 4-8 - Route 1: Section 3



4.2.10. The final section of the route is 20mph and routes into the City Centre at the St Dunstan's Level Crossing. There are dedicated footways on both sides of the highway for the duration and a number of formal crossing points (zebra and uncontrolled dropped kerb crossings). There is no formal cycle infrastructure in this section of the route. The footways are generally 1.8-2.5m along the route and whilst there are crossing facilities at the side roads, these are not always on the desire lines or have the appropriate tactile paving.

ROUTE WIDTHS AND OBSTRUCTIONS

4.2.11. As noted above, the pedestrian and cycle paths are generally of adequate width throughout the duration of the route, especially on the Crab and Winkle Way where widths are up to 5m. However, cyclists and pedestrians are not segregated along this route, which was considered appropriate at the time of the site visit due to low volumes of pedestrians and cyclists but may need to be reviewed if volumes increase (**Figure 4-9**). Along the A290, pedestrian footway widths are approximately 1.8m at their narrowest sections and can reach 3m in some sections. The shared pedestrian / cycle paths are approximately 2-3m in width in all sections along the A290.

Figure 4-9 - Crab and Winkle Way

4.2.12. It was clear from the site visit that some management of vegetation is required to ensure that all signage is visible to users (**Figure 4-10**).

Figure 4-10 - Areas of Vegetation Management Required

CROSSINGS AND LIGHTING

4.2.13. Route 1 is well served by a variety of well-maintained formal crossing points along the majority of the route, especially closer to Canterbury City Centre (Whitstable Road and St Dunstan's Street). There is noticeably less opportunity for crossing by the entrances to St Edmund's School and Kent College (St Thomas Hill). The crossings along the route take the form of Pelican Crossings, Toucan Crossings, Zebra Crossings and uncontrolled dropped kerb crossings with central refuge islands and tactile paving, allowing ease of crossing from the east to west across the A290.

4.2.14. While facilities for crossing the main highway are frequent and well maintained, there are a number of unsatisfactory dropped kerb crossings at some of the roads along the route (**Figure 4-11**). Dropped kerbs are sometimes only available on one side of the road and tactile paving is also inconsistent. Some of these crossing points are also on poor pedestrian desire lines and steep, encouraging informal crossing or pushing users closer towards the main highway environment. A lot of these were also in a poor condition with water and mud building up and uneven paving, further detrimental to the user experience. This is of particular concern for those with mobility issues or the visually impaired.

Figure 4-11 – Inconsistent Crossings

4.2.15. The route is generally well-lit, especially along the main highway network. The only existing concern was identified on the section of the Crab and Winkle Way that connects Parkwood Close and Whitstable Road. There was a lack of any lighting provision at all and combined with the lack of passive surveillance and some areas of overgrown vegetation, has the possibility to affect the ease of passage, especially in a nighttime environment. This can be seen in **Figure 4-12**.

Figure 4-12 - Crab and Winkle Way

LEVEL CROSSING

4.2.16. St Dunstan's Level Crossing is located on the A290, approximately 50m south of the junction with Roper Road. An underpass is provided for pedestrians, ensuring that pedestrians do not have to wait for the train to pass before being able to continue. The underpass has stairs leading down to a tunnel. The tunnel has sufficient lighting and is in good condition (**Figure 4-9**). Those unable to use the underpass such as cyclists, wheelchair users and those with pushchairs are required to wait on the A290 alongside cars and other vehicles and use the footway to cross the level crossing.

Figure 4-13 - St Dunstan's Level Crossing Underpass

IMPROVEMENT OPPORTUNITY AREAS

4.2.17. This section outlines the areas where there is potential for improvements to be made to the existing pedestrian and cycle infrastructure. For ease of reference, the improvements have been split by location.

ST DUNSTAN'S LEVEL CROSSING

4.2.18. Opportunities for improving the level crossing are fairly limited in nature however there are some potential minor changes that may be beneficial listed below:

- An assessment to determine whether there is potential in removing / reducing the number of the car parking spaces (**Figure 4-14**) on either side of the level crossing as this could improve visibility when approaching the crossing for cyclists and improve their ability to filter to the front of the junction.

Figure 4-14 - Parking by St Dunstan's Level Crossing

- Improved signage for the underpass.
- There may be an opportunity to provide an advanced cycle stop box at the level crossing to further enhance safety and visibility of the crossing for cyclists.
- For users who are unable to utilise the pedestrian underpass (cyclists and mobility impaired users), potential to widen the narrow footways in the immediate vicinity of the crossing (especially the western footways (1.5m)) could be an option with a reduction in road space. This will improve the congestion in the area while queuing and maximise space between pedestrians, cyclists and other vehicles.

WHITSTABLE ROAD / ST THOMAS HILL

- Aside from the shared pedestrian / cycle path sections (440m) along Whitstable Road / St Thomas Hill (2km), there are no other sections of formal cycle infrastructure. It is anticipated that only experienced cyclists would use this route, given National Cycle Route 1 (Route 2 of this assessment) is available, however further consideration to the provision of advisory cycle lanes along the sections of Whitstable Road / St Thomas Hill could be explored to provide a better experience for cyclists using the route.

- Improving the condition and consistency of tactile paving and dropped kerbs at all formal crossing points will be investigated to improve the accessibility for mobility and visually impaired users.

CRAB AND WINKLE WAY

- Currently the Crab and Winkle Way is unlit and some signage overgrown in areas (**Figure 4-12**), combining this with the lack of passive surveillance and segregation from any other highways may be uninviting to pedestrians and cyclists, especially in dark environments. As part of the access strategy to the site, the introduction of the new southern access will see the introduction of improved segregated footway / cycleway provision as well as new lighting provision making this element of the route safer to use for existing and new users.

Summary

4.2.19. Route 1 provides excellent connections into the heart of the university by way of the Crab and Winkle Way. With the introduction of the allocation, it is expected that this route would be integrated into the proposed access arrangement which will maintain a foot/cycle way connection developed as far as possible in line with LTN1/20, but also introduce additional surveillance and lighting to improve walking and cycling.

4.2.20. Further into the route as it heads south along Whitstable Road into the city centre, the pedestrian and cycle provision vary although there is continued provision into the City Centre. For cyclists, there is a need for on road travel for sections of the route, however this should be considered alongside route 2 which provides a good cycle route into the City Centre. For pedestrians, the route is lit with natural surveillance and generally sufficient widths. Areas that can be improved with the introduction of the allocation is enhancing the pedestrian crossing facilities along the corridor to support all users.

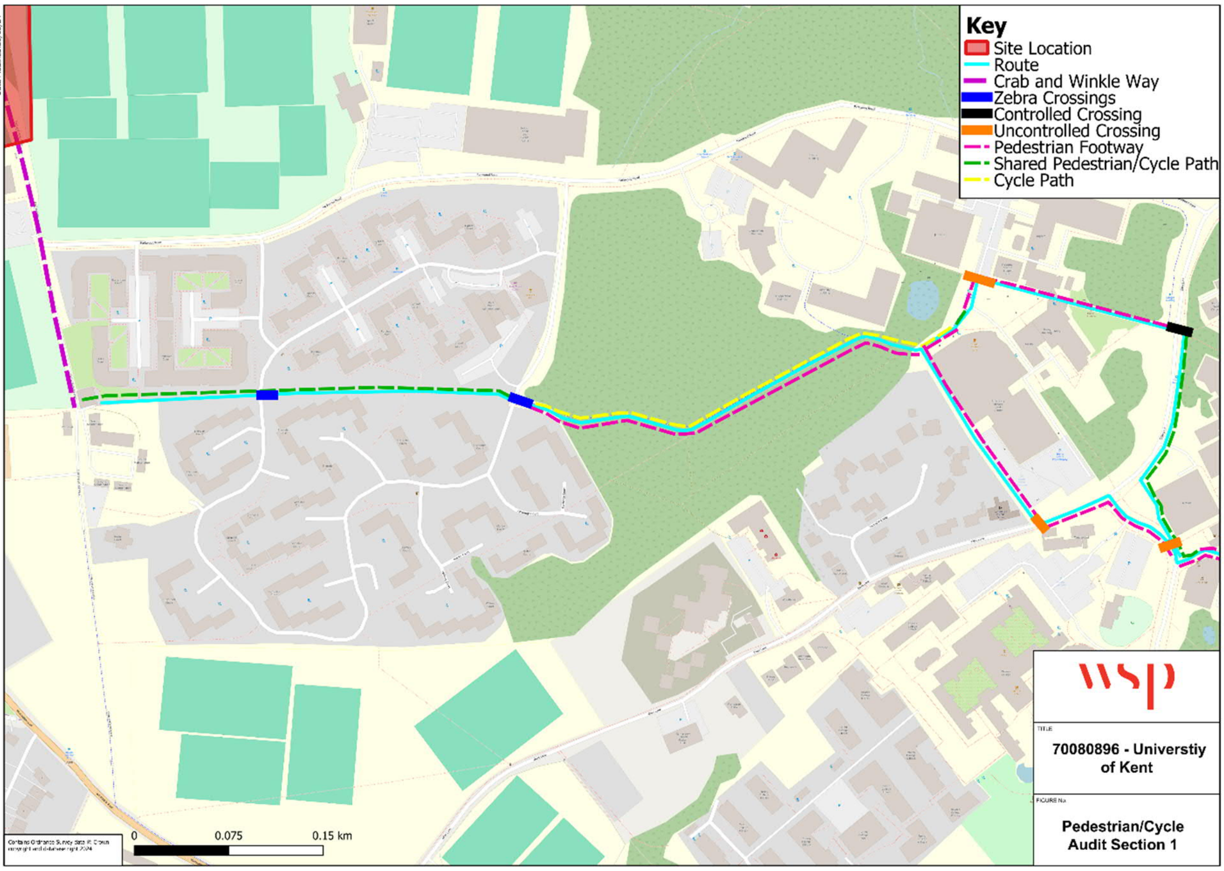
4.3 Route 2 (UoK via St Michael’s Road)

4.3.1. Route 2 runs from the connection point of the Crab and Winkle Way and the shared pedestrian and cycle way (which runs to the south of Kemsdale Court Student Accommodation) and the centre of Canterbury via the UoK campus and the residential area around Salisbury Road / St Michael’s Road.

4.3.2. This route provides excellent connections between the Site and City Centre due to the majority of the route being vehicle traffic free. The route is however steep in locations and approximately 1.8km in length. The route is mainly a public footpath accompanied with a cycle path with both parts being approximately 2m in width and are surrounded by adequately maintained vegetation for a majority of the route.

4.3.3. Whilst the route is steep in places, with the increased use of electric bicycles and scooters, there is the potential for this to become a well-used route.

Figure 4-15 - Route 2 Section 1



4.3.4. The initial section of Route 2 (

4.3.5. **Figure** 4-15), begins on the Crab and Winkle Way, there is shared access with motor vehicles for the majority of this section, although as per **Paragraph 4.2.5** there is low traffic in this area and it would be upgraded as part of the allocation. As seen in **Figure 4-3**, there is a dropped kerb crossing that allows passage over Park Wood Road and provides the only area of footway on the shared motor vehicle section of the Crab and Winkle Way. The route turns eastbound onto a shared pedestrian/cycle path with an average width of 1.8-2m. This path runs through a residential area and is visible with passive surveillance at all points. Where the path crosses roads, there are zebra crossings (

4.3.6. **Figure** 4-15, **Figure 4-16**) present. The shared pedestrian/cycle path runs for 300m and then turns into a segregated pedestrian/cycle track (**Figure 4-16**) that passes through a wooded area. The cycle and pedestrian tracks are on average 1.8-2m wide apiece and are separated by a central gravel area approximately 0.7m in width. There is little passive surveillance in this section of the route, but it is extremely well lit and there is visible CCTV present at frequent intervals (**Figure 4-25**). This is a popular route and was well trafficked during observations.

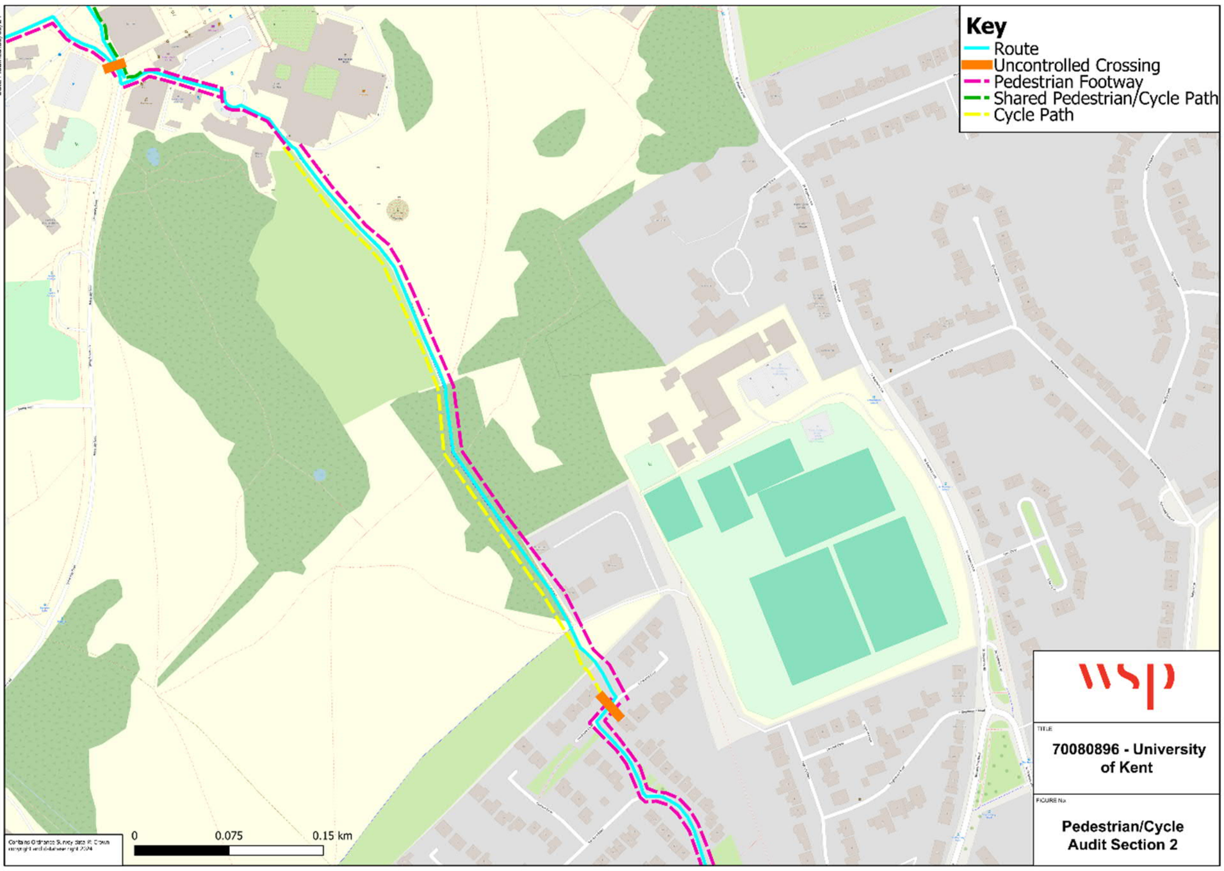
Figure 4-16 - Active Travel Zebra Crossing

4.3.7. As per **Figure 4-15**, there are then two options for pedestrians and cyclists to use, the shortest route continues to the southeast, however a narrow track means that cyclists must dismount and walk through this part of the route (**Figure 4-24**). After this point the rest of section 2 follows an active highway with no cycle infrastructure and pedestrian footways only present on one side of the highway in sections. There are no controlled crossings present here, although dropped kerbs ease passage through crossing points.

4.3.8. A second route option providing an alternative to using this narrow cycle path, utilises a shared pedestrian/cycle path routing around the rear of the sports centre towards a toucan crossing (**Figure 4-17**) at Giles Lane. This alternative route continues to the northeast, through the School of Biosciences towards the east and then back down to the south and towards the University Road where it reconnects with the other route. It is longer in distance (330m) than using the narrower path by the Sports Centre (250m) however may be more attractive to some users due to the more formal pedestrian/cycle infrastructure in place.

Figure 4-17 - Alternative Route Toucan Crossing

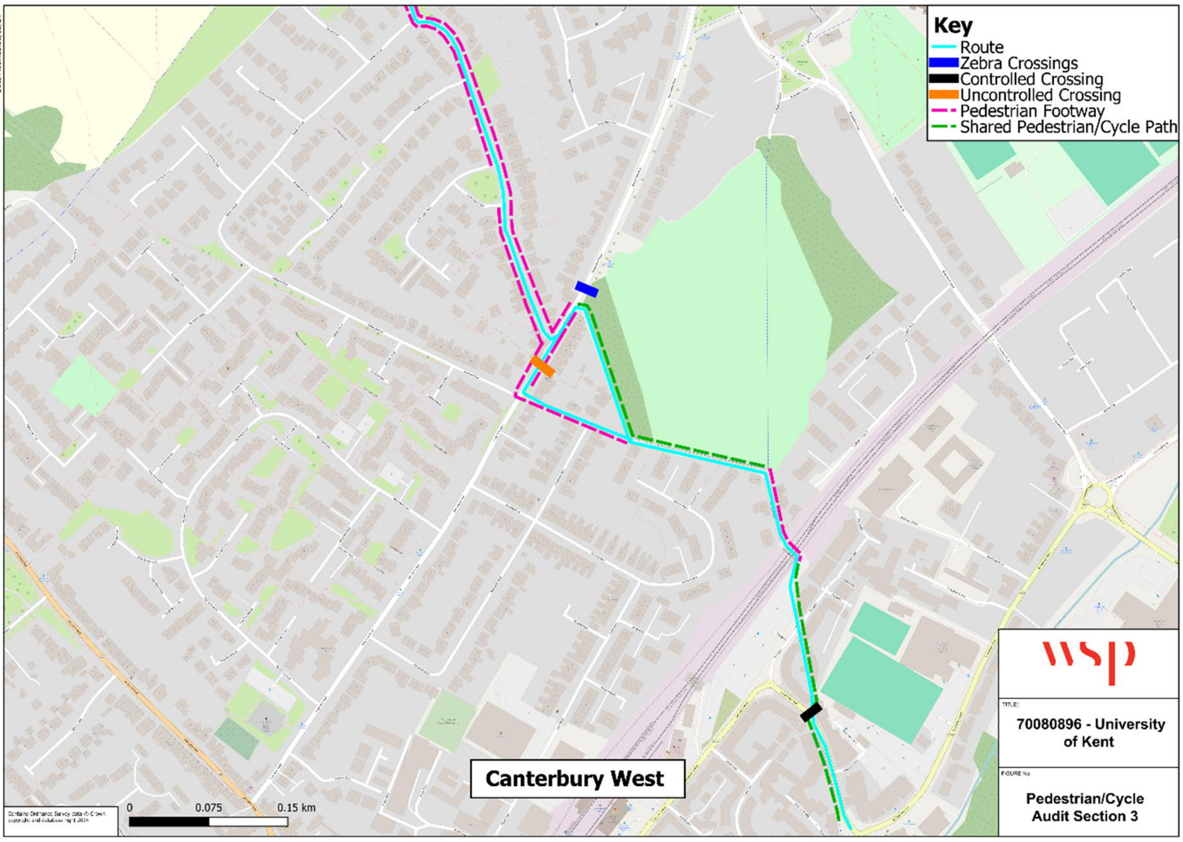
Figure 4-18 - Route 2 Section 2



4.3.9. Section 2 of Route 2, mainly runs through the University Campus along Eliot Hill, a segregated pedestrian/cycle track (**Figure 4-19**). It is 500m in length and both the dedicated pedestrian and dedicated cycle track average 1.8m in width for the duration. The tracks are separated by a gravel centre approximately 0.7m in width. Eliot Hill is a popular route for students, it is however a fairly steep and prolonged climb when travelling in the direction of the University and may not be suitable for users of all types.

Figure 4-19 - Eliot Hill Pedestrian/Cycle Track

Figure 4-20 - Route 2 Section 3



4.3.10. The final section of Route 2 brings users through a residential area. After leaving Eliot Hill, pedestrians/cyclists are brought through Lyndhurst Close/Salisbury Road/St Michael's Road. There is a 30mph speed limit in place throughout this section and there is no formal cycle infrastructure such as marked cycle lanes present. Pedestrian footways were 1.8m at the narrowest points. As observed in **Figure 4-21**, there were some issues with obstructions such as bins restricting the footway (of particular concern for wheelchair users). While there is no dedicated cycle infrastructure, this part of the route is low trafficked, and cyclists of all types were observed utilising the highway.

Figure 4-21 - Salisbury Road

4.3.11. Upon reaching Beaconsfield Road to the south, there are two options to continue towards the City Centre, one utilising a shared active travel path to Hanover Place (**Figure 4-27**) and another that is pedestrian only, with cycle dismount signage present. The initial section of the shared pedestrian/cycle path is somewhat overgrown and dark, and the alternative pedestrian footway offers an alternative for anyone who may find the shared route uncomfortable. This pedestrian footway rejoins the pedestrian/cycle path where it opens out and continues down towards the railway line. Upon reaching Hackington Place there is a small section where cyclists must dismount for 100m until reaching the other side of the rail underpass (**Figure 4-26**). From here the rest of the route is a shared pedestrian/cycle path. There is a mandatory crossing in this final section for users of this path which takes the form of a toucan crossing (**Figure 4-23**).

Figure 4-22 - Convergence of Both Paths

Figure 4-23 - Toucan Crossing Station Road West

ROUTE WIDTHS AND OBSTRUCTIONS

4.3.12. The pedestrian and cycle paths are generally of adequate width (1-2m across) throughout the duration of the route, however in some instances where the paths merge and become pedestrian footway, cyclists are required to dismount and walk. Signage is in place warning cyclists of this. In some instances, the paint on the pedestrian and cycle tracks has become faded and difficult to see. There are also areas on the active travel link from Beaconsfield Road to Hanover Place where vegetation is overgrown and obstructs the path, also reducing visibility of lighting columns.

Figure 4-24 - Narrow Path

CROSSINGS AND LIGHTING

4.3.13. Route 2 is served by adequate lighting and crossing opportunities for the majority of the route, particularly the mid and north sections (**Figure 4-25**). In these sections (such as the pictured section below (**Figure 4-25**)), there are some areas that lack passive surveillance due to vegetation, however due to this CCTV is provided and highly visible improving safety. Dropped kerbs and tactile paving is consistent throughout the route. Lighting is sufficient for the majority of the route, however in some sections due to the significant vegetation, some of this lighting is diminished by the tree cover. This is especially pertinent on the active travel link from Beaconsfield Road to Hanover Place (**Figure 4-27**) towards the southern end of the route.

Figure 4-25 - CCTV, Lighting and Vegetation on the Main Pedestrian/Cycle Route

RAIL UNDERPASS (THE SPIRES)

4.3.14. To gain access into the City Centre and rail station, users of this route will need to navigate an underpass, connecting the path with The Spires. The tunnel is narrow (circa 2m across maximum) with limited signage or lighting as pictured below.

Figure 4-26 - Train Crossing Underpass (nr The Spires)

OPPORTUNITIES FOR IMPROVEMENT

4.3.15. The southernmost section of Route 2 provides the main opportunities for improvement.

TUNNEL CROSSING

- The existing underpass (**Figure 4-26**) for pedestrians and cyclists under the railway is currently dim and lacking in adequate signage. Improving the signage and lighting and general public realm improvements (possible re-painting and removing overgrown vegetation) in this area should be a priority to enhance safety in this area. It should also be explored whether CCTV can be introduced to further aid safety.

ELIOT HILL

- Eliot Hill features a segregated pedestrian/cycle path that is situated on a long, steep hill that takes active travel users into the heart of the university campus. Due to the steep nature of the link, the provision of frequent resting points (such as benches) could be introduced for users to rest where necessary.

ACTIVE TRAVEL LINK FROM BEACONSFIELD ROAD TO HANOVER PLACE

- The vegetation in some areas along this link is quite overgrown and blocks visibility of the path and of lighting columns present along the path. This can be seen in **Figure 4-27**. Clearing this back would improve safety and ease of passage along this path.

Figure 4-27 - Beaconsfield Road Overgrown Link

Summary

4.3.16. Route 2 is an suitable route from the University into the City Centre, the majority of the route is segregated from live highways and features well maintained, well used pedestrian/cycle routes such as Eliot Hill.

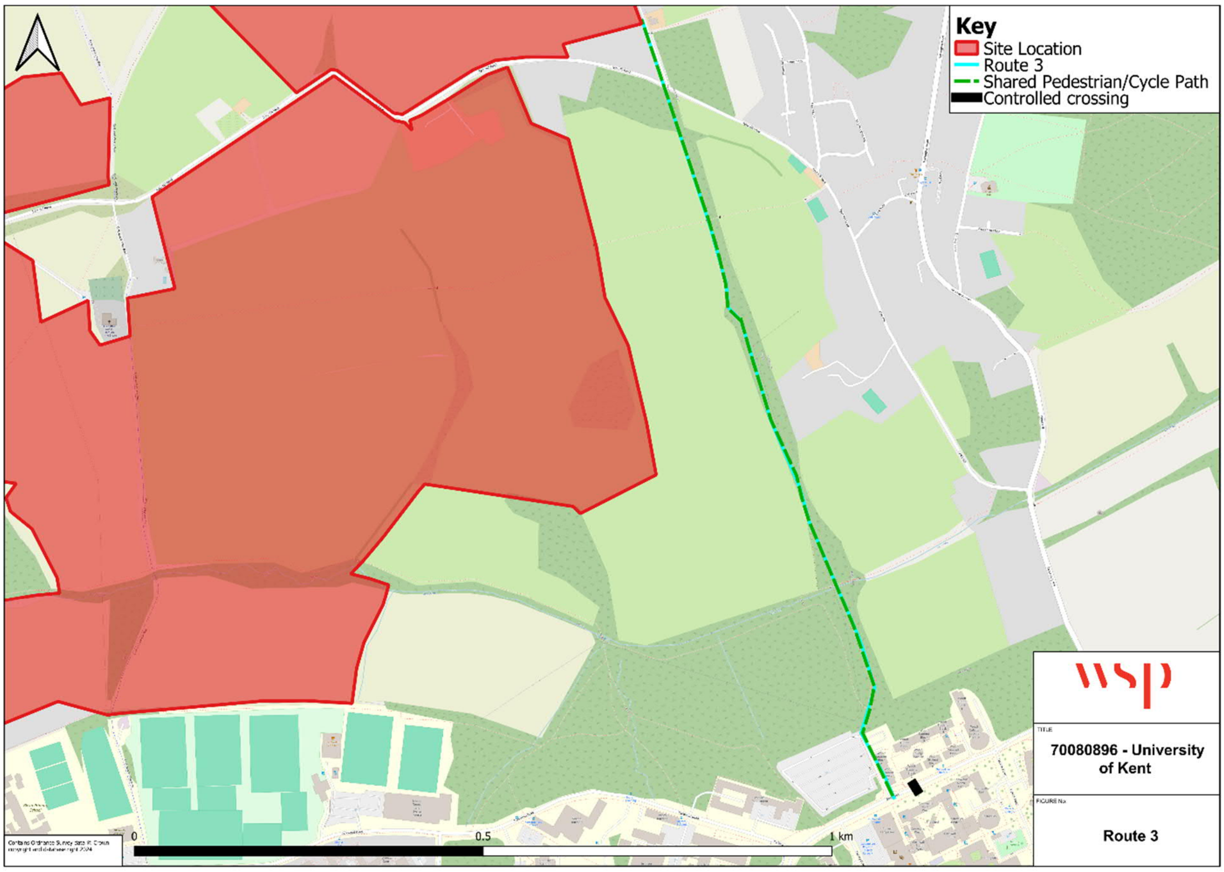
4.3.17. Where cycle facility provision is absent (Lyndhurst Close/Salisbury Road/St Michael's Road) the surrounding quiet residential environment does not provide serious prohibitions to utilising the highway to continue your journey. This is also a relatively small part of the route (400m) out of the entire journey (1.8km).

4.3.18. One of the main detriments to Route 2 is the steep nature that is especially noticeable on Eliot Hill. Increasing resting points in this section may be beneficial.

4.4 Route 3 (Aspirational Route via Crab & Winkle Line between Tyler Hill Road and Giles Lane)

4.4.1. Route 3 is an aspirational leisure route via the Crab and Winkle Line between Tyler Hill Road and Giles Lane. The route was once a trainline which has since been converted into a public footpath for walkers and cyclists. The footpath is approximately 660m long and could be considered as an alternative leisure access to the east side of the development site. The footpath could also benefit residents in Blean, providing connections between the village and the development site, the University and the City Centre.

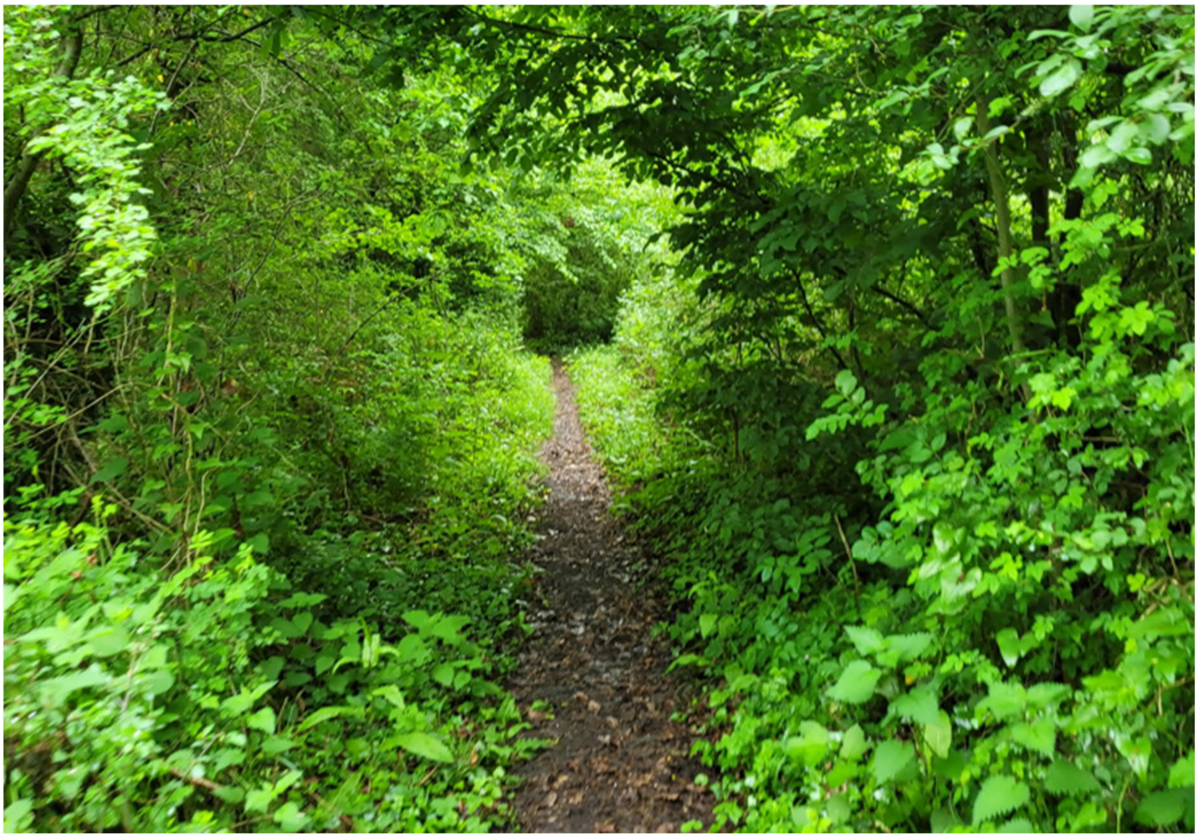
Figure 4-28 – Route 3



ROUTE WIDTHS AND OBSTRUCTIONS

4.4.2. The footpath is relatively narrow, with widths of approximately 1-1.5m at the widest points. The route is not segregated for users, with limited opportunity for passing places. Additionally, the footpath is lined with very overgrown vegetation reducing the width of the path and limiting visibility.

Figure 4-29 - Route 3



4.4.3. Access to the footpath from Giles Lane is via stairs which were mainly clear from shrubbery but are at risk of being slippery from leaf fall as shown in Figure 4-30. In addition, the route is not suitable at this point for cyclists, mobility impaired users, visually impaired users or those with pushchairs.

Figure 4-30 - Stairs to Crab and Winkle Line

CROSSINGS AND LIGHTING

4.4.4. At present, there is no lighting provision along the footpath.

OPPORTUNITIES FOR IMPROVEMENT

4.4.5. Access from Giles Lane would benefit from additional signage, and the stairs would need clearing of leaf mould to reduce the chance of trips and slips. The path itself needs regular maintenance to keep clear.

4.4.6. Route 3 is currently in use as a public footpath for walkers but has potential to be used as an alternative connection to the development. However, any appropriate enhancements along this route to provide a width similar to the original railway line would be expensive to deliver and would require significant environmental assessments. Furthermore, in order to access the university / City Centre significant upgrades at the southern end would be required to get pedestrians and potential cyclists up to road level.

4.4.7. As such, it is concluded that whilst there are benefits to the delivery of this route, it can only be considered aspirational and is not relied upon as an access to the site. However, it is expected that the University will continue to engage with CCC over potential improvements as the masterplan progresses.

4.5 SUMMARY

4.5.1. This section has reviewed two key routes from the University into Canterbury City Centre alongside an aspirational route to the north east utilising the former Crab and Winkle railway line. These routes were walked and observed during a site visit on the 16th May 2024. Both routes into the city centre initially use the Crab and Winkle Way and then split in their relative directions.

4.5.2. Both routes provide excellent connections into the city centre from the university. Route 1 is more suited to pedestrians, as barring the shared pedestrian/cycle paths there is no other cycle infrastructure. There are frequent controlled and uncontrolled crossings along the route, and it is a direct journey straight to the train station.

4.5.3. Route 1 could be improved by added provision of a crossing by St Edmunds School and improving the consistency and condition of dropped kerb crossings along the route (**Figure 4-11**). The delivery of the draft allocation would include improvements to the Crab and Winkle Way where it passes through the University Campus by introducing lighting and footway / cycle segregation (**Figure 4-12**). Consideration could be given to introducing advisory cycle lanes on Whitstable Road where width permits.

4.5.4. Route 2 is a good route for both pedestrians and cyclists, with the majority of the route being shared and segregated pedestrian/cycle tracks that are isolated from any live highway environments. Signage outlining the cycle route into the city centre is consistent and visible, where there is no formal cycle infrastructure the quiet environments do not add detriment to the journey.

4.5.5. This route could be improved by adding resting points along Eliot Hill (**Figure 4-19**), maintaining the vegetation by the Beaconsfield Rd/Hanover Place active travel link (**Figure 4-27)** and improving the signage and lighting of the pedestrian rail underpass near the Spires (**Figure 4-26**).

4.5.6. The main barriers to both routes are the length and gradient, especially when travelling from the city centre back into the university. While there are limitations on improving this, the increasing usage of e-Bikes and e-Scooters will help to offset this.

4.5.7. The study highlighted that the key aspirations of the allocation site will be to provide connections into the heart of the university and beyond towards the City Centre utilising the infrastructure and public transport services that are available, which would support the aim of reducing private car travel. Where residents are comfortable with the journeys into the city centre by walking and cycling, as has been explored within this section, improvements have been highlighted that could make walking and cycling more attractive.

5 Development Proposals

5.1 Overview

5.1.1. Initial masterplanning optioneering indicated potential for approximately 2000 homes supported by a local centre (incorporating transport hub) and primary school to serve the new population.

5.1.2. As set out in Policy C12 of the Draft Local Plan, *"Planning permission will be granted for development which meets the following criteria:*

1) Development mix

Across the site, the development mix will include:

a) Approximately 2,000 new dwellings including affordable housing, older persons housing, accessible housing, self building housing and an appropriate housing mix in line with Policies DS1 and DS2.

b) Non-residential development:

(i) Provision of a community hub as focal area for the community containing a mix of uses including:

(1) Local centre including commercial (minimum 1,250sqm) and local shopping and community uses (minimum 500sqm)

(2) Office and business space (minimum 4,000sqm) including flexible working space

(3) A mobility hub to serve residents and businesses.

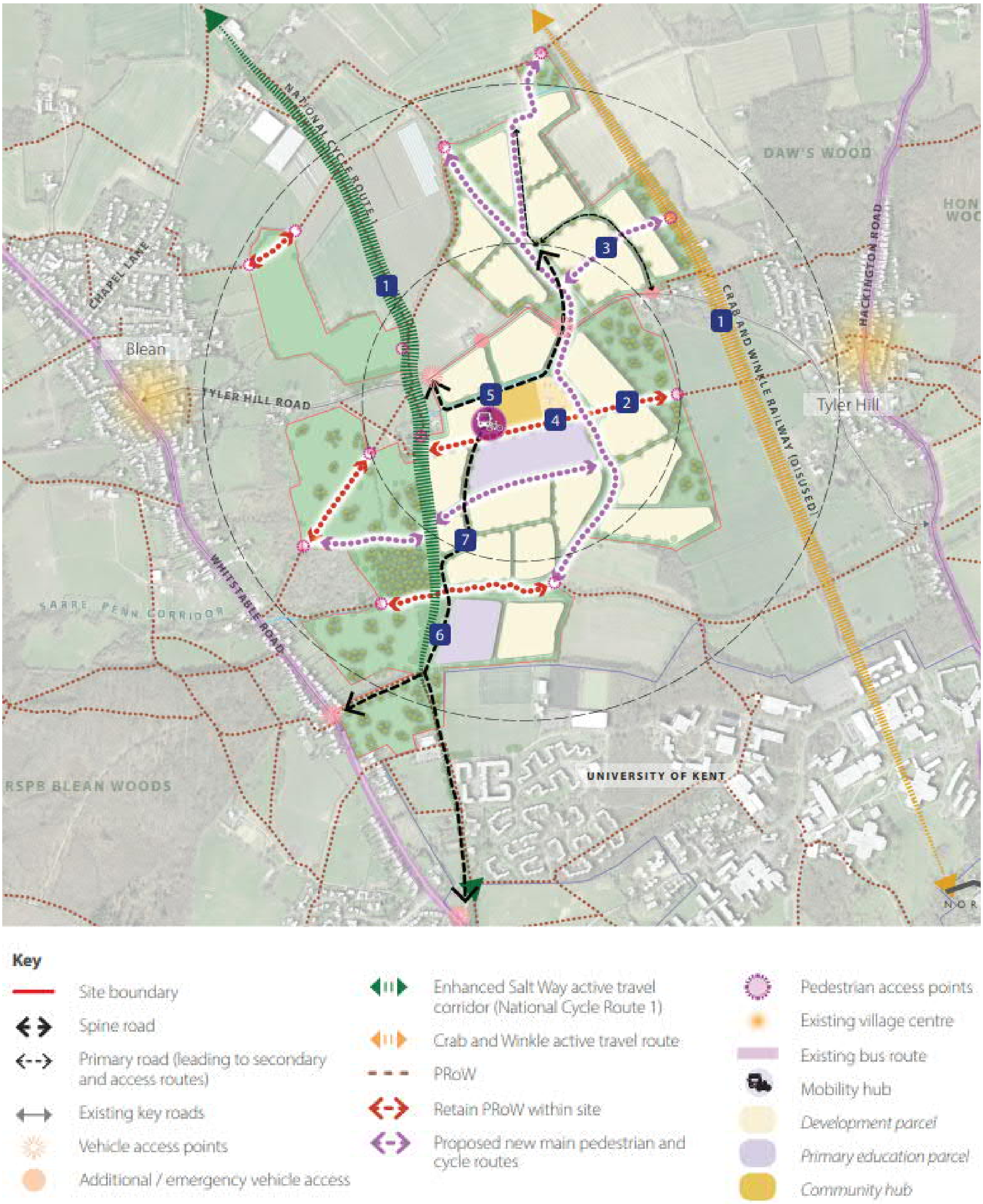
(ii) Provision of a new 3FE Primary School (3 ha) with early years provision, located adjacent to the community hub

(iii) Resiting and provision of a new 2FE Primary School (2.05 ha) to replace existing capacity at Blean Primary School."

5.1.3. Limited vehicular access to Site C would lend the site to provision of open space to contribute towards the overall provision across Sites BCD albeit acknowledging that should alternative access opportunities arise (for instance in the form of third-party land) then there may be opportunity to deliver further residential development in this location.

5.1.4. The emerging masterplan is designed around the principle of building local communities and enabling heathy and sustainable travel. The first step is to reduce the need to travel in the first place. This can be achieved by providing a good mix of uses and by creating good quality routes and services between the new and established communities and facilities. **Figure 5-1** (also contained in **Appendix F**) outlines the current emerging masterplan for Sites BCD.

Figure 5-1 - Current Emerging Masterplan for Sites BCD

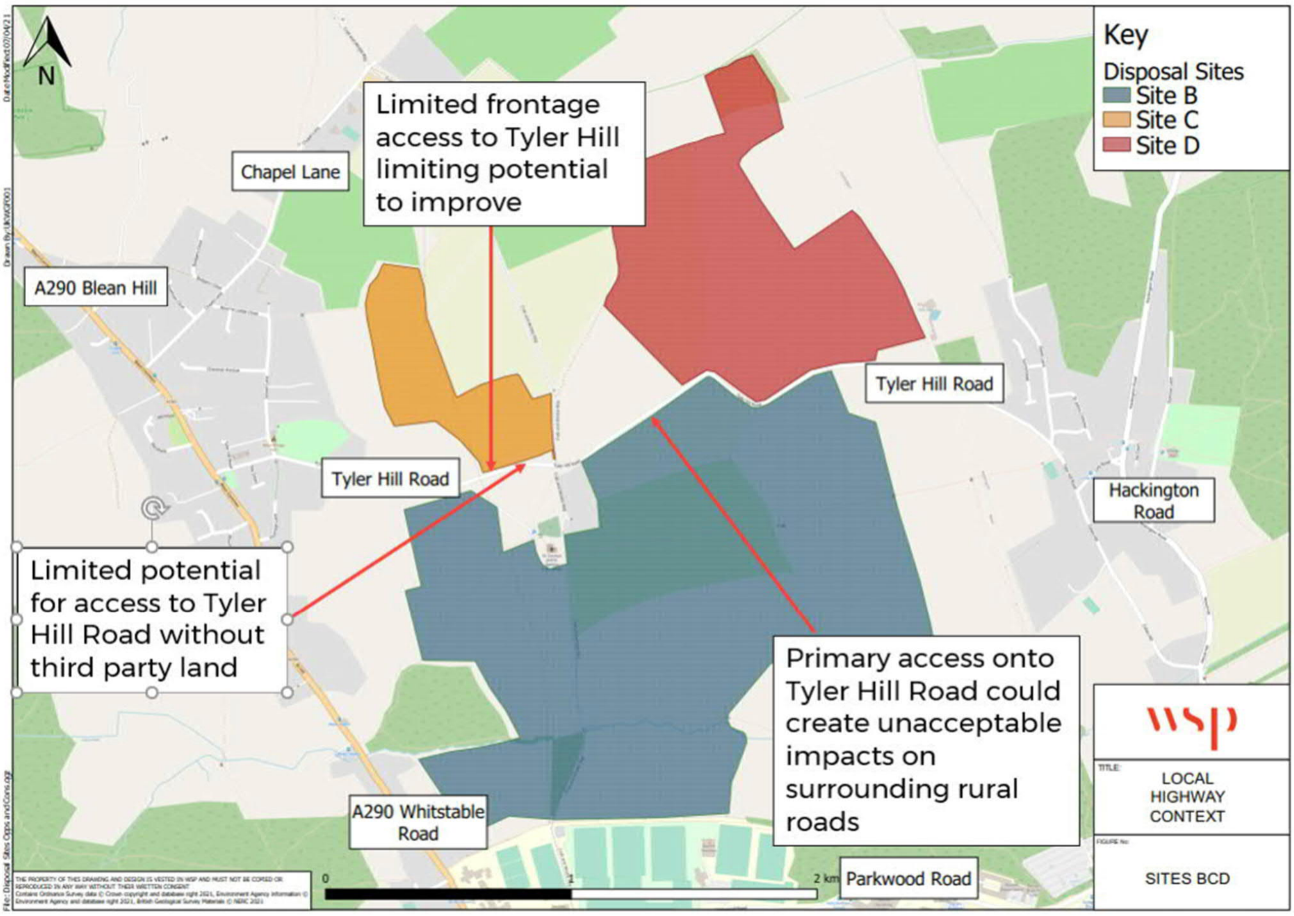


5.2 Access Strategy

5.2.1. 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.

5.2.2. In its current form Tyler Hill Road was not 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 (**Figure 5-2**).

Figure 5-2 - Access Constraints



5.2.3. Consideration was given to whether access could be achieved through third party land acquisition to enable Tyler Hill Road to become a main point of access. However, the multiple land ownerships restricted the ability to achieve this. In addition, significantly increasing traffic volumes on Tyler Hill Road could result in additional 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 KCC and residents as a concern.

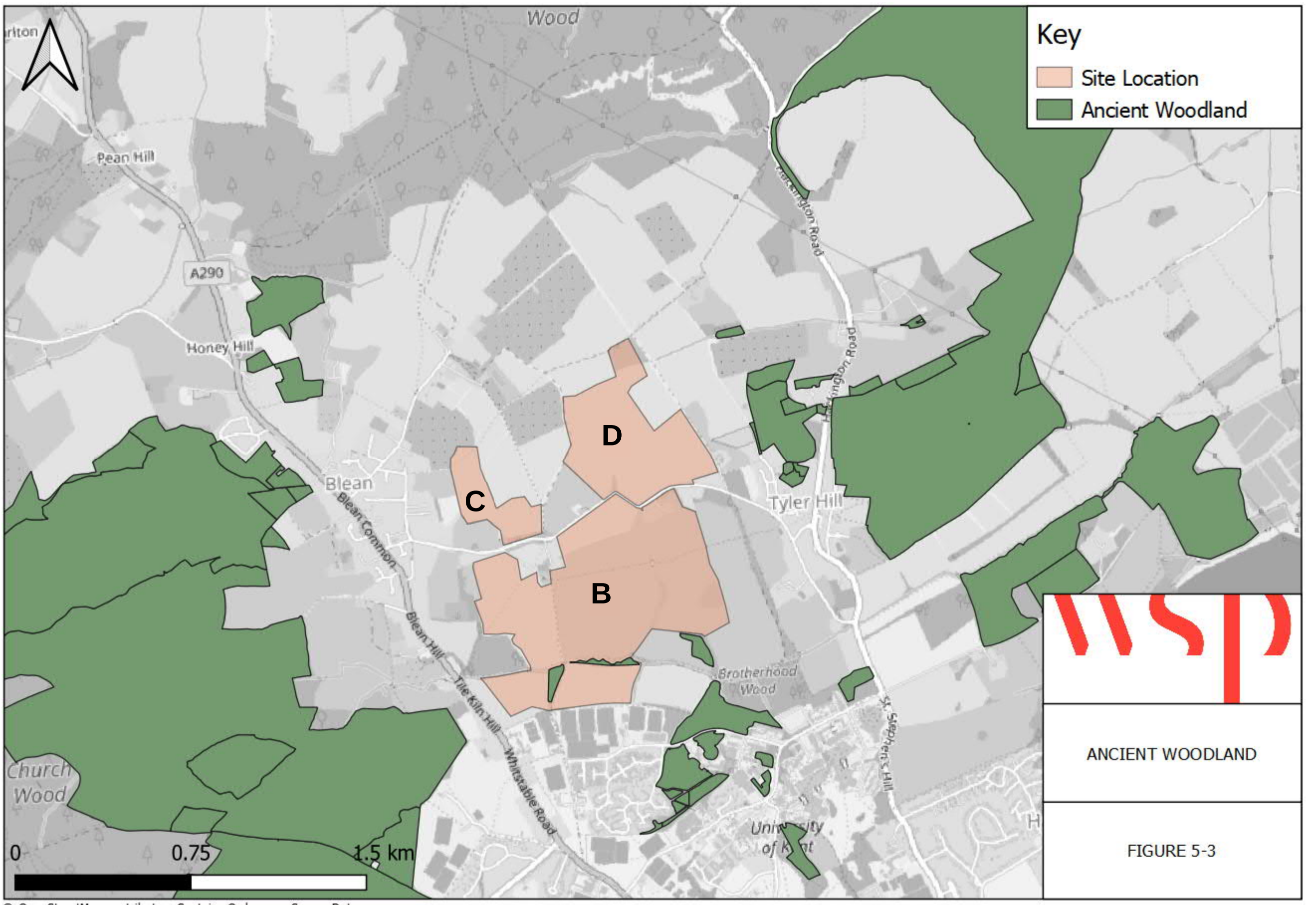
5.2.4. On the basis of the above, the access strategy for unlocking Sites BCD recommended developing a new north-south route through the University Campus. To discourage increased usage of Tyler Hill Road it was recommended that the existing road was downgraded where it passed through University owned land and the highway incorporated into the masterplan where design measures could be included 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

5.2.5. Discussions with the UoK and outputs from the environmental constraints and opportunities analysis informed the constraints for the 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
- 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 car 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.

5.2.6. A range of alignments were considered for the new access road to minimise impacts on the existing University Campus and other constraints such as the ancient woodland, watercourse and relevant heritage constraints located both on and off site. Ancient woodland is present in an east-west band that stretches across the majority of the extents of the southern part of Site B as shown in **Figure 5-3**.

Figure 5-3 – Ancient Woodland Within Site B



5.2.7. Given the constraints to access on Tyler Hill Road, and noting the University's land holdings, the only feasible route to accessing Sites BCD is considered to be to/from the south. This means that the access road would need to pass through the area where the ancient woodland is located on Site B. In the context that ancient woodland is classified as an irreplaceable habitat and of high ecological value, work has been undertaken to understand this constraint, how impacts could be minimised and the potential mitigation/compensation strategy that would be required. A Technical Note[11] was prepared by WSP in August 2021 to summarise the access strategy for Sites BCD and to set out the proposals for the access road alignment in the context of the constraints of delivery through the University Campus and Sites BCD. The Technical Note is provided at **Appendix G**. It should be noted that whilst the access road alignment is still relevant, the access junction arrangement has progressed since the Technical Note was prepared, as set out later in this section.

[11] University of Kent, Canterbury Campus: Access Road Alignment, August 2021

5.2.8. The preferred indicative alignment option (**Figure 5-4**) follows 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 a point potentially within the buffer zones of the ancient woodland rather than impacting the ancient woodland itself. North of the watercourse the alignment crosses Tyler Hill Road to enable access to Site D.

5.2.9. All of the alignment options considered 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. Whilst their review did not identify any trees that would indicate the woodland was ancient (defined as an area to 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.

5.2.10. The preferred indicative alignment option 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
- Ability to integrate the Crab and Winkle Way within the alignment of the new highway to provide a new and improved pedestrian and cycle route
- 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.

5.2.11. **Figure 5-4** shows the proposed preferred alignment of the access road including the indicative location for a bridge crossing the watercourse, showing that an alignment could be delivered. This has been further refined as the masterplan has developed but does still pass through the same section of ancient woodland. The horizontal and vertical alignment drawings are provided at **Appendix H**.

Figure 5-4 - Site BCD Access Road Alignment

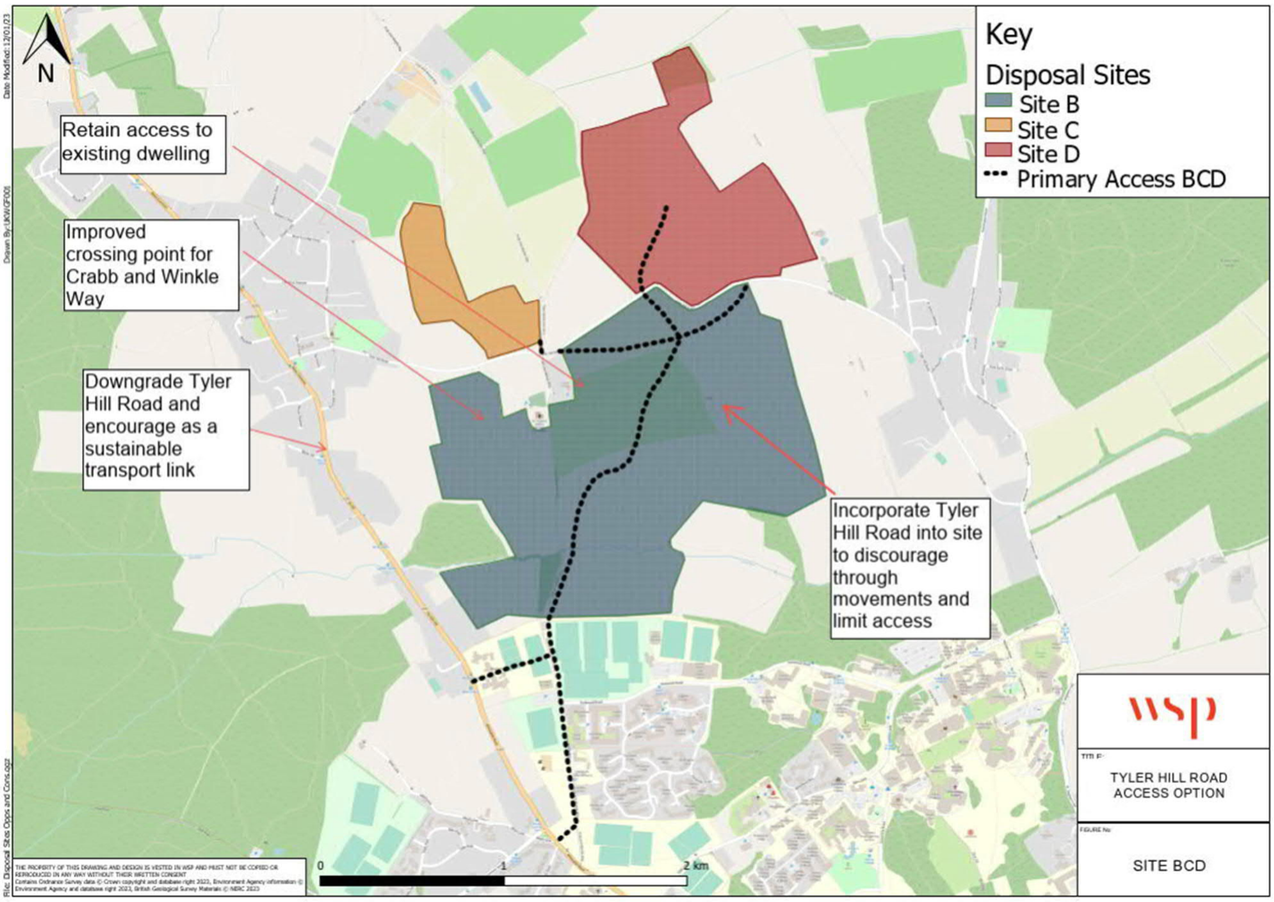
5.2.12. Access onto Whitstable Road was initially focused on a new access in the far south of the University's Campus.

5.2.13. During previous discussions with KCC, and from initial outputs from the Jacobs strategic modelling (prepared to support the Local Plan) it had been highlighted that the introduction of the proposed access road linking Whitstable Road with Tyler Hill Road would be attractive to existing traffic on the highway network and likely see additional traffic routing through the site, impacting upon the performance of the Whitstable Road access. As such, to supplement the southern Whitstable Road access, several options were considered to provide a further access onto Whitstable Road.

5.2.14. The initial point of access (referred to as the southern access) would be delivered onto Whitstable Road in the far south of the University Campus with a second point of access proposed via the Blean Primary School (referred to as the Blean Primary access), which would be delivered at an appropriate point in the development's build out to provide additional permeability to the site. This is in accordance with Policy C12 (item 4d) of the Draft Local Plan.

5.2.15. The proposed access strategy is provided in **Figure 5-5**.

Figure 5-5 - Access Strategy



5.2.16. The access road corridor itself would be designed in accordance with the principles established within the Department for Transport's (DfT) 'Manual for Streets' and meet the standards of a Major Access Road in accordance with the Kent Design Standards and likely feature a 30mph design speed. For the purposes of the initial feasibility design work a highway corridor of 15m was assumed to ensure sufficient space to accommodate the carriageway, pedestrian and cycle infrastructure in accordance with DfT Local Transport Note 1/20 'Cycle Infrastructure Design'.

5.2.17. The highway corridor has been designed as a separate movement corridor to the existing internal University infrastructure and the Crab and Winkle Way. Where the alignment either shares the same corridor or crosses the Crab and Winkle Way careful consideration will be made to preserve the priority of this strategic pedestrian and cycle corridor, integrating with it where appropriate.

5.2.18. The access road would also have the benefit of facilitating the ambitions of the University Masterplan to deliver a new access onto Whitstable Road and allow access to the new parking areas proposed within the masterplan.

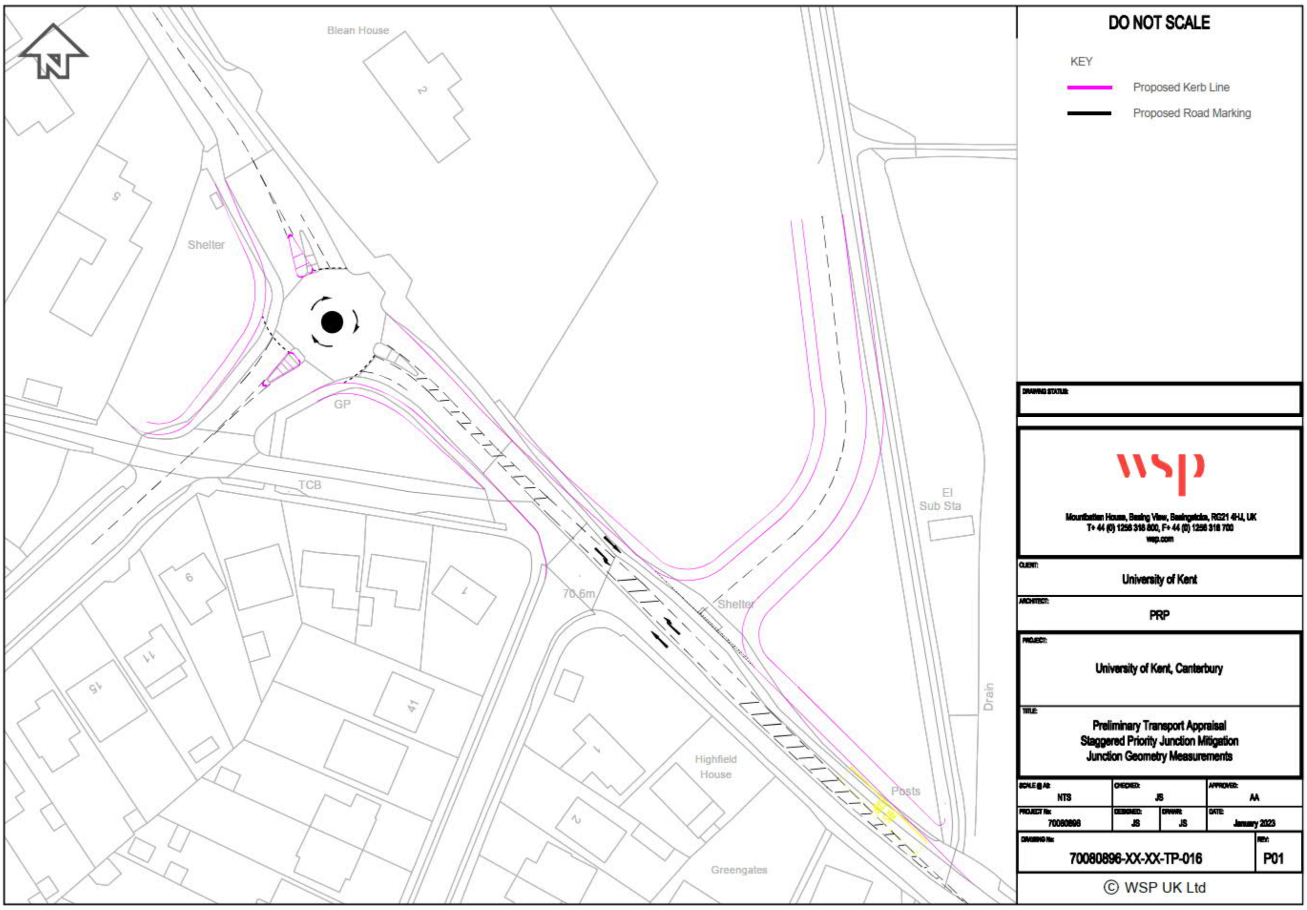
5.2.19. Pedestrians and cyclists would be afforded a high level of priority within the proposed masterplan to ensure that active travel can be a genuine alternative for shorter distance trips than the private car. To deliver this the following access infrastructure is proposed:

- Provision of footways and cycleways on the key movement corridors into and out of the site
- Integration of the on-site provision with the Crab and Winkle Way and surrounding infrastructure
- Improvements to Public Rights of Way in the local area to enhance connectivity with local destinations.

Southern access point

5.2.20. The Transport Strategy (August 2021) identified the potential for a traffic signal junction to be provided on Whitstable Road (at the southern access). Initial testing of this option using LinSig indicated that the traffic signal junction layout identified would struggle to accommodate the volume of traffic anticipated. Alternative junction layouts were therefore considered. A staggered priority junction was investigated. An illustrative concept design for this staggered junction is shown on drawing 70080896-XX-XX-TP-016-A, shown in **Figure 5-6** contained in **Appendix I**.

Figure 5-6 - Southern Access Arrangement



5.2.21. The site access right-left staggered priority junction was assessed using Junctions 10, and shown to operate satisfactorily with development with all arms operating below capacity (RFC of 1). The capacity assessment results are shown in Table 27 of the 2023 PTA, provided at **Appendix C**.

Blean Primary access point

5.2.22. Two potential illustrative options were considered for the new access onto Whitstable Road through the Blean Primary School land, one being a new 28m ICD roundabout (WSP Drawing 70080896-XX-XX-TP-024) or a new signal controlled T-Junction (WSP Drawing 70080896-XX-XX-TP-025). Both options (shown in **Appendix I**) were considered viable from a highway design perspective. The roundabout access was considered to be the preferred option, and was assessed using Junctions 10, and shown to operate with satisfactory performance (RFC below 0.85) in all scenarios assessed. The capacity assessment results are shown in Table 28 of the 2023 PTA, provided at **Appendix C**.

5.2.23. The roundabout access option is shown in **Figure 5-7**.

Figure 5-7 - Blean Primary Access Arrangement

5.3 Impact on Crab and Winkle Way

5.3.1. The National Cycle Network (NCN) route 1, also known as the Crab and Winkle Way runs from north to south, part on carriageway and part traffic free through the University Campus and Site B and bounds Site C in the east. Locally the route runs between Canterbury in the south and Whitstable in the north.

5.3.2. The highway corridor has been designed as a separate movement corridor to the existing internal University infrastructure and the Crab and Winkle Way. Where the alignment either shares the same corridor or crosses the Crab and Winkle Way careful consideration will be made to preserve the priority of this strategic pedestrian and cycle corridor, integrating with it where appropriate. The design of this will be progressed as the development proposals are progressed.

5.3.3. The on-site pedestrian and cycle facilities provided as part of the development proposals will be integrated with the Crab and Winkle Way where possible.

5.3.4. As part of the access strategy, there is the opportunity to re-prioritise Tyler Hill Road as a sustainable transport link and improve crossing conditions for the Crab and Winkle Way.

5.4 Impact on Tyler Hill Road

5.4.1. Tyler Hill Road provides an east-west connection between the villages of Blean and Tyler Hill and runs between Sites BCD. It is clearly important to discourage increased usage of Tyler Hill Road as a result of the development as previously set out, given its rural setting and available passing places. It is recommended that the existing road is downgraded where it passes 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.

5.4.2. A microsimulation model was created as part of the 2023 PTA work to understand the routing of traffic within the local area with the additional development. In order to manage traffic flows on Tyler Hill Road, and complement the access strategy, speed restraints and priority give way working have been modelled on Tyler Hill Road to inform the level of mitigation to minimise traffic impacts along Tyler Hill Road, although alternative options could be explored as the masterplan is developed.

5.4.3. The impact of the traffic calming measures on traffic flows along Tyler Hill Road is further detailed in Section 6.8.

5.5 Transport Strategy

Emerging Transport Patterns

5.5.1. The last few years has witnessed a significant change to the transport environment. Changing travel trends have emerged, accelerated by the Covid Pandemic, which has resulted in a shift in the way people live and work. From a work perspective a more hybrid approach has emerged, mixing home and office type working. In addition, there has been significant growth in online retail.

5.5.2. The emergence of new technology is offering new opportunities for alternatives to the private car. Micro-mobility schemes, which offer a range of lightweight vehicles, such as e-scooters and e-bikes, overcome some of the traditional barriers to cycling by reducing the hindrance created by topography and distance and provide an alternative to the car and traditional public transport for shorter journeys.

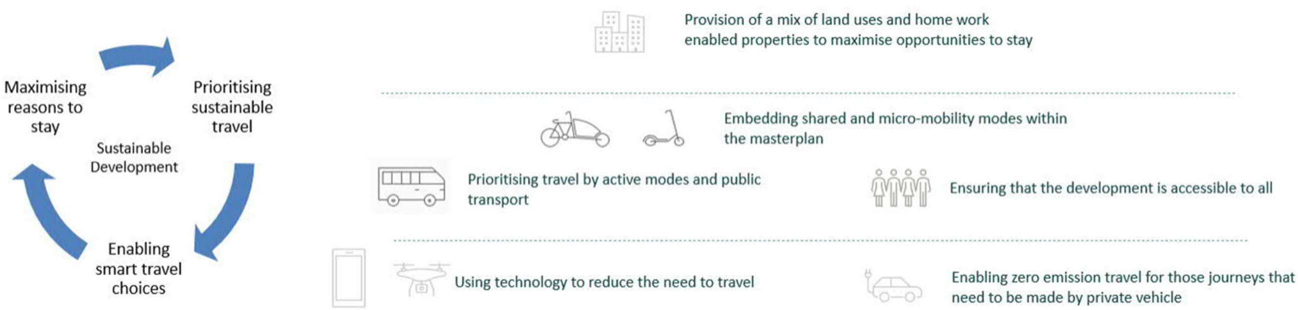
5.5.3. There has also been a relative shift towards low and zero emission vehicles, which has been further stimulated by changes within the new Building Regulations Part S.

5.5.4. As well as the above wider changes that have occurred, there are opportunities to explore other key areas which could facilitate a reduction in car ownership and private car usage. This includes, but is not limited to, the emergence of ride hailing services such as Uber and increasing development of autonomous vehicles and consolidation of deliveries.

5.5.5. The masterplan that has been developed for the UoK has sought to fully embrace these emerging technologies to create a sustainable development that is able to adapt to a changing environment and respond to a societal shift towards net zero. This approach is reflected in the transport strategy for the site.

5.5.6. The Transport Strategy summarised in **Figure 5-8**, sets out some of the key transport principles that the masterplan will seek to achieve.

Figure 5-8 - Transport Principles



Transport Hub

5.5.7. A key principle of the transport strategy is the delivery of a transport hub on the development site to focus and provide access to a range of transport options, with the overarching aim of reducing reliance on the private car. This aligns with the vision of the Canterbury Draft Transport Strategy which seeks to ensure that by 2040, more journeys in the district will be made by sustainable transport than by the private car.

5.5.8. A transport / mobility hub can be understood as a 'place' or interchange providing different and connected transport modes supplemented with enhanced facilities to both attract and benefit the traveller. They are usually focussed around mass public transport facilities (e.g. bus stops or rail station) and last mile mobility solutions (e.g. cycles).

5.5.9. The transport hub will be located adjacent to the local centre and be complimentary to the uses within the local centre itself. Whilst the principle of the transport hub is still evolving the key transport components of the facility would likely include:

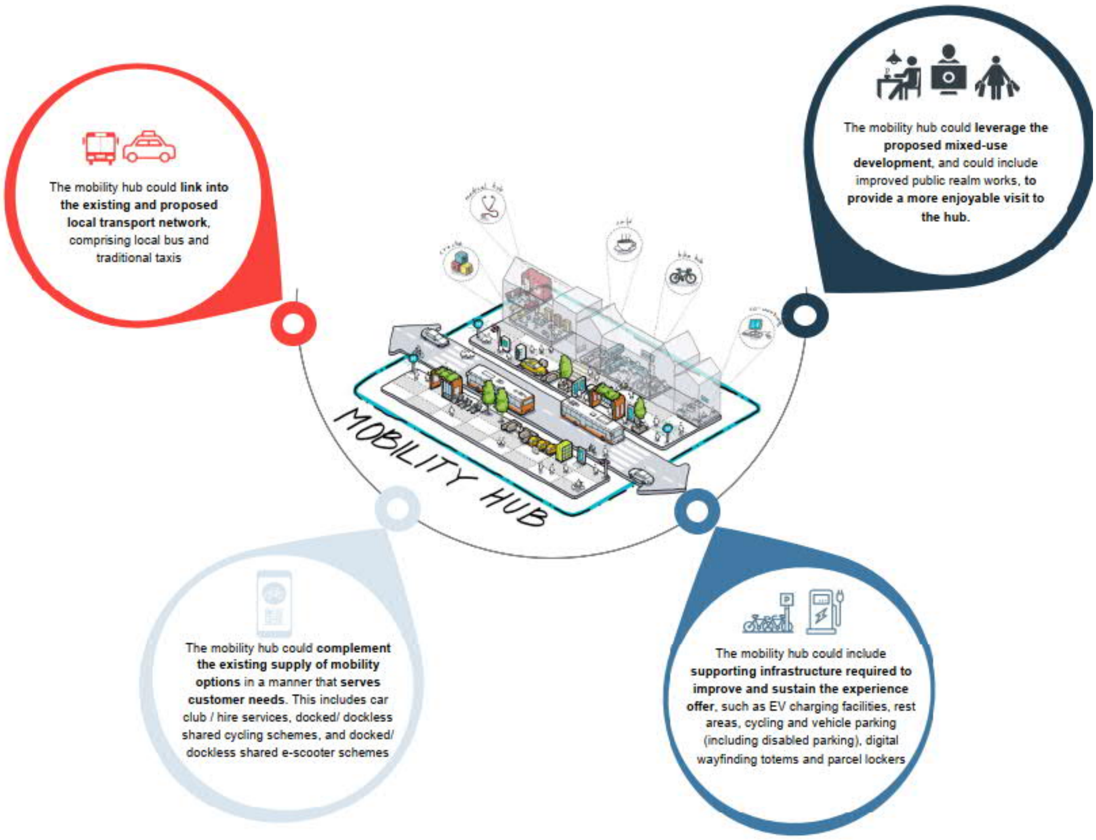
- Bus stop including access to real time passenger information
- Cycle parking to facilitate modal interchange including bike pump and repair facilities
- A focal point for ride sharing and hailing services (such as Uber)
- Car club spaces
- Micro-mobility (bike and scooter hire docking stations)
- Rapid electric vehicle charging

5.5.10. Complimentary facilities may include:

- Micro-consolidation facilities such as parcel lockers (e.g. Amazon lockers)
- Retail
- Digital services (real time public transport information, community news etc)

5.5.11. An example of a transport hub is illustrated in Figure 5-9.

Figure 5-9 - Illustration of Transport Hub



5.5.12. Alongside the emergence of transport hubs, technology has facilitated the development of personalised journey planning platforms. When combined across modes these are known as Mobility as a Service (MaaS).

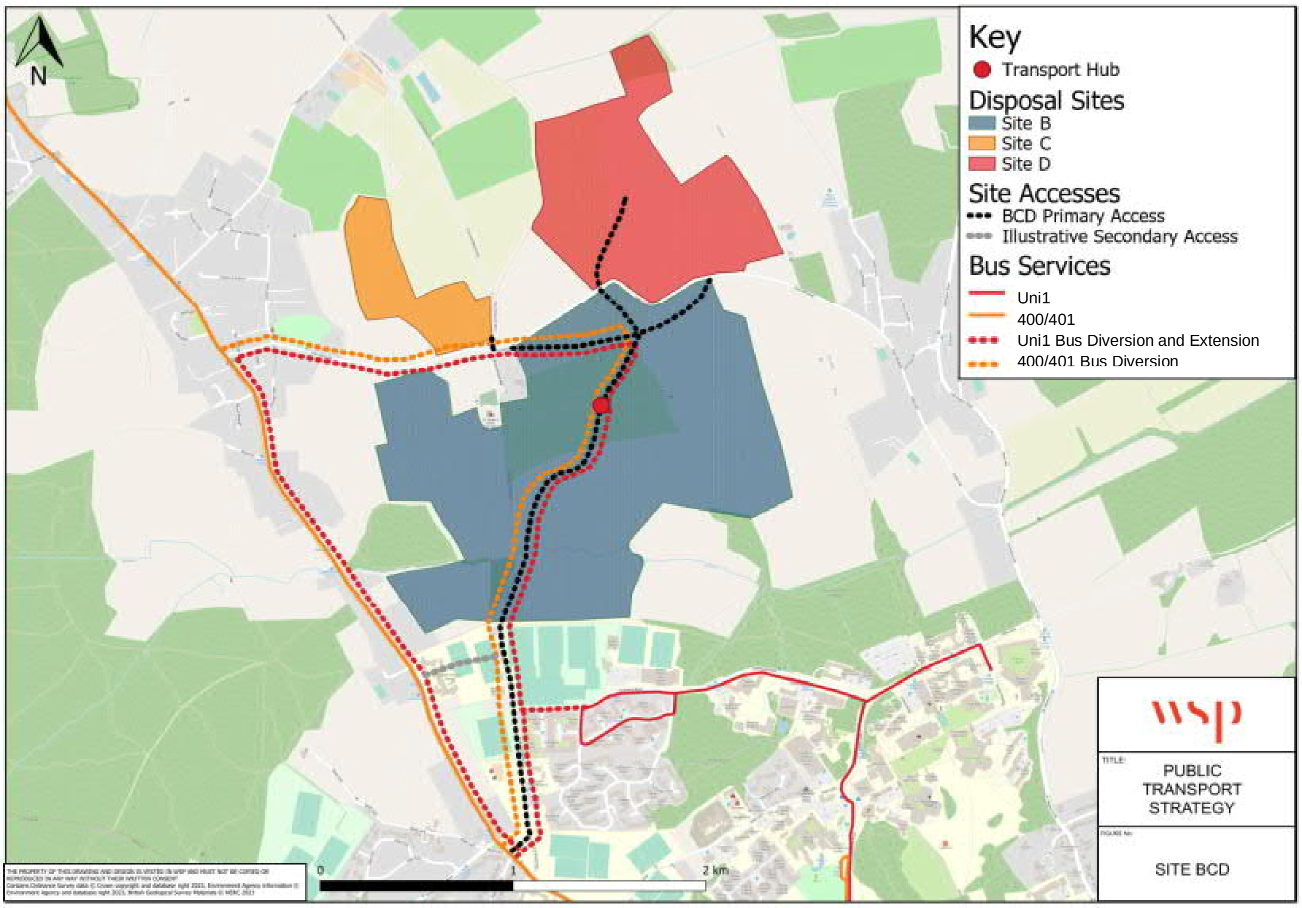
5.5.13. This app-based platform enables access to a wide range of mobility services (traditional bus, rail and taxi services) as well as emerging technologies such as car clubs and e-scooter and cycle hire. By providing access to information about all the services in one place people can make informed decisions about the most appropriate mode or multiple modes for their entire journey. Deployment of this platform could be done on a regional basis or on a development specific basis (Enterprise Car Club for instance have developed their own platform which is being deployed in parts of Scotland).

5.5.14. The use of a MaaS is considered a key element of future developments alongside the provision of the Transport Hub to offer a range of services to residents and visitors of the site.

Public Transport

5.5.15. The Sites benefit from the adjacency of the University Campus where high frequency bus routes can be accessed. The public transport strategy will seek to build on the existing network of bus routes by extension of existing services to serve the on-site public transport hub. **Figure 5-10** indicates how existing bus routes could be extended / diverted to serve the development's on-site transport hub.

Figure 5-10 - Proposed Public Transport Strategy



5.5.16. Discussions have been held with the University and Stagecoach as local bus operator to ensure integration of the site with the public transport network. A technical note submitted to Stagecoach summarising the outcomes of the meeting is provided at **Appendix J**.

5.5.17. The strategy initially considers an extension to Uni1 (shown in red in **Figure 5-10**) to serve the on-site transport hub. This route could either be fully extended via A290 Whitstable Road, or it could turn around at the transport hub. There is also the opportunity for a combination of both, alternating the route to maximise coverage. Extension of the Uni1 service would provide a weekday daytime frequency of up to every 10 minutes. This would be further enhanced in terms of frequency to the city centre and direct travel to Whitstable with the diversion of the 400 and 401 routes. At present, the route travels along the A290 Whitstable Road, but it could be diverted through the site, entering / exiting the A290 via Tyler Hill Road and one of the site access points. Other route options could be preferable depending on how other developments on the line of those bus routes progress in the intervening period, however the fact that the development is on line of existing, commercially-viable bus routes is considered to be a positive starting point for developing the network in future years.

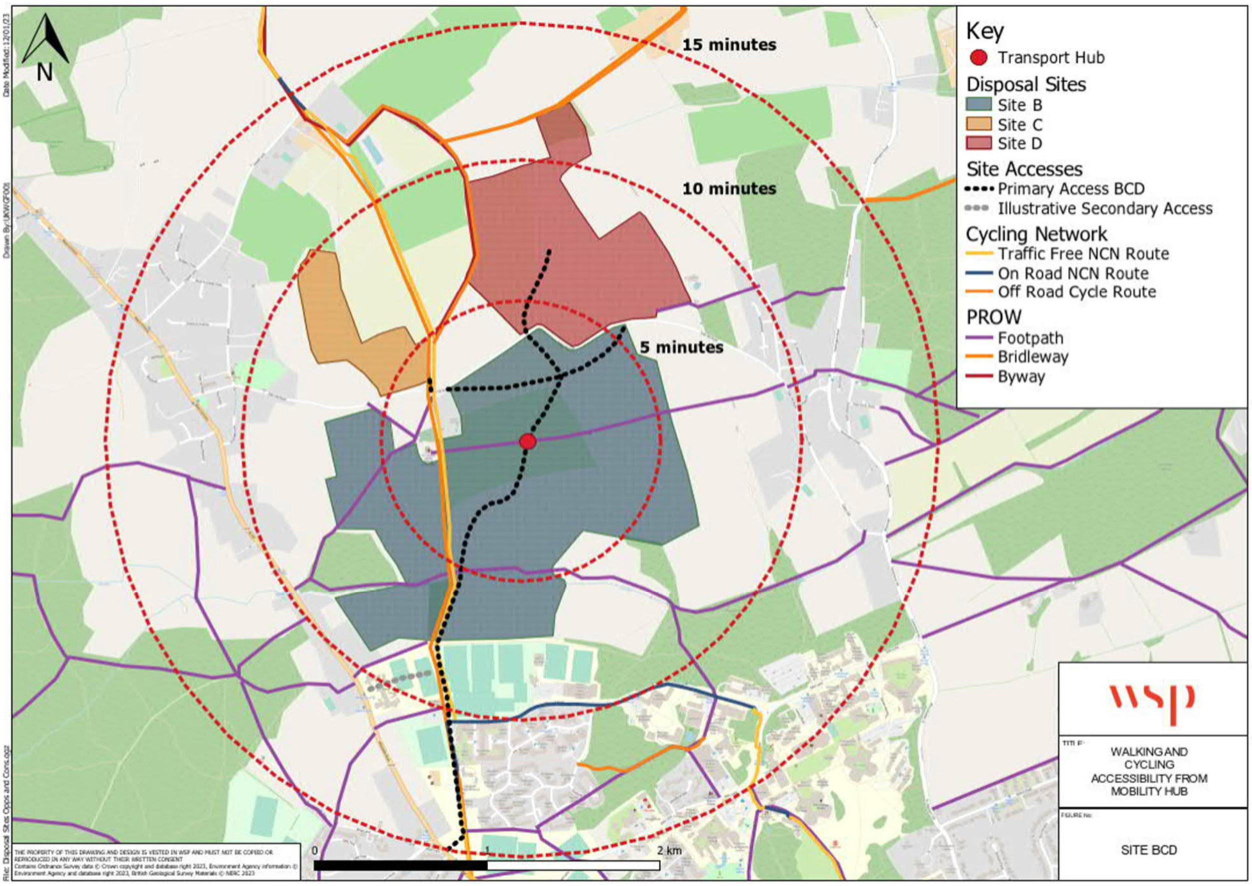
5.5.18. Both of the above proposals were supported by Stagecoach and the University and it was agreed that a positive public transport offering could be delivered at this site that fulfils the CCC Transport Strategy, but also supports the planned improvements sought by Stagecoach and the University. It was agreed that as the wider strategies are progressed within Canterbury, the University would continue to work with the bus operators to finalise the public transport delivery.

5.5.19. The discussions held with Stagecoach and UoK summarised the following:

- There is an intention to increase the frequency of bus services back to pre-covid levels in the near future, once the demand arises.
- Stagecoach support an extension of the existing Uni1 bus service to serve the on-site transport hub. The route could either be fully extended via Whitstable Road or it could turn around at the transport hub.
- Another option is to divert the 400/401 service. At present, the route travels along the A290 Whitstable Road, but it could be diverted through the site, entering / exiting the A290 via Tyler Hill Road and one of the site access points.

5.5.20. **Figure 5-11** provides indicative walking times from the transport hub to all parts of the development site. These walking times would be further reduced through development of the on-site infrastructure and final siting of the public transport hub.

Figure 5-11 - Public Transport Hub Walking Distances



Walking and Cycling

5.5.21. Personal mobility (e-scooters, e-bikes, cargo bikes, electric skateboards, shared bicycles and scooters) are collectively referred to as Micro-mobility. Whilst some of these modes may be personal (owned by the user) there is a growing trend towards shared usage (Santander cycle hire in London for instance). Through the MaaS platform mentioned previously residents and visitors of the site would have access to a range of mobility services to facilitate travel to and from the development.

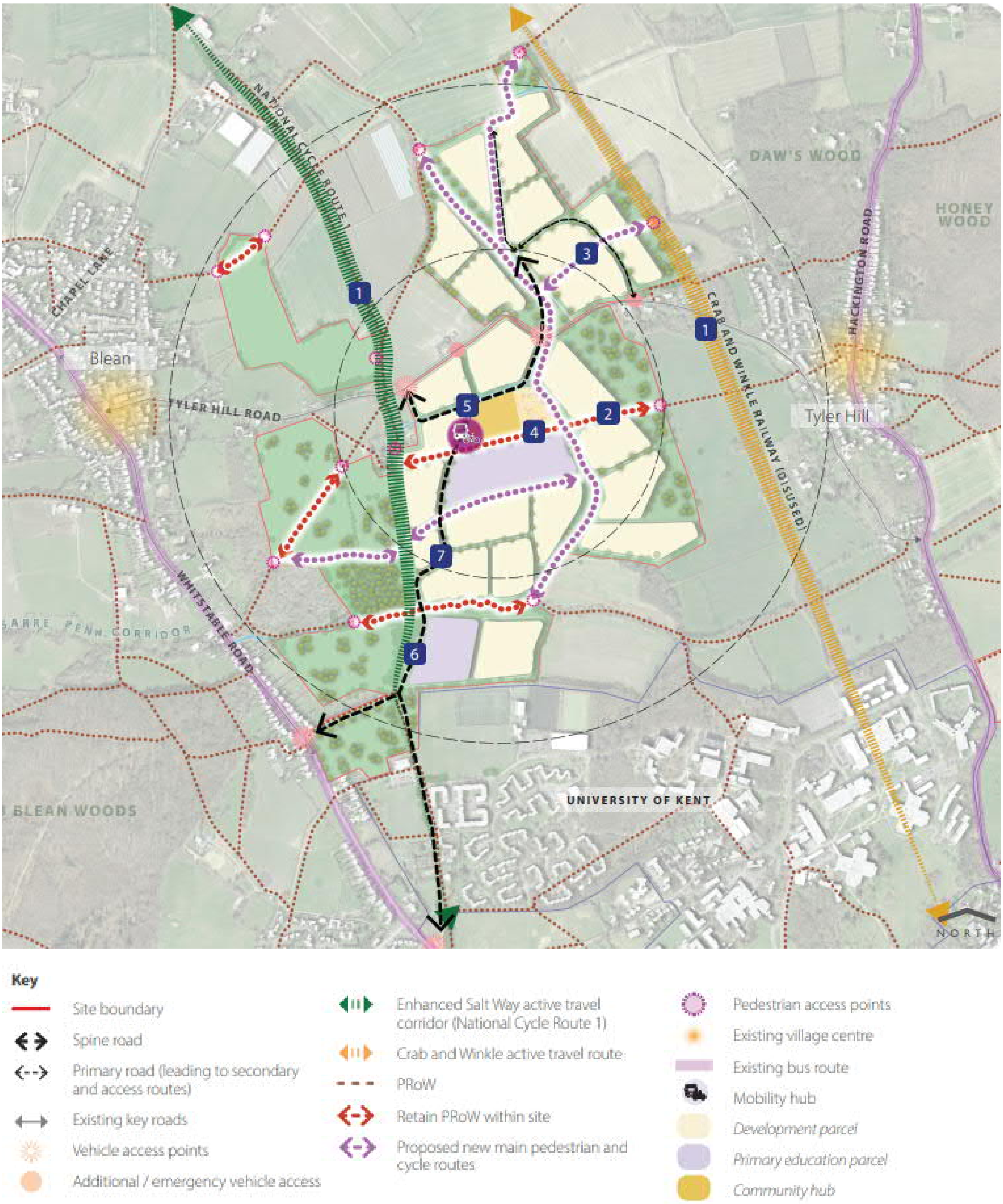
5.5.22. The development site benefits from access to the Crab and Winkle Way and the site benefits from access to the whole of Canterbury within a 30-minute cycle distance. The proximity of Canterbury to the site and available infrastructure alongside any enhancements that may be identified make travel by micro-mobility an attractive option for future residents and visitors to the site.

5.5.23. The development proposals will provide enhanced connections to the University and will provide natural surveillance of the Crab and Winkle Way where it passes through the site which will promote safety of the route.

5.5.24. The proposed transport hub will also provide cycle parking and micro-mobility stations to encourage short journeys to be made sustainably between the development and surrounding areas.

5.5.25. The proposed sustainable movement corridors are illustrated in **Figure 5-12**.

Figure 5-12 - Proposed Sustainable Movement Corridors



University of Kent Campus

5.5.26. The University is committed to reduce the impacts of transport and travel and encourage sustainable alternatives, which in turn will assist with its obligation to reduce carbon emissions, create a greater awareness and understanding of the benefits of physical fitness in relation to health and wellbeing as well as enhance the environment for everyone.

5.5.27. The UoK developed its first Travel Plan in 2006 and developed a further version for 2010 to 2015. Since then, the Travel Plan has been continually monitored, reviewed and updated in response to operational requirements of the University and to meet planning requirements associated with new developments taking place across the campus and carbon emission reductions required.

5.5.28. The Travel Plan for the Canterbury Campus was most recently updated in 2023. This version incorporates measures and targets included within the previous plan to ensure continuity as well as new schemes and initiatives to meet the aims and objectives. The Travel Plan works alongside the Movement & Transport strategy, Estates Strategy, and the developing Estates Master Plan.

5.5.29. As part of development of the Travel Plans[12] local public transport service providers were contacted in order to get their opinion on the existing operation of their services in relation to the University.

5.5.30. As mentioned above, Stagecoach have explained that they work very closely with the University on meeting student transport requirements. The routes currently on offer, the Uni1 and Uni2, best serve the present student population. These routes provide a 24/7 service connecting the University, town centre, railway station and Hales Place – a popular student residential area. Potential modifications to the route are frequently discussed. Local bus routes are also diverted into campus to supplement the university services and travel discounts are available.

5.5.31. Views were also sought from National Express regarding their routes to the Canterbury campus. They noted that additional coaches have recently been implemented due to passenger uptake being high.

5.5.32. The proposed bus strategy which initially assumes an extension to Uni1 and diversion of the 400 and 401 routes to serve the on-site transport hub is consistent with Stagecoach's approach to serving the University.

5.5.33. The proposed development will be complementary to the UoK's operations, and it is anticipated that they will provide mutual benefit.

[12] University of Kent Canterbury Campus Travel Plan, March 2023

Alignment with the Draft Local Plan

5.5.34. **Table 5-1** sets out key policies taken from the Draft Local Plan and summarises how the Proposed Development will accord with the policy.

Table 5-1 – Policy Context vs Development Proposals

Policy Context		Development Proposal
SS4 – Movement and Transportation Strategy for the district	2a) Improved public transport connectivity across the district, with additional bus services, bus priority measures and enhanced park and ride infrastructure, and upgrades at railway stations in the district.	▪ The Sites benefit from the adjacency of the University Campus where high frequency bus routes can be accessed. The public transport strategy will seek to build on the existing network of bus routes by extension of existing services to serve the on-site public transport hub. ▪ Discussions with Stagecoach confirm that these proposals are viable and supported. ▪ There are also potential opportunities to divert one of the existing bus routes via Rough Common Road.
	4) The council will continue to work with partners to improve public transport connectivity in the rural areas and to maximise opportunities to improve walking and cycling routes to connect rural settlements with each other and to the urban areas within the district.	
	2f) Upgrades at the A2 junction at Harbledown and at Rough Common Road.	▪ The landowners are supportive of upgrades along Rough Common Road – potential opportunities are discussed in Section 5.9 and **Appendix J**. ▪ Detailed traffic modelling will be required to determine the level of infrastructure required to support the development proposals and this will include consideration of the need for a potential A2 junction at Harbledown.
C12 – Land north of the University of Kent	2b) Along with neighbouring sites, create a complete, compact and well-connected neighbourhood, where everyday needs such as food shopping, can be met within a 15 minute walk or short cycle, to support the local economy, to promote health, wellbeing and social interaction and to address climate change by reducing car dependency;	▪ Provision of a local centre and primary school on site offering a range of amenities and facilities, will reduce the need to travel. ▪ The development proposals will provide enhanced connections to the University, where a range of facilities and services are available.

<table>
<tr><th colspan="2">Policy Context</th><th>Development Proposal</th></tr>
<tr><td></td><td>6) New development should ensure easy and safe pedestrian and cycle connectivity is available, including segregated cycle lanes where achievable, with high levels of connectivity to the wider network, including within and between neighbourhoods.</td><td rowspan="3">

Pedestrians and cyclists would be afforded a high level of priority within the proposed masterplan to ensure that active travel can be a genuine alternative for shorter distance trips than the private car.
Provision of footways and cycleways on the key movement corridors into and out of the site.
Integration of the on-site provision with the Crab and Winkle Way and surrounding infrastructure.
Improvements to Public Rights of Way in the local area to enhance connectivity with local destinations.
It is acknowledged that other connections in the area are largely PROWs which are unpaved. As part of the development of the masterplan, improvements in the wider area would be considered and secured through any planning consent.
Any provision of new or upgraded cycle routes will follow the guidance set out in DfT LTN 1/20. Walking and cycling routes will be delivered at the earliest possible stage of a development to maximise take up.

</td></tr>
<tr><td></td><td>4a) Provide safe and convenient pedestrian and cycle connectivity including:
(i) Improved walking and cycle connections to the city centre via the Crab and Winkle cycle route and PRoWs through the UoK estate
(ii) Improved cycle connections to Whitstable via Crab and Winkle cycle route
(iii) New and improved walking and cycling connections to Blean, Tyler Hill, Broad Oak and the wider countryside to the east; and
(iv) Improvements to PRoWs within and around the site as required.</td></tr>
<tr><td>DS14 – Active and Sustainable Travel</td><td>

Proposals for development must demonstrate how they will maximise high quality walking and cycling connectivity both within the site and to local facilities, open spaces and public transport networks including bus and rail.
Existing Public Rights of Way should be retained or, where necessary and where the need outweighs the harm, rerouted and upgraded to avoid development, providing a publicly accessible, high-quality route, subject to KCC statutory processes.

</td></tr>
</table>

Policy Context		Development Proposal
	■ Developments will be expected to improve off-site routes to ensure high quality connectivity and accessibility where necessary. Proposals within settlement boundaries should be designed to ensure that walking and cycling routes from the development are more convenient than vehicular routes. Routes and access should be designed to be safe and inclusive and meet the needs of all pedestrians and cyclists, including disabled people and the mobility impaired.	
C12 – Land north of the University of Kent	4b) Provide a Transport Hub within the site to facilitate good access to public transport facilities for new residents, with a new bus route connecting residential areas and the community hub to Canterbury West railway station and the city centre.	■ Delivery of a transport hub on the development site to focus and provide access to a range of transport options, with the overarching aim of reducing reliance on the private car. ■ The transport hub will be located adjacent to the local centre and be complimentary to the uses within the local centre itself.
	4d) Provide a primary access point to the site at the junction of Whitstable Road and Rough Common Road and secondary access to the site from Whitstable Road through land at Blean Primary School.	■ The initial point of access would be delivered onto Whitstable Road in the far south of the University Campus with an additional point of access proposed via the Blean Primary School, which would be delivered at an appropriate point in the development's build out to provide additional permeability to the site.
	4f) Minimise traffic flow onto Tyler Hill Road in both directions.	■ The access strategy is focused on delivery of a new north-south route through the UoK campus. There is the potential to downgrade Tyler Hill Road where it passes through University owned

Policy Context		Development Proposal
		land, 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. ▪ Initial traffic modelling has shown the downgrading of these routes can aid in reduced traffic flow, minimising impacts on the surrounding road network.
	4g) Provide an all-movement junction at A2 Harbledown through the provision of additional slip roads.	▪ The landowners are supportive of the introduction of the A2 Harbledown slips. However, delivery of the Harbledown slips would not just benefit the development but the wider City and as such would be a piece of City-wide infrastructure. Work will be undertaken as part of the next stages of the Local Plan to understand the impact of the Proposed Development and the requirements for the A2 Harbledown junction.
	4h) Provide highway improvements to Rough Common Road; and	▪ A study has been undertaken that considers the potential measures necessary to safeguard the free flow of traffic on Rough Common Road. ▪ Through the implementation of a series of parking control measures coupled with additional parking bay capacity the on-street parking that currently occurs can be better managed and alleviate some of the issues identified.

Policy Context		Development Proposal
DS14 – Active and Sustainable Travel	*2)* Cycle parking should be provided in accordance with council's Parking Standards (Appendix 3), and must be conveniently sited, secure and overlooked to encourage their use. Any provision of new or upgraded cycle routes should be designed in accordance with Local Transport Note 1/20 or any subsequent updated guidance. Walking and cycling routes must be delivered at the earliest possible stage of a development and should be hard-surfaced and lit and, wherever possible, provide for ecological connectivity and pollinators.	▪ Reference will be made to KCCs vehicle parking standards, with cycle parking spaces conveniently sited, secure and overlooked to encourage use. ▪ Sufficient space will be provided to accommodate parking on plot with space for adaptive cycles and trailers. Visitor cycle parking will also be conveniently located to facilitate access to the site by cycle.
	▪ Proposals for more than 300 homes should maximise opportunities for alternative and innovative travel options from the site through the provision of a mobility hub in order to further reduce the need to travel by private car, such as through e-scooter* and cycle hire, parcel collection lockers, shared transport services and car clubs. Consideration should be given to opportunities for autonomous technologies for deliveries. Schemes should integrate effectively with existing networks and public transport, including through use of standard payment platforms. Consideration should be given to the scope for car-free areas and zero-emission transport zones as part of the scheme design.	▪ Delivery of a transport hub on the development site to focus and provide access to a range of transport options (including a car club, micro-mobility, micro-consolidation etc_, with the overarching aim of reducing reliance on the private car. ▪ Parking standards will be reviewed and it is proposed that a bespoke parking strategy will be developed to ensure the right balance of supply and demand and to maximise travel by sustainable modes.
	1) Proposals for development must ensure adequate vehicle parking provision reflecting the scale, use and location of development, in line with the	

Policy Context		Development Proposal
DS15 – Highways and Parking	council's Parking, and should set out how any parking is to be controlled. Within and on the edge of the designated city and town centres, developments should be "car free" with on street parking controls introduced where necessary.	
	2) Parking provision within the curtilage of all new homes in the district should include a suitable connection for EV charging. Within parking areas provided as part of new developments, EV charging points should be provided to a minimum of 1 in 10 spaces, with a further cable route for the remainder of the spaces. If the parking is to be allocated, then each space should have access to an EV charging point. For non-residential uses with off street car parking, EV charging points to a minimum standard of 7KW wifi enabled should be provided to a minimum of one in five spaces, with a further cable route for the remainder of the spaces.	▪ Where car parking is provided electric vehicle charging points will be provided to an appropriate level. ▪ Parking provision will be designed in such a way that areas could be adapted for other uses should parking demand diminish over time.

5.6 A2 Harbledown Slips

5.6.1. The Draft Local Plan states that "*the access and transport strategy for the site should provide an all-movement junction at A2 Harbledown through the provision of additional slip roads."*

5.6.2. A Feasibility Technical Review was undertaken by Stantec in April 2023 in relation to the introduction of a new off-slip from the A2 to the existing Faulkners Lane and a new on-slip from Faulkners Lane to the A2. It is understood that detailed traffic modelling has not yet been undertaken.

5.6.3. The Feasibility Technical Review and the National Highways response to the review identifies the need for third-party land to deliver the slips. Work will be undertaken as part of the next steps prior to Regulation 19 to understand the impact of the Proposed Development on the highway network including the need for the A2 Harbledown junction and to determine the level of upgrades necessary in combination with other measures being bought forward as part of the Transport strategy.

5.6.4. Whilst the delivery of the Harbledown slips would benefit the development it would also greatly benefit movements around the wider City. UoK will continue to work with CCC to review this requirement as part of the revised strategic transport model and agree how UoK may contribute to this piece of infrastructure.

5.7 Parking Strategy

5.7.1. The vision for the Proposed Development is to provide a sustainable new residential community. The site will prioritise pedestrian and cycle movements over that of vehicles, and to achieve this, it is envisaged that the development will be an early adopter of innovative transport and servicing solutions based around the "Future Mobility" agenda, namely mechanisation and shared and autonomous transport solutions.

5.7.2. Whilst walking, cycling and public transport will be the primary modes of transport adopted for travel to and from the site, there will still be a role for personal vehicle travel. It is anticipated that a proportion of this demand can be catered for through shared mobility services such as car clubs and taxis. However, there will still be, particularly in the early years of the development a demand for private vehicle ownership and use which will drive a demand for parking.

5.7.3. In accordance with Section 10 of the Draft CDTS, the development site will be expected to demonstrate that it will generate significantly lower private car trips by providing reduced parking within the sites. Parking standards will be reviewed and it is proposed that a bespoke parking strategy will be developed to ensure the right balance of supply and demand and to maximise travel by sustainable modes.

5.8 Servicing and Waste Strategy

5.8.1. The Covid Pandemic has resulted in an acceleration of online shopping trends. It is anticipated that this form of shopping will continue to grow as traditional retail responds to this growing demand. However, one detractor of the growth in online shopping has been the increase in delivery vehicles to accommodate demand.

5.8.2. Micro-consolidation offers the ability to reduce the number of deliveries and total mileage driven by couriers. The transport hub would be able to accommodate facilities such as parcel lockers offering a consolidated location for delivery of certain items that could then be picked up by residents at their own convenience and by active mode.

5.8.3. The waste strategy for the site will be developed in conjunction with CCC in due course but will need to have due regard to the 2021 Environment Bill.

5.9 Rough Common Road

5.9.1. At the request of KCC a study was undertaken in 2023 that considered the potential measures necessary to safeguard the free flow of traffic on Rough Common Road. This study is presented in **Appendix K** and demonstrates that through the implementation of a series of parking control measures coupled with additional parking bay capacity the on-street parking that currently occurs can be better managed and alleviate some of the issues identified.

5.9.2. It is noted that there is the opportunity to make further upgrades to Rough Common Road, but this will likely require 3rd party land and would need to be led by the CCC and their wider transport strategy.

6 Trip Generation

6.1 Introduction

6.1.1. The impacts of the proposed development were previously assessed in the 2023 PTA. Whilst the quantum of residential development is unchanged from the previously assessed proposals, the proposed primary school has expanded from a 2-form entry to a 3-form entry school.

6.1.2. In addition, the previous trip generation was based on mode shares taken from the 2011 census. The Draft Transport Strategy forecasts that a combination of the measures set out in the bus strategy, and improvements to rail infrastructure will result in a 63% increase in mode shift to public transport, with a further 128% to walking and cycling by the horizon year of 2040. In response to this, the development mode shares have been adjusted to accord with the Draft Transport Strategy.

6.1.3. As such, to support the allocation, WSP have considered the potential changes to the vehicle trip generation at the site taking into account the draft transport strategy proposals. It should be noted, this is to show the potential for a reduction in traffic, however the traffic modelling undertaken to date within the 2023 PTA (utilising a more conservative estimate of the proportion of trips made by sustainable travel) is still considered to be a robust position to assess the impacts of the scheme.

6.2 Work to Date – 2023 PTA

6.2.1. The impacts of the proposed development were assessed in the 2023 PTA. The total core residential development trip generation previously calculated is set out in **Table 6-1**.

Table 6-1 - Total Core Scenario Residential Trip Generation (Sites B and D)

Mode	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport Trips	38	167	205	154	78	233	888	892	1780
Vehicular Trips	159	601	739	673	355	1015	3754	3694	7448
Total Person Trips	304	1325	1629	1154	587	1740	6721	6796	13516

6.2.2. A new primary school is proposed to serve the needs of the Proposed Development. A provisional external to site trip generation was previously developed on the basis of provision of a two-form of entry primary school.

6.2.3. **Table 6-2** presents the previously calculated staff trip generation on the basis of a two-form of entry primary school with approximately 34 full time equivalent staff, of which 69% would be teaching staff and 31% non-teaching staff.

Table 6-2 - Primary School Staff Vehicular Trip Generation

AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)			Daily		
Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
21	0	21	0	13	13	34	34	68

6.3 Potential Changes to Trip Generation

6.3.1. For the purposes of this Transport Appraisal, the illustrative development proposals that have been considered, based on the Reg18 allocation are as follows:

- 2,000 dwellings with a mixture of housing and tenure type. Based upon the emerging masterplan the residential development quantum has been split down with 1447 dwellings (approximately 72%) assumed on Site B and 553 dwellings (approximately 28%) assumed on Site D.
- Local Centre located on Site B to serve the needs of the new community including a transport hub
- Primary School (3-form entry) located on Site B to accommodate the primary school age pupils living on site
- Public open space to accommodate the needs of the development

6.4 Residential Trip Rates

6.4.1. The trip rates used are unchanged from the previous assessments undertaken in the 2023 PTA. The AM and PM peak person trip rates (per dwelling) extracted from TRICS are shown in **Table L1**(contained in Appendix L) along with the resultant person trip generation.

6.4.2. As shown in **Table L1**, the provisional person trip generation would total 1,854 in the AM peak and 1,780 in the PM peak.

6.4.3. 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. This methodology was unchanged from the 2023 PTA.

6.4.4. The methodology utilised the National Travel Survey (NTS0502) data which identified journey purpose by time of day as shown in **Table L2** (contained in Appendix L). The journey purposes were then combined to reduce the number of individual trip generations required as follows:

- Commuting and Business
- Education
- Education Escort
- Shopping
- Other work, visiting friends, holiday

6.4.5. **Table L3** (contained in Appendix L) presents the residential person trip generation split by journey purpose based upon the person trip generation.

6.4.6. Education trips are separated within NTS 0502 into those that are escorted and those that are not. For the purpose of the trip generation, it was assumed that unescorted trips represent those undertaken by secondary, further and higher education pupils, whilst education escort trips were assumed to be undertaken by primary school pupils. This methodology was unchanged from the 2023 PTA.

6.4.7. The following mode share and internalisation assumptions were applied after the trips were split by journey purpose.

- Retail – 10% of the residential trips were internalised reflecting the presence of a local centre on site to serve the needs of the development.
- Escort Education – 100% of the residential trips were internalised to reflect the presence of a primary school on site.

6.4.8. The residential person trip generation taking account of the internalisation factors outlined above is detailed in **Table L4** (contained in Appendix L).

6.4.9. The Draft Transport Strategy considers that in 2031, 14% of individuals will work at or from home, and by 2040 this will increase to 18% of individuals. 14% of commuting / business trips have therefore been removed from the trip generation for 2031 to reflect this, and 18% have been removed from the 2040 trip generation as shown in **Table L5** (contained in Appendix L).

6.5 Mode Shares

Education

6.5.1. For the education trip generation, a review was undertaken to identify a more locally specific mode share relevant to education trips. NTS Table 9908 provides the mode share of education trips split down by region of England. Information is available for each year between 2002 and 2020. Data for 2018/2019 for the south-east of England was extracted and is summarised in **Table L6** (contained in Appendix L). This methodology was unchanged from the 2023 PTA. There is the potential for an increased level of trips to be made by active travel (walk, cycle) due to the location of the schools on Whitstable Road.

6.5.2. It should be noted that there is no distinction made in NTS Table 9908 regarding car driver or passenger. For robustness it was assumed that for every car passenger trip there would be a corresponding car driver trip. The education trip generation is detailed in **Table L7** (contained in Appendix L).

Retail, Other Work, Visiting Friends, Holiday

6.5.3. A review of 2011 Census Travel to Work data was undertaken to identify the likely mode share of residential external trip making by all journey purposes. 2011 Census data has been used, as it is considered to provide a more robust assessment in comparison to the 2021 Census Travel to Work data which was skewed by the Covid-19 pandemic. This methodology was unchanged from the 2023 PTA. The Draft Transport Strategy mode share targets were not used in this, as they are more focused on work related journeys. Whilst the bus targeted strategy, and other measures associated with the development will likely lead to reduced private car usage across the site compared to the 2011 census, this mode share data has been used to provide a robust assessment.

6.5.4. **Table L8** (contained in Appendix L) illustrates the mode share derived for the Mid Layer Super Output Area (MSOA) that the site is located within. The trip generation by mode is provided in **Table L9** (contained in Appendix L).

Commuting / Business

6.5.5. The Draft Transport Strategy forecasts that a combination of the measures set out in the bus strategy, and improvements to rail infrastructure will result in a 63% increase in mode shift to public transport, with a further 128% to walking and cycling by the horizon year of 2040. The number of people working from home is estimated to remain higher than was predicted in the 2014 Transport Strategy, resulting in fewer trips.

6.5.6. It is anticipated that the combination of the measures will lead to a reduction in the volume of traffic on the district's roads, specifically on the city centre roads, where the majority of congestion is experienced, and therefore the volume of traffic is expected to reduce more significantly as the potential for walking, cycling and local bus is greater.

6.5.7. The census and target mode shares taken from the Draft Transport Strategy across the Canterbury District are set out in **Table 3-1**, indicating a reduction in private car trips, and a subsequent increase in walking, cycling and public transport trips.

6.5.8. The 2040 target mode shares have been used in the trip generation. For the purpose of the trip generation, the 'Other' mode share has been reassigned to motorcycle and taxi.

6.5.9. The associated trip generation by mode is provided in **Table L10** (contained in Appendix L).

Residential Trip Generation

6.5.10. The resultant residential trip generation is set out by mode in **Table 6-2**.

Table 6-2 - Residential Trip Generation

Mode	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	35	153	188	142	72	214	907	770	1677
Taxi	1	5	6	8	4	12	48	39	86
Motorcycle	1	6	8	9	4	13	49	33	82
Car Driver	117	510	627	559	284	843	3540	2999	6539
Car Passenger	9	37	46	56	28	84	329	251	580
Cycle	9	40	50	44	22	66	273	226	499
Pedestrian	69	300	368	199	101	300	1343	1207	2550
Other	1	4	5	0	0	1	6	8	14

Mode	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Working mainly at home	9	40	49	48	24	73	243	124	367
Total	251	1095	1346	1065	541	1606	6738	5657	12395
Vehicular Trips	**120**	**521**	**641**	**576**	**293**	**868**	**3636**	**3071**	**6707**

6.6 Residential Trip Generation

6.6.1. The previous vehicular trip generation, as set out in the 2023 PTA compared against the revised vehicular trip generation is set out in **Table 6-3**.

Table 6-3 – Comparison of Residential Trip Generation 2023 PTA vs 2024 TA

	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
2023 PTA	159	601	760	673	355	1015	3754	3694	7448
2024 TA	120	521	641	576	293	868	3636	3071	6707
Difference	**-39**	**-80**	**-119**	**-97**	**-62**	**-160**	**-118**	**-623**	**-741**

6.6.2. **Table 6-3** illustrates a reduction in vehicular trip generation in the revised appraisal compared to the 2023 PTA. It is considered that this is a conservative estimate, given that the transport strategy mode share targets have only been applied to the commuting / business related trips.

6.7 Trip Distribution

6.7.1. As part of the 2023 PTA work, a two-stage trip distribution process was adopted to calculate the anticipated provisional trip distribution for the trips associated with the Proposed Development. The first stage involved calculating the wider distribution of development trips using Census Origin-destination data.

6.7.2. Stage two of the trip distribution considered the distribution of development trips in the immediate vicinity of the site. It was agreed with KCC that a microsimulation model would provide the most appropriate means of achieving this, due to the ability of the software to dynamically change routing in response to congestion and to consider the potential re-distribution of traffic associated with the introduction of the access road which would connect A290 Whitstable Road with Park Wood Road and Tyler Hill Road.

6.7.3. Some network changes were made in the future year development Paramics model to manage traffic flows on Tyler Hill Road and complement the access strategy proposed. The changes included:

- Modelling of speed bumps on Tyler Hill Road and Parkwood Road
- Priority give way working on Tyler Hill Road

6.7.4. The microsimulation modelling illustrated a reduction in traffic at the westbound end of Tyler Hill Road (eastbound). The modelling showed that the access road attracts vehicles travelling from the Blean area to the St Stephen's Hill area, diverting them from Tyler Hill Road. This reduction along Tyler Hill Road is seen as a positive given its limited width to the west of the Proposed Development.

6.7.5. The microsimulation modelling illustrated that the greatest proportional increases in traffic flow take place on the eastern end of Tyler Hill Road (in the westbound direction). Closer interrogation of the flow information shows that there is however a decrease in the number of vehicles travelling eastbound along the same link, resulting in an overall reduction in two-way traffic flows along the eastern section of Tyler Hill Road, a betterment overall.

6.7.6. A full summary of the changes in traffic flows is provided in Section 6 of the 2023 PTA, provided at **Appendix C**.

6.8 Highway Network Assessment

6.8.1. The 2023 PTA included a full highway network assessment. This assessment was undertaken to align with the previous Local Plan with a plan year of 2045 and its associated growth assumptions.

6.8.2. The change to a 2040 plan period and the significant reduction in growth assumptions (housing numbers reduced from 13,495 to 9,346), and the potential to reduce the vehicle trip general discussed above, it is clear that the assessment within the 2023 PTA is a robust assessment. It is concluded that these results would be worst case and the true impacts are likely to be less.

6.8.3. The following scenarios were tested as part of the 2023 PTA work:

- 2021 Base
- 2045 Future Forecast
- 2045 + Core Development Scenario
- 2045 + Sensitivity Test Development Scenario

6.8.4. As part of the 2023 PTA, mitigation measures were developed at four locations which effectively reduced the impacts of the Proposed Development and improved the performance of the highway network when compared to the 2045 Base year scenario.

6.8.5. At the junction of A290 Whitstable Road/London Road, it was identified that the existing junction is already expected to operate over capacity in the future base without the Proposed Development. The inclusion of the Proposed Development further increases the queuing and delay at this junction. A review of the junction layout identified limited opportunities for improvement within the highway boundary. The assignment of traffic in this location was fixed within the microsimulation modelling. However, further testing using the strategic model is likely to demonstrate re-routing of traffic as a result of this congestion which may reduce the impacts in this location. It is clear that one of the mitigation options for this particular junction is the A2 Harbledown Slips and the level of mitigation will be assessed through the strategic modelling prior to the Regulation 19 consultation.

6.8.6. The constraint identified at the A290 Whitstable Road/London Road is not considered to be insurmountable and it is anticipated that a strategic solution can be found and agreed with KCC through the use of the strategic model, with the Proposed Development assisting in any delivery as required.

7 Summary, Conclusion and Next Steps

7.1 Summary and Conclusion

7.1.1. 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.

7.1.2. Following the publishing of the Reg. 18 version of the Draft Local Plan in March 2024, and the allocation of the site, the transport appraisal work has been updated to reflect the latest Transport Strategy for the district which has been prepared as part of the DLP, alongside the Bus Strategy and Local Cycle and Walking Implementation Plan.

7.1.3. The Proposed Development site benefits from access by a range of modes of transport and provisional strategies have been developed to ensure that access by sustainable modes is prioritised.

7.1.4. A site visit, which included a review of the local walking and cycling network was undertaken on Thursday 16th May 2024. The audit review considered three key movement corridors within close proximity to the Site to understand the existing conditions and opportunities for improvement.

7.1.5. A key principle of the transport strategy is the delivery of a transport hub on the development site to focus and provide access to a range of transport options, with the overarching aim of reducing reliance on the private car. This aligns with the vision of the Canterbury Draft Transport Strategy which seeks to ensure that by 2040, more journeys in the district will be made by sustainable transport than by the private car.

7.1.6. Stagecoach support an extension of the existing Uni1 bus service to serve the on-site transport hub. The route could either be fully extended via Whitstable Road or it could turn around at the transport hub.

7.1.7. To support the allocation, WSP have considered the potential changes to the vehicle trip generation at the site taking into account the draft transport strategy proposals. It should be noted, this is to show the potential for a reduction in traffic, however the traffic modelling undertaken to date within the 2023 PTA is still considered to be a robust position to assess the impacts of the scheme.

7.2 Next Steps

Strategic Modelling

7.2.1. The next stage of work involves undertaking bespoke runs of the strategic model to test the impact of the proposed development on the local and wider highway network. This will help further refine the package of mitigation required to support the development proposals.

A2 Harbledown Slip Roads

7.2.2. The draft allocation includes wording that identifies the provision of the A2 Harbledown Slips as a requirement of the development proposals.

7.2.3. The delivery of the Harbledown slips would not just benefit the development but the wider City. UoK will work with CCC to review and agree an appropriate way forwards. Part of this will involve undertaking further modelling of the proposals within the strategic transport model as identified above.

Reg. 19 Consultation

7.2.4. The next stage of the process is the Regulation 19 consultation. At this point, representations can be made on the proposed amendments to the Local Plan prior to its examination by the Planning Inspector. At this point it is envisaged that an updated PTA will be prepared summarising the findings of the strategic modelling and outlining a package of mitigation measures as appropriate.

Appendix A

2021 Transport Strategy

University of Kent, Canterbury Campus

Transport Strategy: Disposal Sites

-

August 2021

Public

University of Kent, Canterbury Campus

Transport Strategy: Disposal Sites

Type of document (version) Public

Project no. 70080896

Our Ref. No. -

Date: August 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	Revision 2
Remarks	DRAFT	Draft for Stakeholders	Final Issue
Date	19/07/2021	22/07/21	05/08/21
Prepared by	Will Forster / Sarah Thomas	Will Forster / Sarah Thomas	Will Forster / Sarah Thomas
Signature			
Checked by	Justin Sherlock	Justin Sherlock	Justin Sherlock
Signature			
Authorised by	Alex Andrews	Alex Andrews	Alex Andrews
Signature			
Project number	70080896	70080896	70080896
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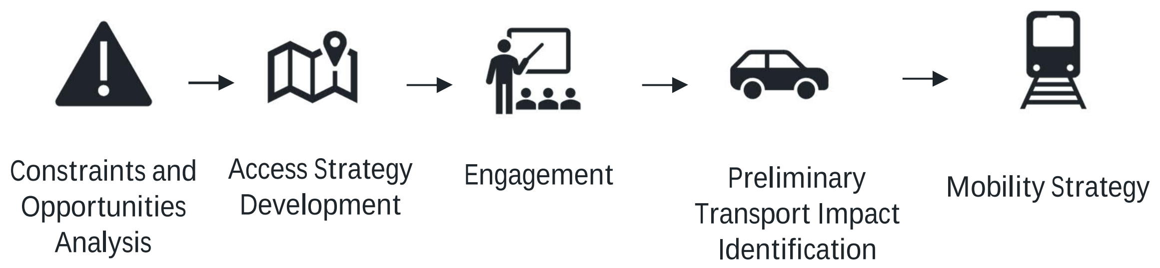
Contents

Executive summary

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.

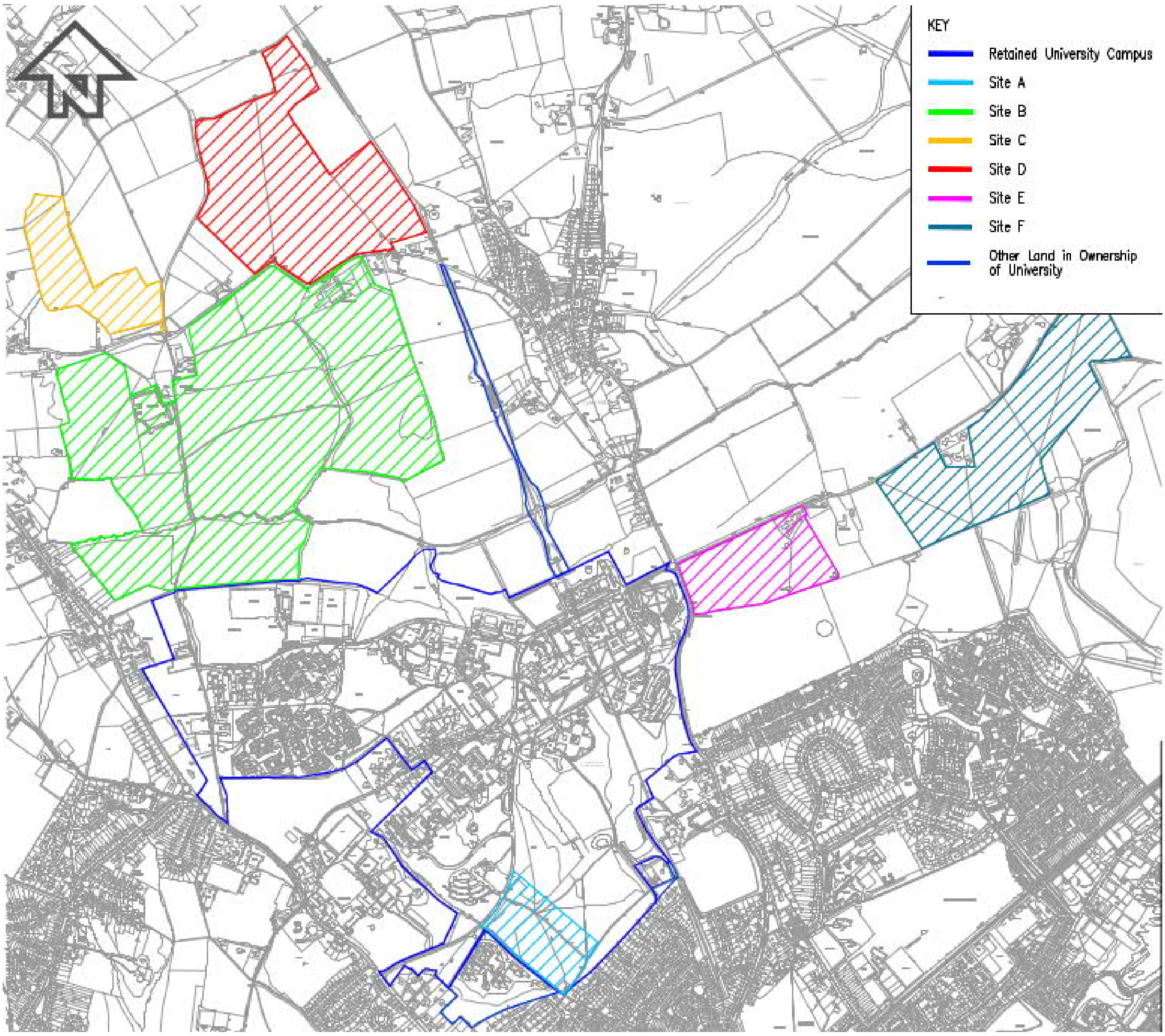
This Transport Strategy has been prepared to document the process undertaken to develop the Transport Strategy and present the findings of the Strategy to inform the Canterbury City Council Local Plan process.

Six sites were originally identified by the University for consideration and a five-stage process was adopted to develop this Transport Strategy:



The site locations relative to the University Campus are shown in **Figure 1**.

Figure 1: Surplus Land Site Location



Site A is no longer being promoted for development of alternative non-University related uses at this time. Instead, and as set out within the corresponding Local Plan Options Representation (prepared by Avison Young) Site A is now being promoted for retention within the wider UoK Campus Boundary within the emerging Local Plan for continued University-related uses. As such, Site A is not focussed on within this current Transport Strategy.

Of the remaining sites the Constraints and Opportunities analysis identified at an early stage that the sites with the greatest potential for built development were sites BCD (as a combined development opportunity) that lie to the north of the University Campus. Constraints to access, visual impact and the presence of a Scheduled Ancient Monument

(SAM) limited the potential uses on Sites E and F located to the east of the University Campus.

Sites BCD benefit from close proximity to the University Campus and as such are able to access the high frequency bus services available as well as amenities and facilities on and beyond the University.

Vehicular access to Sites BCD is 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.

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 considered suitable to accommodate a significant increase in volumes of traffic. Due to the limited frontage available from Sites BCD 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.

The access strategy responded to these constraints by proposing a new north-south route through the University Campus with an access onto A290 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 included 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 (a regionally significant cycle route).

A range of alignments were considered for the new access road to minimise impacts on the existing University Campus and other constraints such as the ancient woodland, watercourse and relevant heritage constraints located both on and off site. Acknowledging that the access strategy relies upon creating a new route through the ancient woodland the overall footprint of the road would be minimised and where it crosses the watercourse a bridge used rather than a culvert.

The access strategy will facilitate delivery of the existing University Masterplan and help to unlock the parking strategy which seeks to locate parking on the periphery of the University Campus enabling traffic volumes in the centre of the Campus to be reduced.

Pedestrian and cycle access to Sites BCD would be achieved via the new access road but also via the Crab and Winkle Way (National Cycle Route 1) that runs through Site B and through improvements to the network of Public Rights of Way in the local area.

A range of supporting strategies have been developed to ensure delivery of sustainable development can be achieved on Sites BCD. These include an outline public transport strategy that seeks to provide a transport hub at the centre of the development offering access to a range of modes of transport. Supported by a Mobility as a Service (MaaS) and Micro-mobility offer this will ensure that active travel and public transport can be prioritised above the private car.

A provisional trip generation for the proposed development has been developed to understand potential traffic volumes and consideration given to the findings of the Jacobs Local Plan modelling work when considering off-site highway impacts.

The provision of a new access road between Whitstable Road and Tyler Hill Road will alter the highway network in this part of Canterbury and further strategic modelling may be required to understand this in more detail.

Throughout the process of development of the Transport Strategy engagement has been undertaken with Canterbury City Council and Kent County Council Highways.

The Transport Strategy developed is considered to be deliverable and would enable this site to come forwards in due course subject to further masterplanning design development, and appropriate assessment.

Contact name Justin Sherlock

Contact details | justin.sherlock@wsp.com

1 Introduction

1.1 Background

1.1.1. 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.

1.1.2. This Transport Strategy has been prepared to document the process undertaken to develop the Transport Strategy and present the findings of the Strategy to inform the Canterbury City Council Local Plan process.

1.1.3. Following this introduction, the remainder of this Transport Strategy is set out as follows:

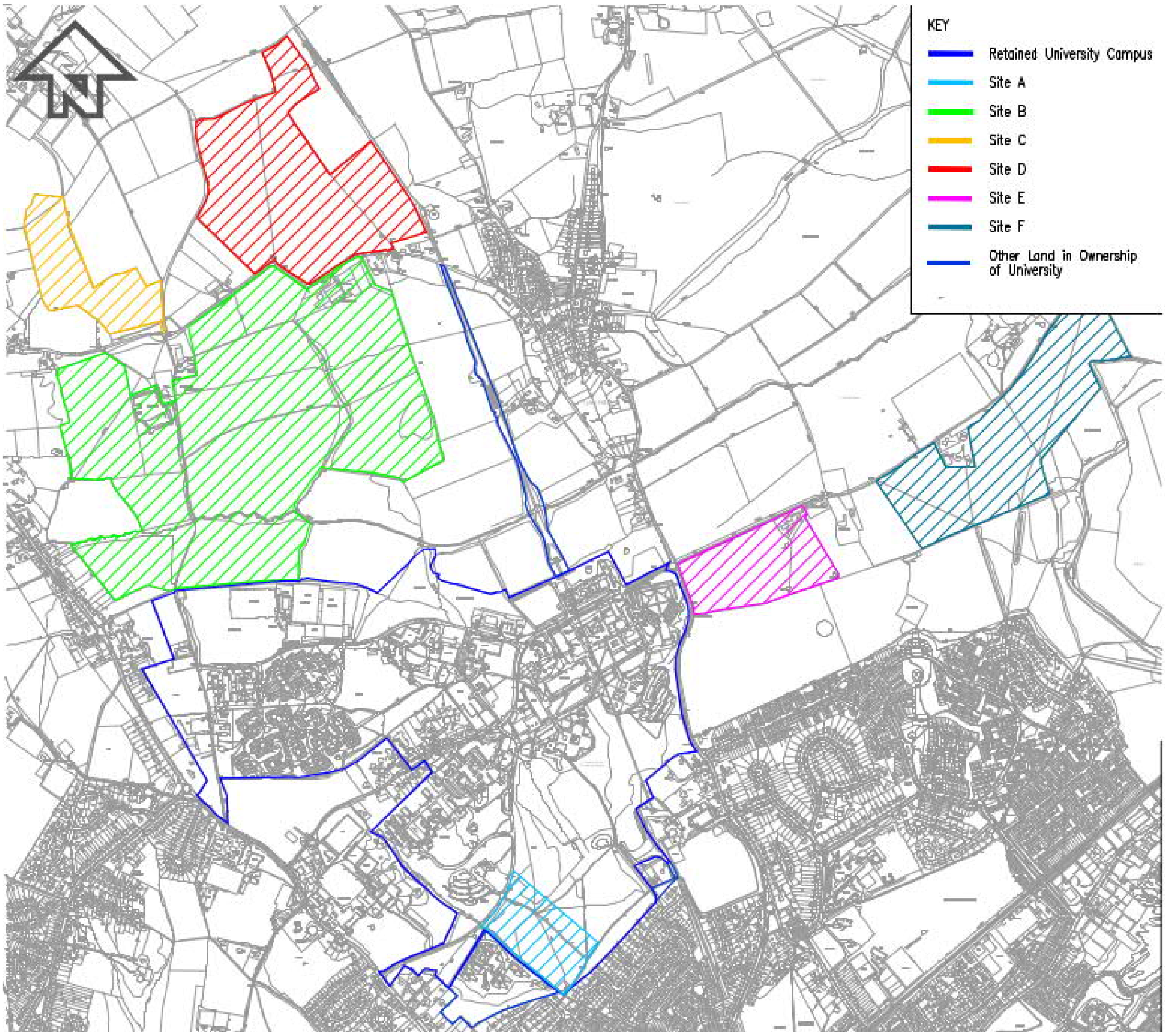
- Section 2 considers the existing site and transport conditions
- Section 3 provides an overview of the emerging development proposals including the stakeholder engagement undertaken to inform development of the proposals
- Section 4 provides the transport strategy for the surplus land
- Section 5 considers the all-mode trip generation of the development proposals and the anticipated likely transport impacts
- Section 6 provides a summary and conclusion

1.2 Site location

1.2.1. The UoK Canterbury Campus is located to the north of the centre of Canterbury on the urban fringe of the City. Covering an area of approximately 105 hectares the University Campus features a mixture of academic buildings and student accommodation buildings alongside associated sports and recreational facilities.

1.2.2. Surrounding the University Campus UoK own several additional land holdings which are currently let to tenant farmers for predominantly arable farming. **Figure 1** identifies the University Campus and surrounding land that is the subject of this Transport Strategy.

Figure 1: Surplus Land Site Location



1.2.3. Site A is no longer being promoted for development of alternative non-University related uses at this time. Instead, and as set out within the corresponding Local Plan Options Representation (prepared by Avison Young) Site A is now being promoted for retention within the wider UoK Campus Boundary within the emerging Local Plan for continued University-related uses. As such, Site A is not focussed on within the remainder of this current Transport Strategy.

2 Site Context and Existing Conditions

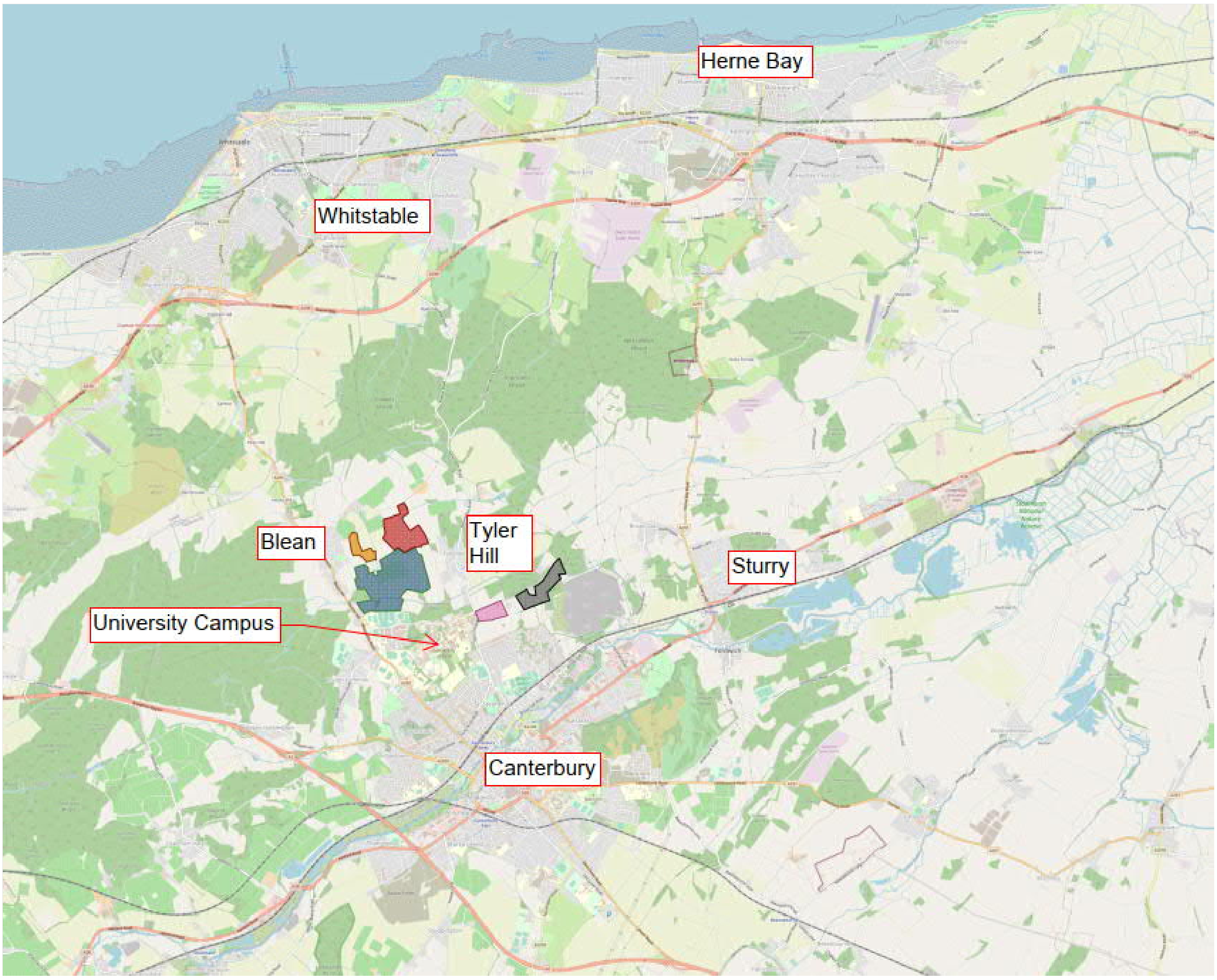
2.1 Introduction

2.1.1. This section outlines the existing transport conditions in the vicinity of the disposal sites, assessing the walking, cycling, public transport and local highway network facilities and accessibility.

2.2 Site location

2.2.1. The UoK Canterbury Campus is located to the north of the centre of Canterbury on the urban fringe of the City. Covering an area of approximately 105 hectares the University Campus features a mixture of academic and student accommodation buildings alongside associated sports and recreational facilities. **Figure 2** shows the site location in the context of East Kent.

Figure 2: Site Location

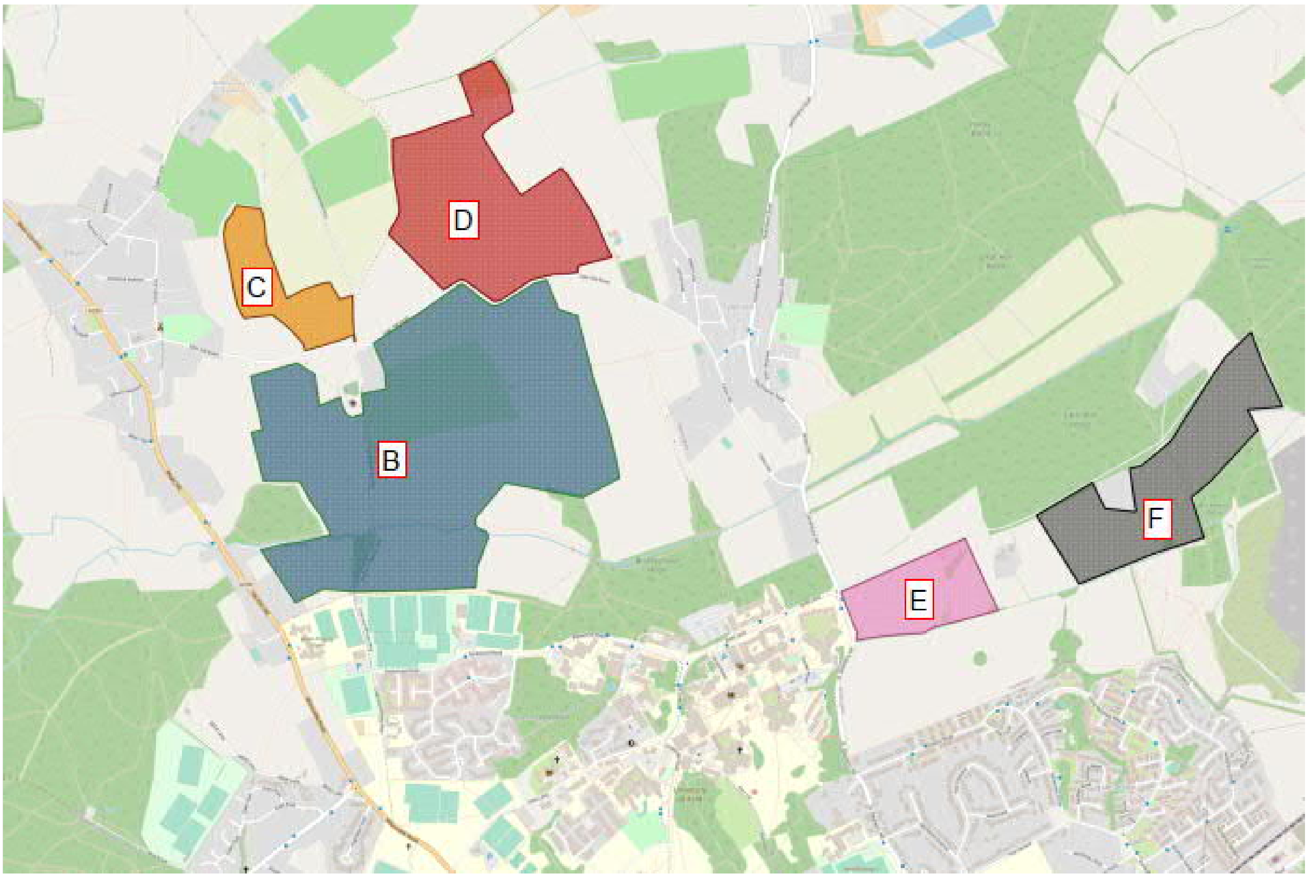


2.2.2. The focus of this Strategy is land that the University has identified as being surplus to requirement. This land can be split into five main land parcels. Sites BCD lie to the north of the University Campus and are currently accessed from Tyler Hill Road, an unclassified rural road that runs approximately east west between Blean and the A290 Whitstable Road in the west to the village of Tyler Hill in the east. Frontage to this road from Sites BCD is limited with third party land between the site boundary and adopted highway.

2.2.3. Site E is located to the east of the University Campus and is bound by St Stephen's Hill in the west. Site E is currently accessed via a private road that bounds the site to the north.

2.2.4. Site F is located to the east of Site E and is accessible by a private road that runs east west from the junction of St Stephen's Hill and Giles Lane in the west. **Figure 3** identifies the location of each of the sites considered within this Strategy.

Figure 3: UoK Disposal Sites



2.3 Policy context

Local planning context

2.3.1. The Canterbury Campus is located within the Canterbury City Council administrative area and within the County of Kent. Planning policy in Canterbury is guided by the Canterbury

District Local Plan (adopted 2017) and the Kent Minerals and Waste Local Plan (adopted 2016).

2.3.2. Policy EMP7 within the Canterbury District Local Plan establishes the policy designation of the University Campus, the geographic extents of which are marked in red in **Figure 1**. The policy supports development of education buildings, student and business accommodation, sports facilities and other facilities directly related to the University's core business.

2.3.3. It requires a masterplan to be developed for the Campus site which should seek to maintain the character of the University, respecting its setting.

2.3.4. Any significant development proposals at the University should be subject to updating of the University's Transport Impact Assessment and Travel Plan.

2.3.5. CCC is in the process of preparing a new Local Plan for the District. Preparation of this document is still at an early stage (with the Local Plan 'Options' Consultation Process currently ongoing). As preparation of this document progresses, these emerging planning policies will also gain significant weight and prominence from a planning perspective.

University Masterplan

2.3.6. A Framework Masterplan for the Canterbury Campus was published in 2019 to guide the future development of the University's physical estate within Canterbury. The Framework Masterplan was designed to bring benefits not only to the University but also the wider City and region.

2.3.7. As a framework for the development the Masterplan does not set out defined proposals but instead acts as a guiding document to shape the University over the short (up to 2021) and medium term (2021-2031).

2.3.8. The Framework masterplan is supported by a Movement and Transport Strategy which prioritises sustainable travel and contains a suite of walking, cycling and public transport improvements aimed at reducing the historic dominance of the car within the Campus.

2.3.9. To support the ambition of placing sustainable travel at the top of the movement hierarchy the following key schemes are proposed:

- new and improved east-west and north-south walking and cycling routes and crossing points within the Campus and wider Estate
- implementation of infrastructure, wayfinding and signage that increases the visual prominence of non-car modes within the Campus
- creation of a closer visual relationship between the bus turnaround and the Campus Heart, delivering high quality modal interchanges
- supporting wider connectivity improvements for walking and cycling beyond the Campus, for example routes to Canterbury West Rail Station and Sturry Road Park and Ride

- a new link to Whitstable Road to deliver improved permeability of the Campus for bus services, and
- a commitment to harness opportunities provided by technology as it develops and expands, for example electric vehicles, electric bicycles and in the long term, autonomous transit opportunities

2.3.10. Any proposals brought forwards on the University Campus therefore need to accord with this vision and support delivery of the key sustainable transport schemes.

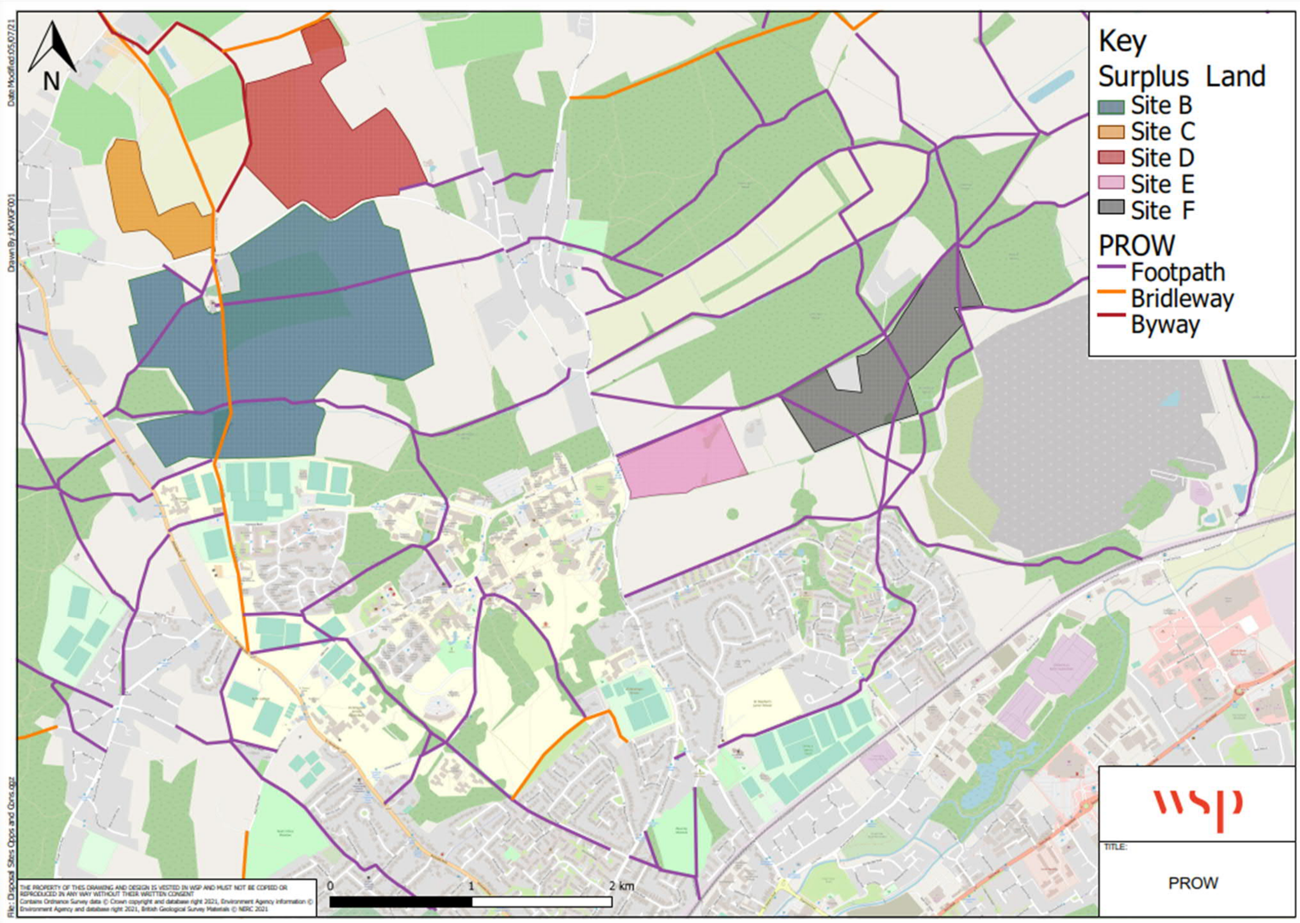
2.4 Existing transport conditions

2.4.1. There are a range of existing transport facilities present within and surrounding the University Campus ranging from a network of footpaths and public rights of way, cycleways to several bus stops and services that service the University and wider area.

Pedestrians

2.4.2. The area benefits from a combination of pedestrian footways bounding highway routes in the local area and a series of public rights of way that provide connections across the surrounding rural hinterland. **Figure 4** shows the existing footpaths and public rights of way that provide pedestrian access to the University Campus and surplus land.

Figure 4 – Pedestrian Infrastructure



2.4.3. Several footways, bridleways and byways provide pedestrian access to the University campus and the surrounding surplus land. The main footways are provided along the neighbouring Whitstable Road in the west and St Stephen's Hill in the east. The University Campus is then accessed via either University Road or Giles Lane. Both Giles Lane and University Road feature footways along their length albeit in some locations these are only provided along one side of the carriageway. Continuous pedestrian routes are therefore provided east west through the University Campus to connect Whitstable Road in the west with St Stephen's Hill in the east.

2.4.4. CB24A (The Crab and Winkle Way) provides a strategic walking connection between Canterbury and Whitstable (a distance of approximately 7.2km). The route commences on Whitstable Road in the west of the University Campus and heads north directly through the Campus on a combination of dedicated off road shared use pedestrian/footway and shared surface (used by both vehicles and active mode users). To the north of the University Campus the route continues across open farmland as a shared footway/cycleway that forms Site B before reaching Tyler Hill Road. The route from Whitstable Road to Tyler Hill Road is a designated bridleway. The route then crosses Tyler Hill Road at an uncontrolled crossing point before continuing north along the boundary of Site C and is designated as a byway.

North of Site C the route continues towards Whitstable on a combination of bridleway and footpaths.

2.4.5. A series of public footpaths run east west across Site B including CB12 which follows the alignment of the watercourse and connects Blean in the west with Tyler Hill in the east. CB12 also connects with footpath CB13 which connects into the University Campus and Giles Lane. Footpath CB14 runs east west between Tyler Hill Road and Tyler Hill.

2.4.6. Site C is bound by byway CB27 in the east along with footpath CB16 both of which form part of the Crab and Winkle Way. Site C is also bound to the north by footpath CB18A which connects with Blean in the west.

2.4.7. Site D is bound in the west by byway CB27 and in the north by bridleway CB24.

2.4.8. Site E is bound to the north by a private road that forms part of footpath CB44. CB44 connects with Giles Lane and St Stephen’s Hill in the west and further footpaths for onward connection with Broad Oak and Sturry in the east.

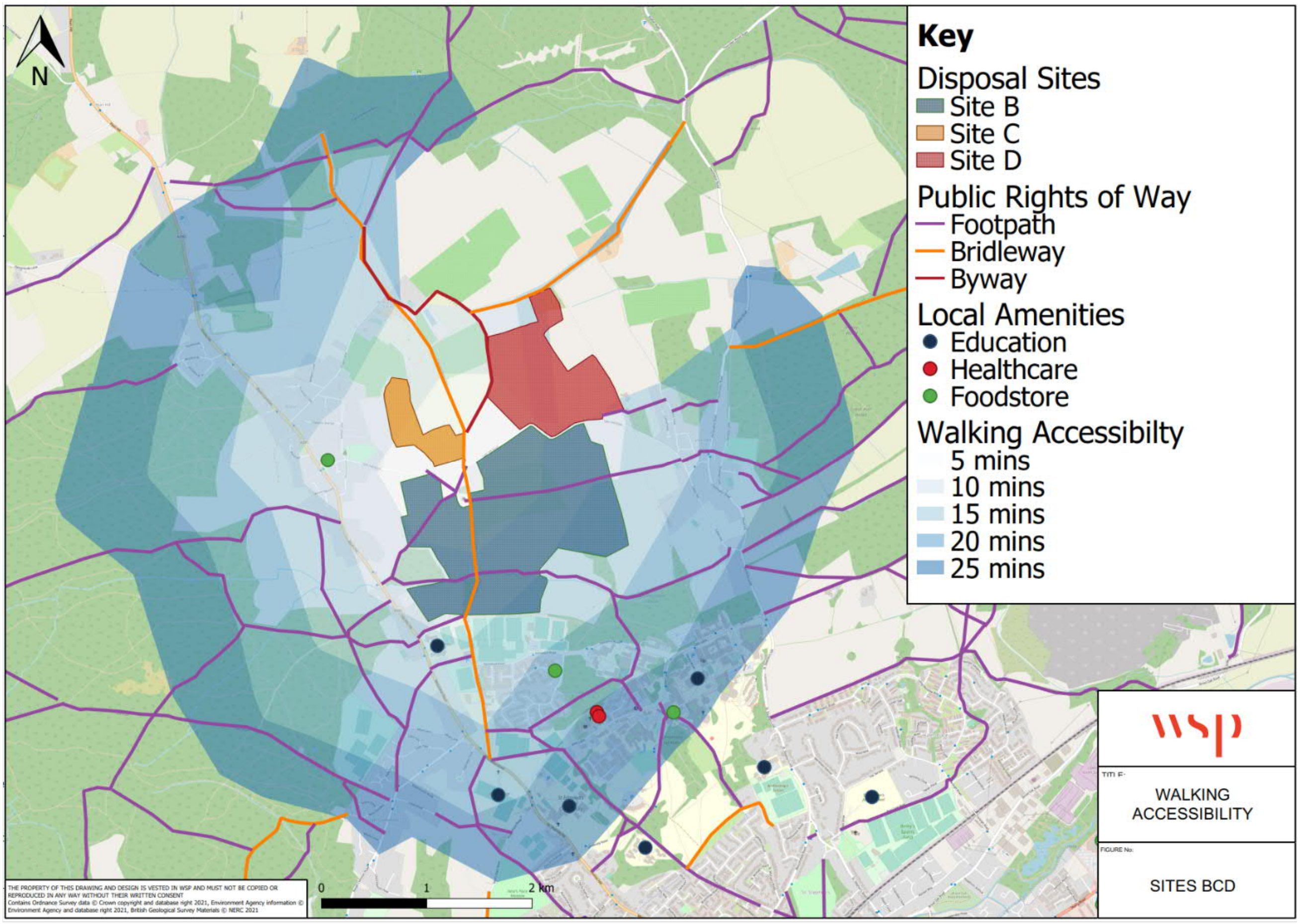
2.4.9. Site F is bound by footpath CB44 in the north but is also crossed by footpaths CB47 and CB37 which provide connections to the south towards Canterbury.

2.4.10. On the University Campus itself footpaths CB13 and CB33 provide pedestrian access alongside the footways adjacent to the carriageways. Footpaths CB31A and CC5 provide a north to south access for pedestrians to access the University from the area of St Stephens.

2.4.11. **Figure 5** provides existing walking isochrones from the centre of Sites BCD. **Figure 5** shows that the areas of Blean, Tyler Hill and the University Campus are all accessible within a two kilometre (25 minute) walk of the centre of these sites. Two kilometres is considered to be the maximum distance that pedestrians are willing to walk to access day to day facilities such as schools and workplaces[1]. A range of amenities and facilities can be accessed within these existing settlements including schools, convenience retail and healthcare.

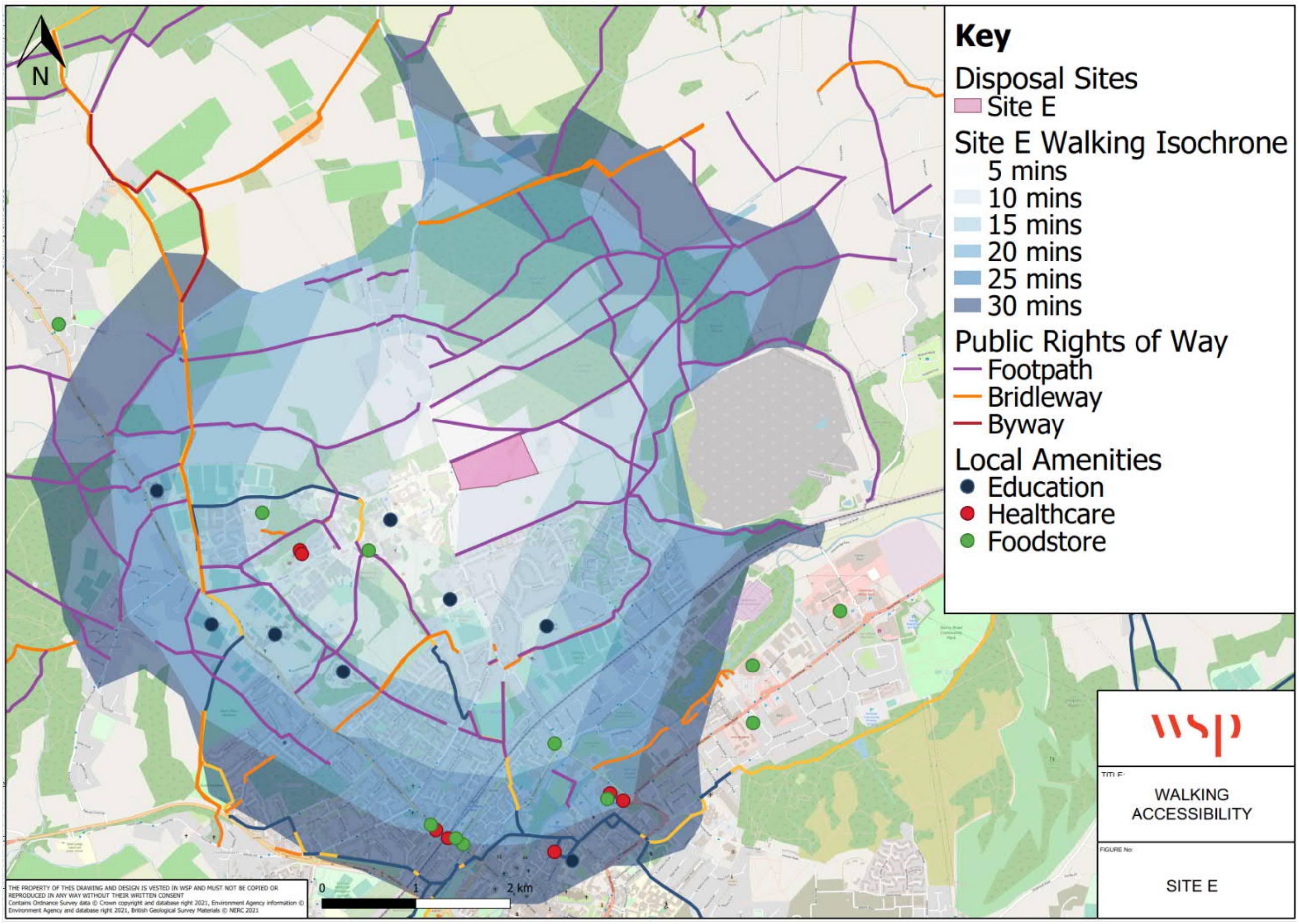
[1] Charterd Institute of Highways and Transportation (CIHT), Providing for Journeys on Foot (2000) Table 3.2

Figure 5 – Sites BCD Pedestrian Isochrones



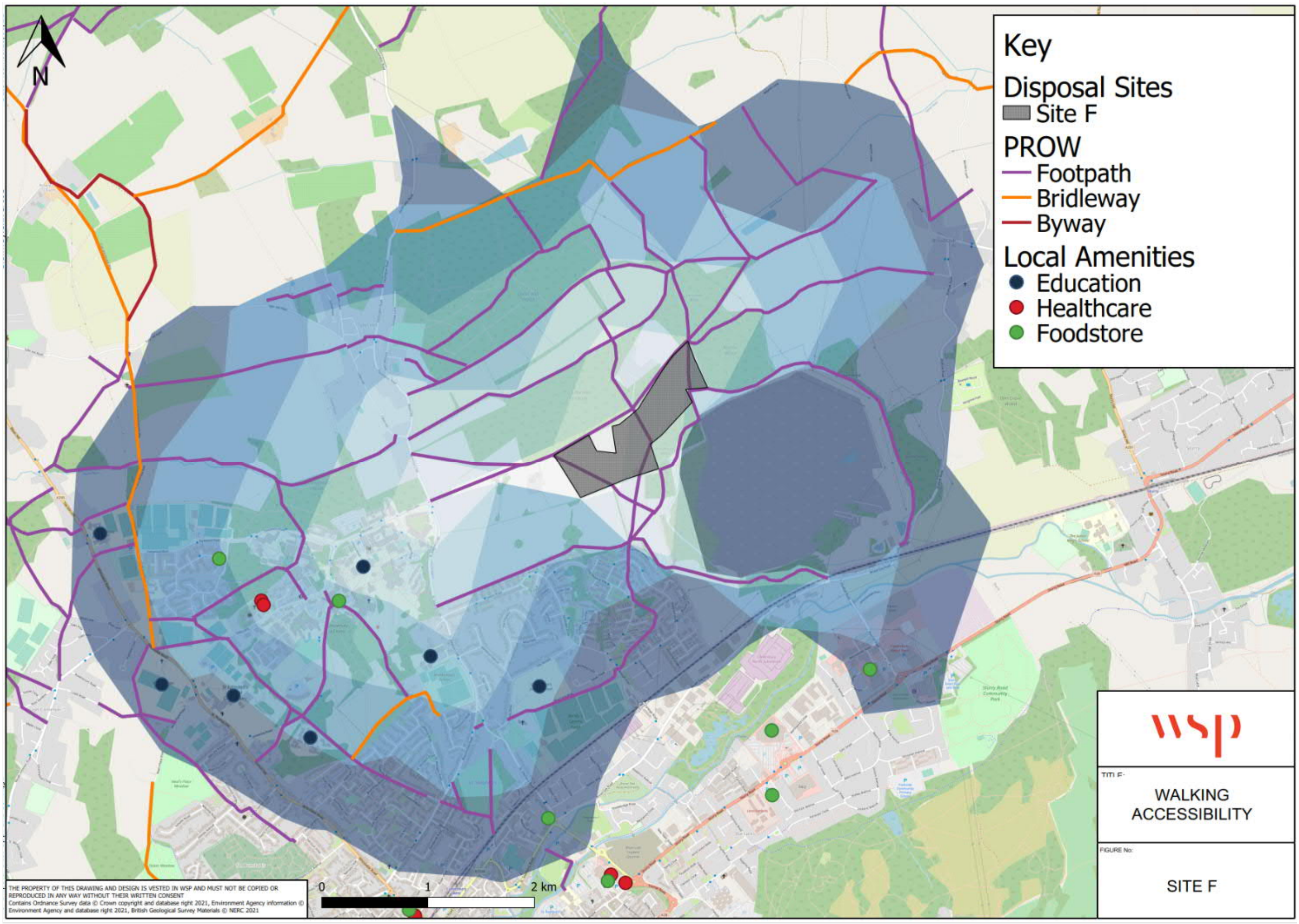
2.4.12. **Figure 6** provides existing walking isochrones from the centre of Site E. Figure 6 shows that Tyler Hill, the University Campus and much of northern Canterbury is accessible within a two-kilometre distance (equivalent to a 25 minute walk). Within these areas a range of amenities and facilities are available.

Figure 6 – Site E Pedestrian Isochrones



2.4.13. **Figure 7** provides existing walking isochrones from the centre of Site F. Figure 6 shows that Tyler Hill, the University Campus and much of northern and eastern Canterbury is accessible within a two-kilometre distance (equivalent to a 25 minute walk). Within these areas a range of amenities and facilities are available.

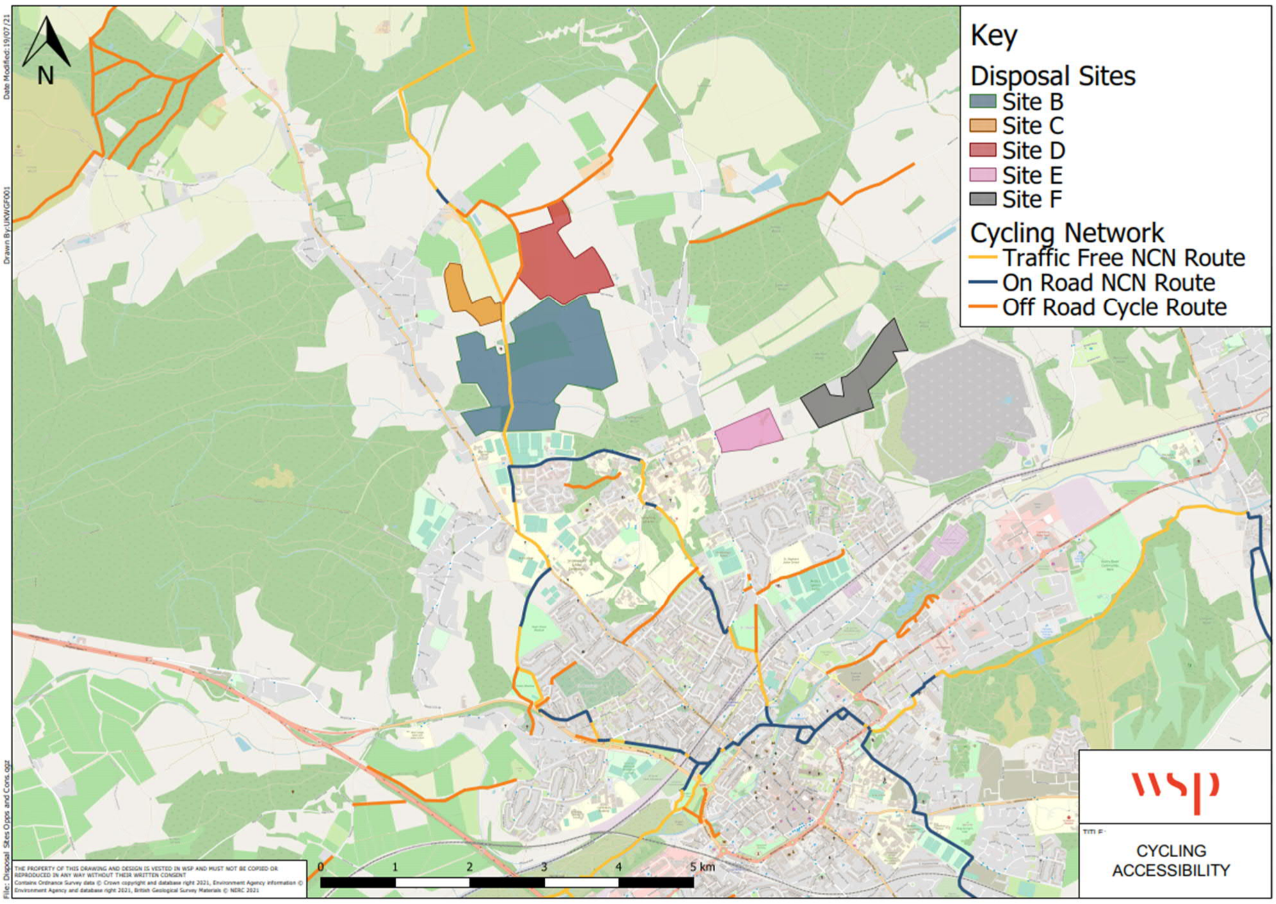
Figure 7 – Site F Pedestrian Isochrones



Cyclists

2.4.14. There are several cycle paths that currently provide access to the University Campus and surplus land. The National Cycle Network (NCN) route 1, also known as the Crab and Winkle Way runs from north to south, part on carriageway and part traffic free through the University Campus and Site B and bounds Site C in the east. Locally the route runs between Canterbury in the south and Whitstable in the north. In addition to the NCN route, there are several off-road cycle routes that run through the University Campus east to west. **Figure 8** shows the cycle routes in the context of sites B,C,D, E and F.

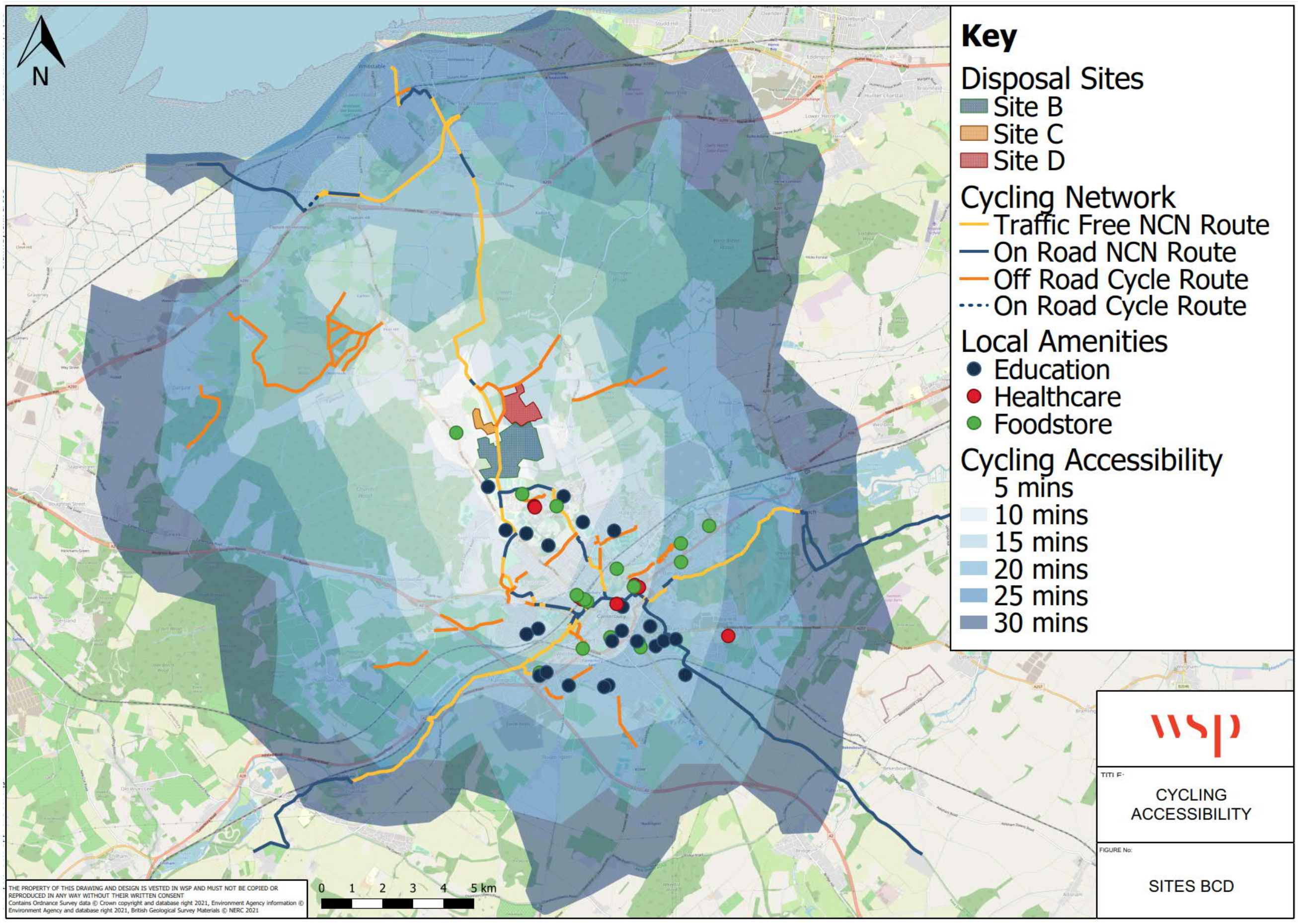
Figure 8 - Cycling Accessibility and Routes



2.4.15. **Figure 9** provides existing cycling isochrones from the centre of Sites BCD. **Figure 9** shows that the whole of Canterbury and areas to the north including Whitstable are all accessible within a five mile (30 minute) cycle of the centre of these sites. Five miles is considered to be the maximum distance that people could realistically swap car-based travel for cycling[2]. A range of amenities and facilities can be accessed within these existing settlements including schools, convenience retail and healthcare.

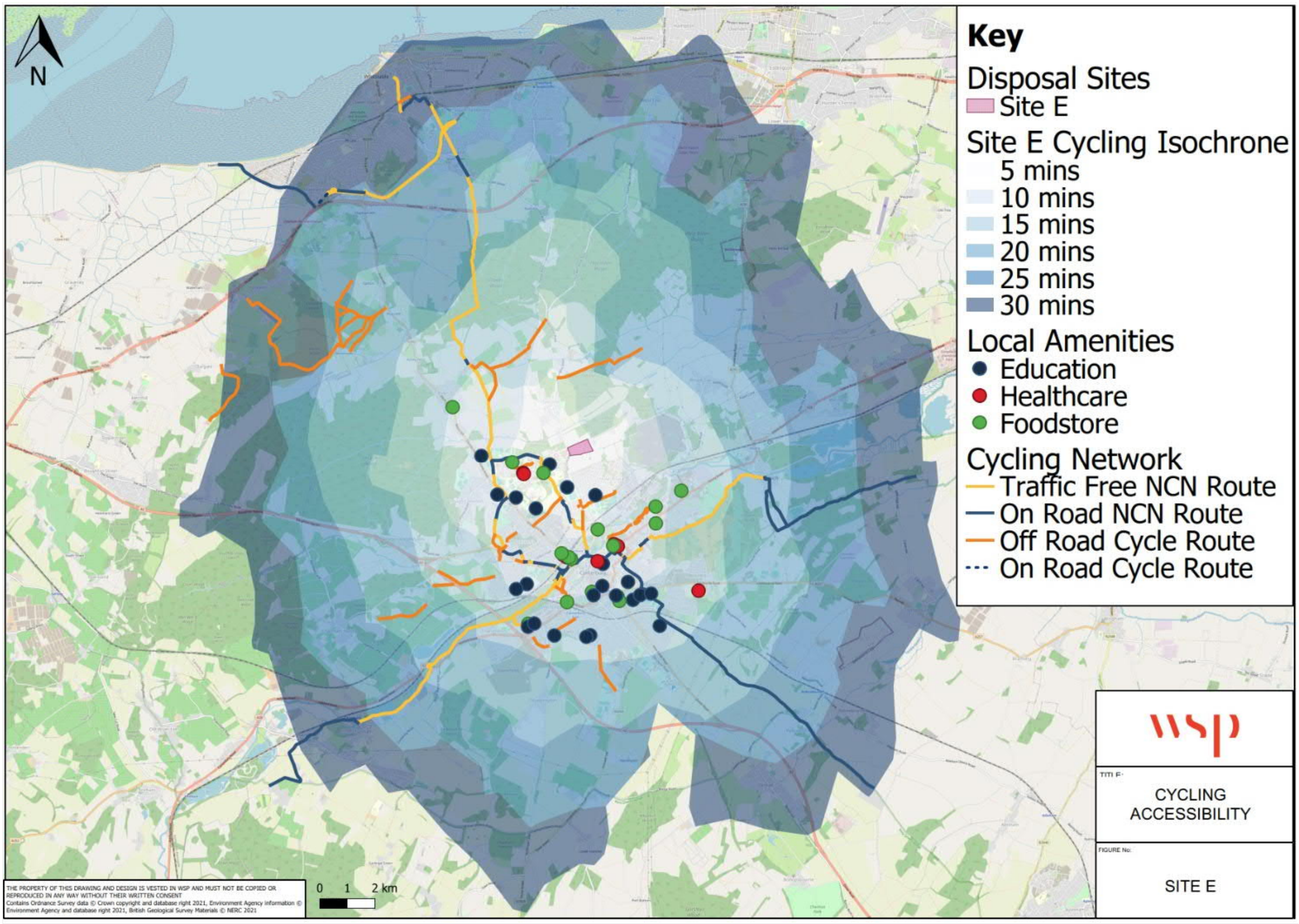
[2] Department for Transport's Local Transport Note 1/20: Cycle Infrastructure Design (2020) Paragraph 2.2.2

Figure 9 – Sites BCD Cycling Isochrone



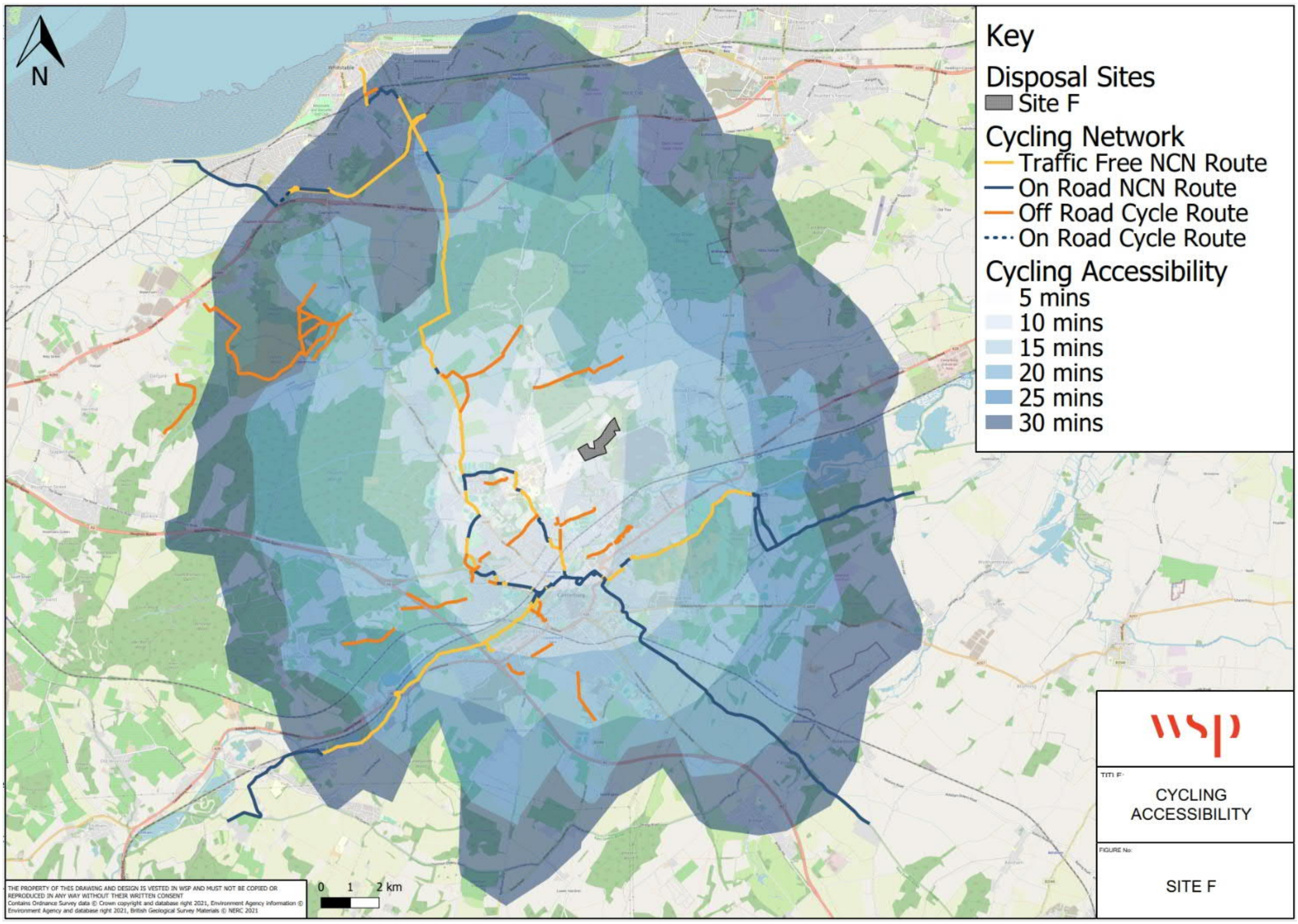
2.4.16. **Figure 10** provides existing cycling isochrones from the centre of Site E. **Figure 10** shows that the whole of Canterbury and areas to the north including Whitstable are all accessible within a five mile (30 minute) cycle of the centre of the site. A range of amenities and facilities can be accessed within these existing settlements including schools, convenience retail and healthcare.

Figure 10 – Site E Cycling Isochrone



2.4.17. **Figure 11** provides existing cycling isochrones from the centre of Site F. **Figure 11** shows that the whole of Canterbury and areas to the north including Whitstable are all accessible within a five mile (30 minute) cycle of the centre of the site. A range of amenities and facilities can be accessed within these existing settlements including schools, convenience retail and healthcare.

Figure 11 – Site F Cycling Isochrone



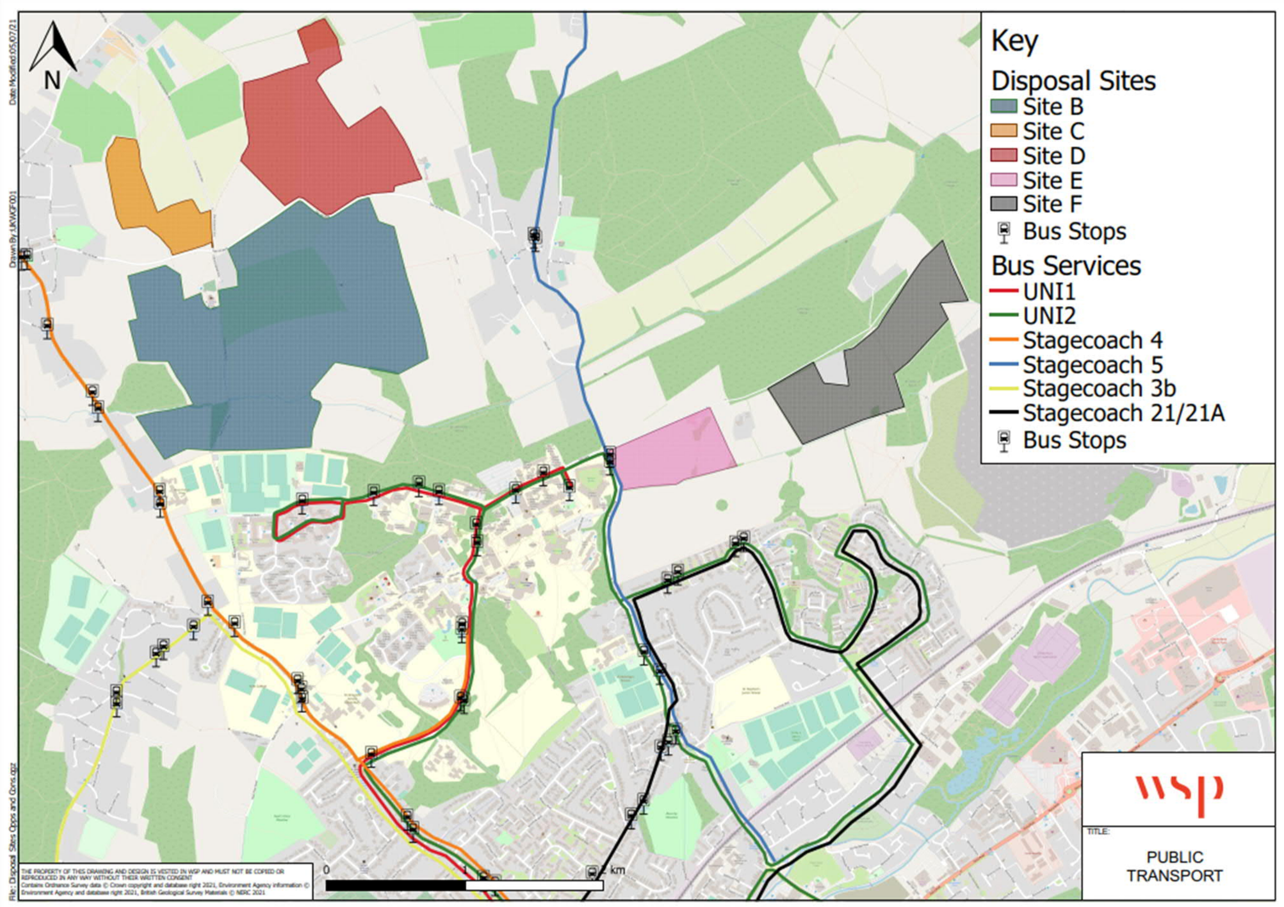
Public Transport

2.4.18. The University Campus and surrounding land benefits from access to a range of public transport services that primarily connect the University with wider Canterbury and destinations further afield. At the time of preparation of this study Covid-19 travel restrictions meant that some bus services were not operating. However, for the purposes of this Strategy pre-covid timetable information has been used to inform the assessment of accessibility on the basis that services will return in the near future.

Bus Services

2.4.19. **Figure 12** illustrates the bus stops and bus routes that are accessible from the bus stops in the vicinity of the University Campus and surrounding area.

Figure 12 – Local Bus Stops and Routes



2.4.20. **Figure 12** demonstrates that the University is served directly by three bus services whilst further services are accessible from both Whitstable Road in the west and St Stephen's Hill in the east.

2.4.21. **Table 1** provides a summary of the bus services accessible from the University Campus, Whitstable Road and St Stephen's Hill that could be utilised by users of Sites BCD, E and F.

Table 1 - Bus Services in the Vicinity of the Sites

Bus Service	Route	First Bus	Last Bus	Frequency		
				Mon - Fri	**Sat**	**Sun**
3 / 333 / 3x	Canterbury - Sittingbourne	07:40	21:00	Hourly	Hourly	Hourly
4	Canterbury - University of Kent – Whitstable – Tankerton - Greenhill	07:58	17:20	30 minutes	30 minutes	N/A
5	Canterbury – Tyler Hill – Chestfield – Whitstable - Seasalter	07:22	17:02	Hourly	Hourly	N/A
21/21A	City Centre - St. Dunstan's - Hales Place - City Centre	06:28	22:45	15 minutes	15 minutes	Hourly
UNI1	University of Kent – Canterbury City Centre	08:27	17:38	30 minutes	30 minutes	N/A
UNI2	Canterbury – Westgate Towers, University of Kent	09:00	18:04	30 minutes	30 minutes	N/A

2.4.22. **Table 1** demonstrates that a range of services are available in the area surrounding the sites that operate on a range of frequencies up to every 15 minutes. Key destinations served include Canterbury City Centre, Canterbury West Railway Station, Sittingbourne, Whitstable and Herne Bay.

Rail services

2.4.23. Canterbury West Railway Station is located approximately 1.7 km from the closest access point to the University and 2.7 km from the heart of the University Campus. To Sites BCD the station is 3.7 km and to Sites E and F the station is 2.4km. **Tables 2-4** provide details of the rail services from Canterbury West Station from Monday to Friday and Saturday and Sunday Respectively. All timings are from Canterbury West Station.

Table 2 - Rail Services (Monday – Friday)

Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West - London Victoria	07:03	21:03	Hourly	122 minutes
Margate – Canterbury West – London St Pancras	05:18	22:26	Hourly	95 minutes
Canterbury to Ashford International	07:03	21:03	Hourly	22 minutes

Table 3 - Rail Services (Saturday)

Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West - London Victoria	06:05	22:05	Hourly	122 minutes
Margate – Canterbury West – London St Pancras	05:26	22:26	Hourly	95 minutes
Canterbury to Ashford International	06:05	22:05	Hourly	22 minutes

Table 4 - Rail Services (Sunday)

Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West - London Victoria	07:30	22:03	Hourly	123 minutes
Margate – Canterbury West – London St Pancras	05:26	22:26	Hourly	54 minutes
Canterbury to Ashford International	06:05	22:05	Hourly	22 minutes

2.4.24. **Tables 2-4** demonstrate that Canterbury West Station provides train services to a range of locations including London Victoria, London St Pancras, and Ashford International.

2.4.25. The analysis presented above demonstrates that the railway station is accessible by either bus or by cycling from the disposal sites. Space for 134 cycles is provided at Canterbury West Station[3].

Highway Network

2.4.26. The local highway network in the vicinity of the disposal sites is characterised by a series of north south radial routes that converge on Canterbury City Centre in the south and connect with the settlements of Herne Bay and Whitstable in the north. In the west the A290 Whitstable Road provides a connection between the City Centre Ring Road, the University, Blean and north towards the A299 and Whitstable. This road also connects in the vicinity of the University with Rough Common Road which provides a connection to the A2 in the west.

2.4.27. In the east St Stephen's Hill connects the City Centre and areas to the east of Canterbury along the A28 corridor with the University and north towards the A299 and Herne Bay.

2.4.28. The University Campus itself is accessible from either Whitstable Road or St Stephen's Hill. Giles Lane provides a continuous east-west connection through the University Campus between Whitstable Road and St Stephen's Hill. However, its width is constrained within part of the University resulting in an informal priority working system. University Road provides a connection between Whitstable Road in the west and Giles Lane in the centre of the University Campus. The road forms a priority junction with Giles Lane. Within the centre of the University Campus both Giles Lane and University Road are subject to a 20mph speed limit.

2.4.29. Park Wood Road is a private internal university road that connects Giles Lane with areas in the north of the University.

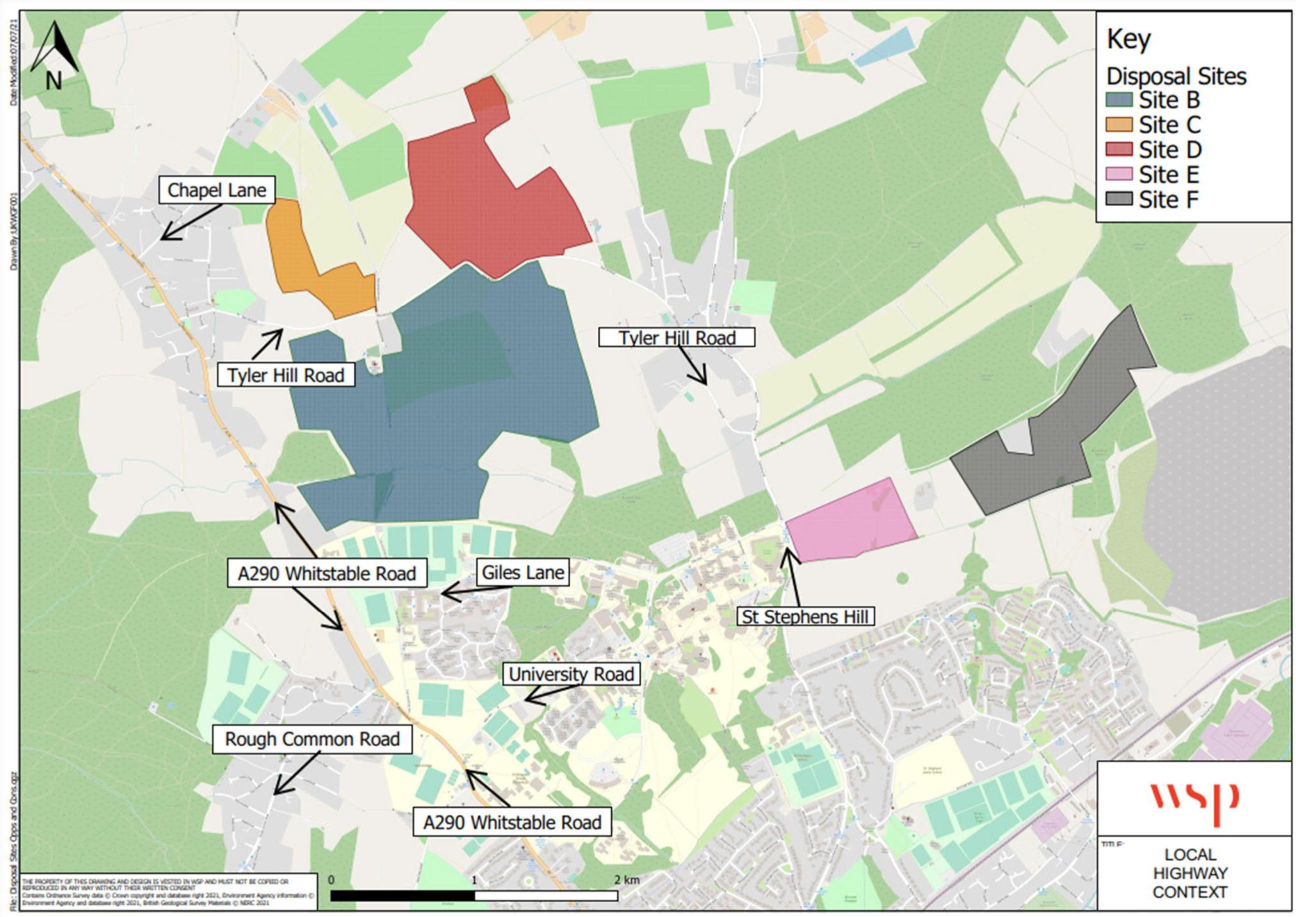
2.4.30. Tyler Hill Road provides an east-west connection between the villages of Blean and Tyler Hill and runs between Sites BCD. The road is a rural country lane which whilst subject to national speed limit (60mph speed limit) features constrained geometry which limits the speed of vehicles.

2.4.31. Sites E and F are accessed via a private road that runs east-west and forms a mini-roundabout junction with Giles Lane and St Stephen's Hill.

2.4.32. **Figure 13** provides an overview of the highway network in the vicinity of the sites.

[3] Source: National Rail Website

Figure 13 – Local Highway Network



3 Emerging Proposals

3.1 Introduction

3.1.1. This section outlines the emerging proposals for the surplus land along with the process of engagement that has taken place to inform the development of the masterplan.

3.2 Scheme Development

3.2.1. The UoK appointed a multi-disciplinary team to develop proposals for the surplus land consisting of:

- Avison Young – Town Planning and Commercial Advice (Land and Disposal Strategy)
- PRP – Masterplanning, Urban Design and Landscape Architecture
- WSP – Transport Planning, Engineering and Environmental input including Air Quality, Noise, Ecology, Minerals, Flood Risk and Drainage, Agricultural Assessment, Land Contamination, Arboriculture, Built Heritage and Archaeology and Nutrients

3.2.2. The team commenced work by undertaking a detailed constraints and opportunities analysis of the University Campus and surrounding surplus land. This constraints and opportunities analysis enabled the team to familiarise themselves with the background and history to the University Masterplan and inform the potential for development of each site. It was evident from this initial work that the main focus of built development would need to be focused on land to the north of the University Campus.

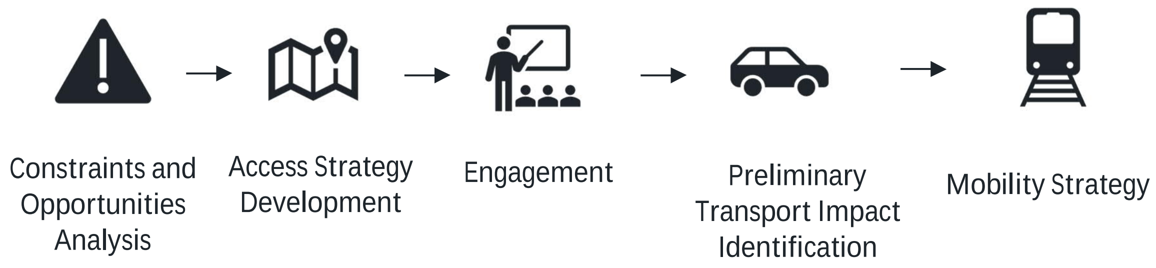
3.2.3. Site E was discounted for built development because a large proportion of the site contains a Scheduled Ancient Monument (SAM) whilst Site F is in an exposed location above Canterbury City Centre and is only accessible via a private road. Opportunities for these two sites was therefore limited to potential bio-diversity enhancement, green infrastructure, open space and supporting facilities for the University Campus.

3.2.4. A series of stakeholder workshops were then held with officers from Canterbury City Council (CCC) (Local Planning Authority) and Kent County Council (KCC) (Local Highway Authority) to better understand wider context and shape development of the proposals.

3.2.5. The stakeholder workshops, constraints and opportunities analysis and suite of environmental surveys were then used to inform the development of the masterplan proposals.

3.2.6. From a transport perspective a five-stage process was followed to develop the accompanying Transport Strategy to the masterplan as illustrated in **Figure 14**.

Figure 14: Transport Strategy Development Process



Constraints and Opportunities Analysis Findings

3.2.7. The constraints and opportunities analysis identified the following key transport design principles:

Constraints

- Access to the surplus land was constrained by the rural location and nature of the highway network adjoining the sites. A significant volume of development on land to the north of the University could result in inappropriate increases in traffic on Tyler Hill Road and the junctions with Whitstable Road (A290) in the west and Canterbury Hill in the east
- Limited frontage access to the public highway identified through land title searches and highway boundary records revealed limited potential for improvement of the highway network on Tyler Hill Road to facilitate access
- The highway network immediately surrounding the sites featured constrained geometry which would require third party land in order to improve
- Access to Site C from the public highway is only achievable from a single point limiting land use opportunities on this site without seeking additional land.

Opportunities

- The public transport, walking and cycling networks serving the University Campus provide an opportunity through extension and incorporation within the development sites to integrate with the surrounding area and ensure that sustainable development could be achieved
- The Crab and Winkle Way (National Cycle Route 1) provides a unique opportunity to facilitate a high-quality active mode connection to the University and City Centre in the south and north towards Whitstable and the Coast
- The neighbouring settlement of Blean and the University Campus provides a range of amenities and facilities that could be accessed by residents/employees of the development sites
- The ability to create an access road through other University owned land

- The access strategy, if integrated with the University's aspirations could help to facilitate the University Masterplan.

Stakeholder Engagement

3.2.8. Throughout the masterplan development process the transport team engaged with both Officers from CCC and KCC as well as the Head of Traffic Management and Travel at the University. Key findings from this engagement process can be summarised as follows:

- The development proposals should seek to safeguard the mobility strategy outlined within the University Masterplan. In particular the University Masterplan proposed a series of car parks around the periphery of the Campus to facilitate a reduction in traffic volumes in the centre
- The use of Park Wood Road as an access to development to the north of the University Campus was not viewed as attractive to the University and could result in negative impacts on the amenity of the Campus
- Initial modelling undertaken for the Local Plan Process[4] had identified a series of interventions to manage traffic demand resulting from the growth aspirations of the Local Plan. These would potentially impact the development proposals
- Access to the public highway from the sites to the north of the University was constrained and if access onto Tyler Hill Road was not managed could result in unacceptable impacts on surrounding roads and villages
- There would be a need for a careful balance to deter development traffic from using Tyler Hill Road whilst not fully stopping up the existing route which is used as a key east west link between the A290 and east of Canterbury
- If measures to control traffic flows on Tyler Hill Road resulted in a significant reduction in existing traffic volumes on Tyler Hill Road this may have undesirable effects on Giles Lane which runs through the University Campus and is the next east-west corridor south between the A290 and east of Canterbury
- A belt of ancient woodland is located in Site B. Removal of this ancient woodland to facilitate access would require careful consideration from both a policy and design perspective. This matter is dealt with separately by way of a note prepared by Avison Young and WSP.

3.3 Development Proposals

3.3.1. On the basis of the scheme development process followed, the development proposals that have been identified and this Transport Strategy supports are as follows:

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[4] Jacobs Kent Countywide Model Stage 3 Canterbury Local Plan Forecasting Report 14th May 2021

Sites BCD

3.3.2. A residential led mixed-use development is proposed to the north of the University Campus on Sites BCD. Initial masterplanning optioneering indicated potential for approximately 2000 homes supported by a local centre (incorporating transport hub) and primary school to serve the new population.

3.3.3. Access to the site would focus movement towards a north-south axis with movement to/from Tyler Hill Road managed through incorporation of the road within the site where it bounds the site.

3.3.4. A new access road for all users (pedestrians, cyclists and vehicles) would be delivered through the University Campus and access onto the public highway on Whitstable Road (A290). Previous work undertaken for the University Masterplan identified the potential for a traffic signal junction on Whitstable Road to facilitate access in this location.

3.3.5. Limited vehicular access to Site C would lend the site to provision of open space to contribute towards the overall provision across Sites BCD albeit acknowledging that should alternative access opportunities arise (for instance in the form of third party land) then there may be opportunity to deliver further residential development.

Site E

3.3.6. The provision of a new access road through the University Campus and delivery of the parking areas outlined within the University Masterplan would impact upon the provision of playing fields. Site E could potentially provide space for green infrastructure, open space or playing fields subject to a suitable design acknowledging the SAM located on the site.

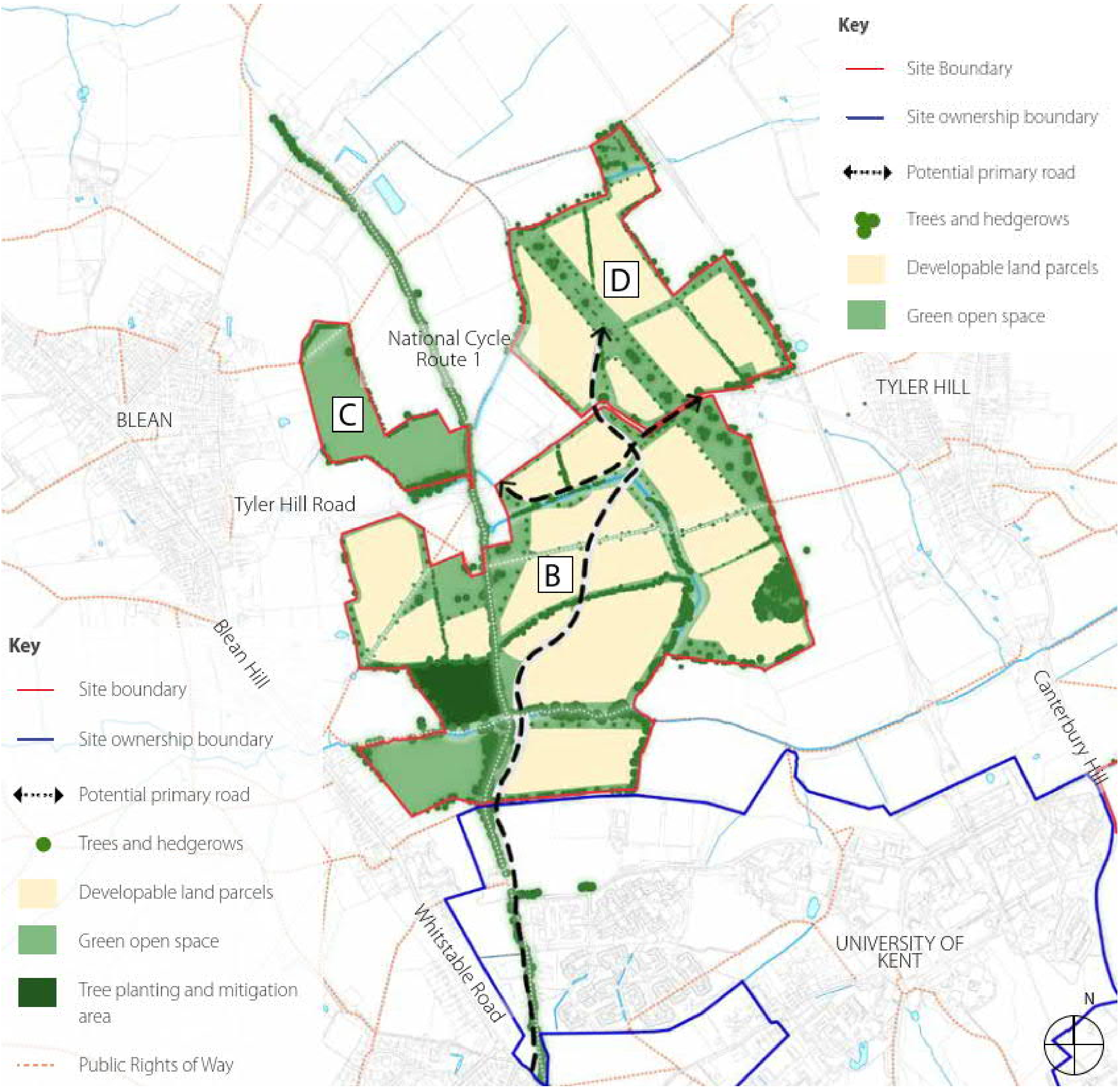
Site F

3.3.7. Access to site F is via a single-track private road and as such land uses on this site are likely to be limited to those aligned with the low traffic volume nature of the access arrangements. This site has therefore been identified at this stage for potential ecological enhancement land.

3.4 Emerging Masterplan

3.4.1. **Figure 15** outlines one of the current emerging masterplans for Sites BCD.

Figure 15: Emerging Masterplan Option (Source: PRP)



3.4.2. Six key masterplanning principles have been identified for the development. The key masterplanning principles that relate to transport are as follows:

- A vibrant mix of uses – provision of a mix of uses on site including a local centre and primary school to reduce the need for external trip making. Provision of a mixed-use development will provide opportunities for people to live, work and play on site.
- A well-connected neighbourhood – provision of a transport hub on site to offer a range of transport options that prioritise sustainable modes of transport and maximise use of the sustainable links available in the local area.

4 Transport Strategy

4.1 Introduction

4.1.1. The Transport Strategy consists of a series of sub-strategies that are combined to form a holistic strategy that aims to meet the vision and objectives of the site. The elements that make up the Transport Strategy are shown in **Figure 16**.

Figure 16 – Transport Strategy Elements

4.2 Access Strategy

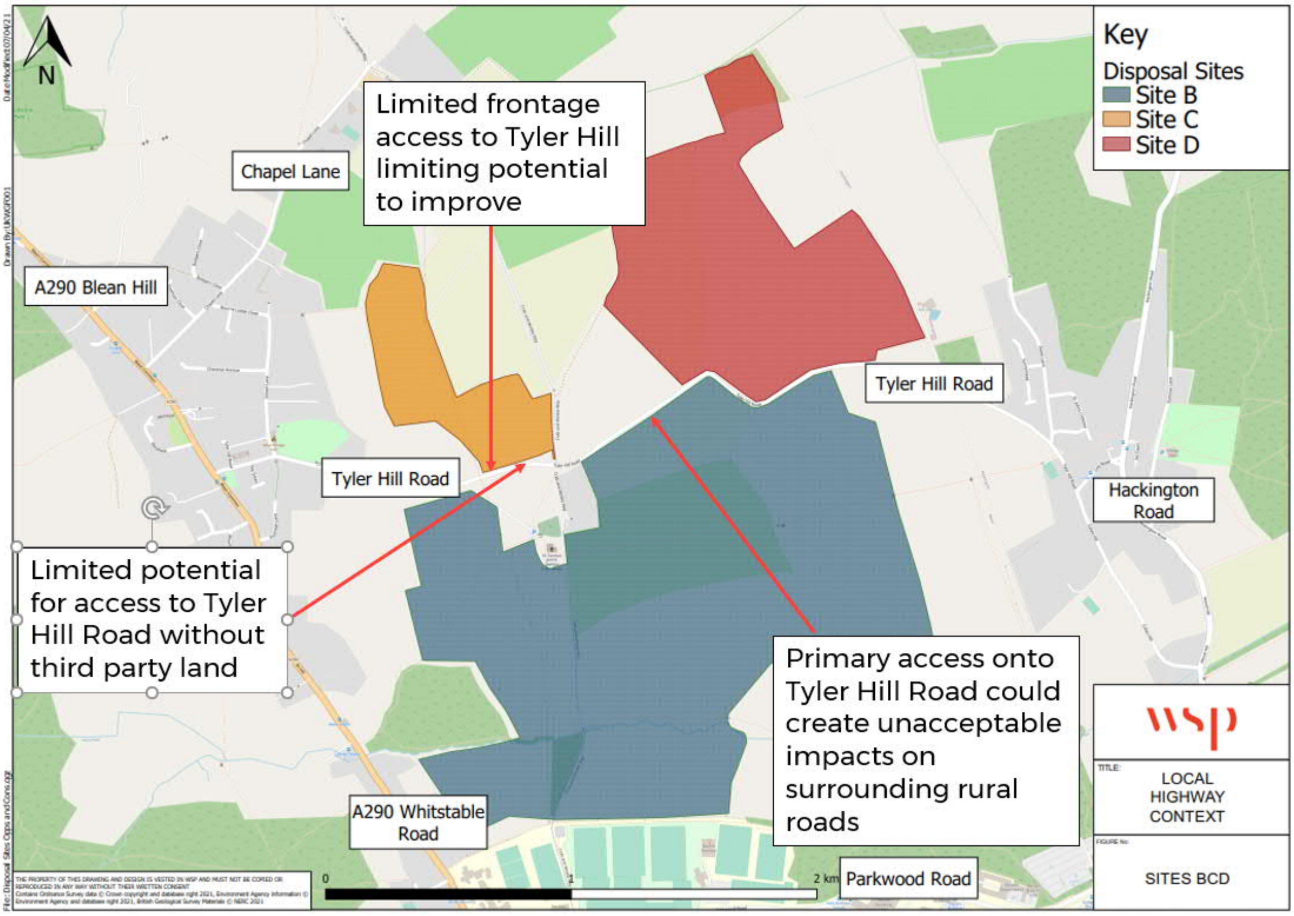
Vehicular Access

4.2.1. When considering vehicular access to Sites BCD our 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 (Figures 17-18).

Figure 17 – View west along Tyler Hill Road adjacent to Hothe Lodge	**Figure 18 – View east along Tyler Hill Road adjacent to Hothe Lodge**
	
Figure 19 – View east along Tyler Hill Road from Blean Village	**Figure 20 – View east along Tyler Hill Road from Hothe Court Farm**
	

4.2.2. 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 (**Figure 21**).

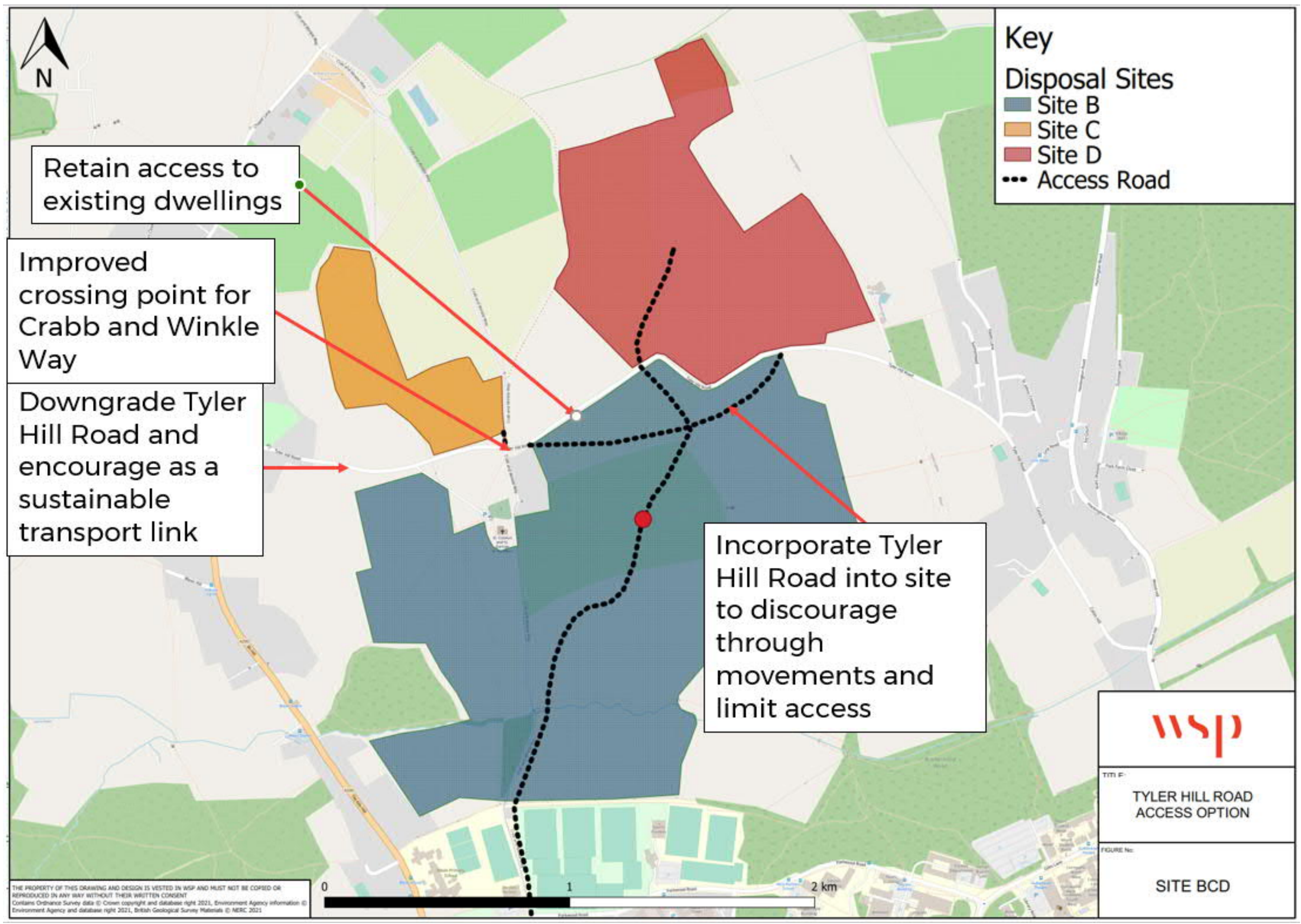
Figure 21 – Access Constraints



4.2.3. Consideration has been 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 KCC as a concern.

4.2.4. 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 (**Figure 22**).

Figure 22 – Access Strategy



4.2.5. A range of alignments have been considered for the new access road (**Figure 23**) to minimise impacts on the existing University Campus and other constraints such as the ancient woodland and watercourse. Acknowledging that the access strategy relies upon creating a new route through the ancient woodland the overall footprint of the road would be minimised and where it crosses the watercourse a bridge used rather than a culvert.

4.2.6. A review of the ancient woodland was undertaken by WSP's Arboriculture and Ecology Teams. 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. This alignment is shown as Option 3 on **Figure 23**.

Figure 23 – Access Road Alignment Options

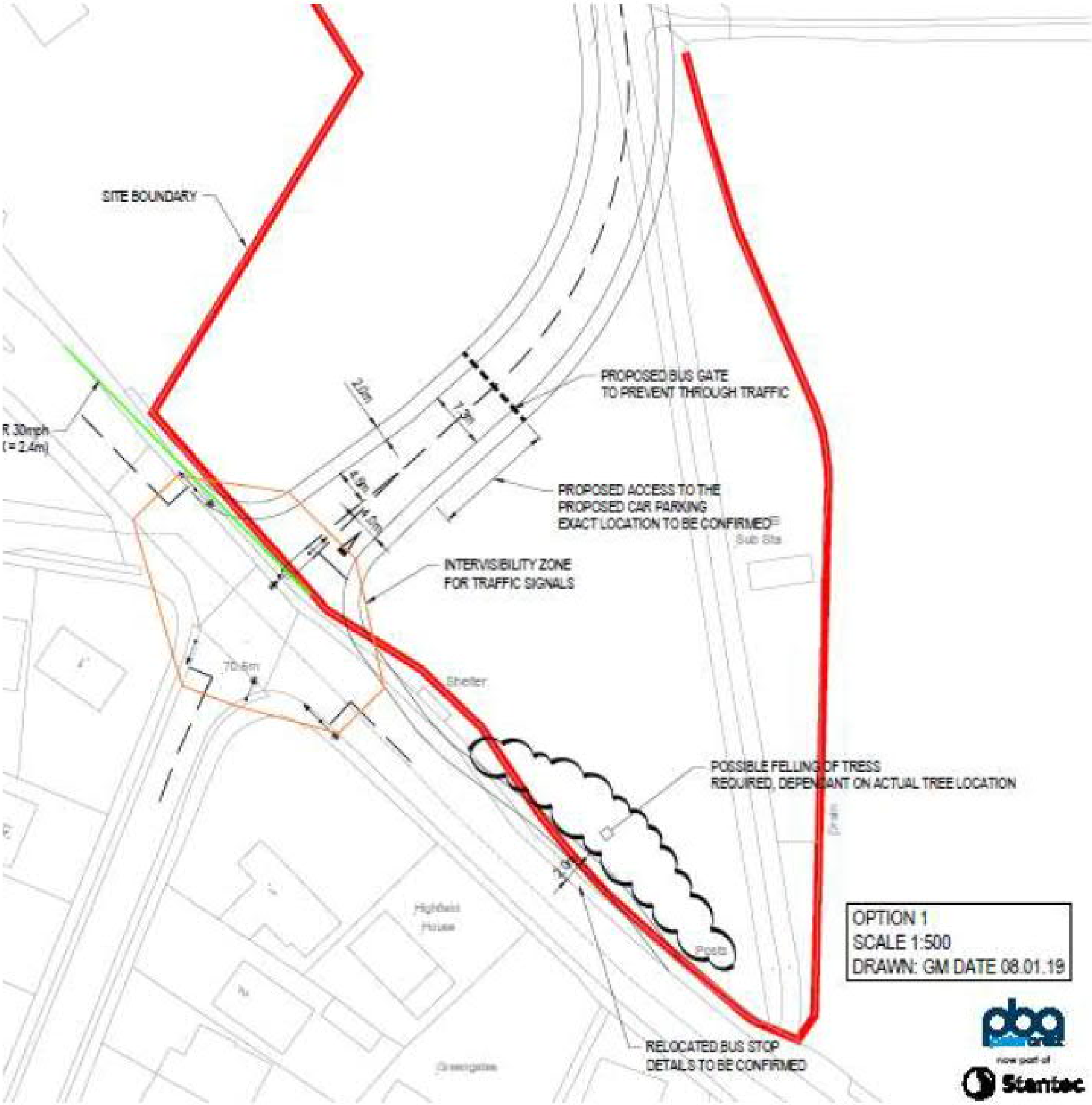
4.2.7. The road itself would be designed in accordance with the principles established within the Department for Transport's (DfT) 'Manual for Streets' and likely feature a 30mph design speed. For the purposes of the initial feasibility design work a highway corridor of 15m was assumed to ensure sufficient space to accommodate the carriageway and pedestrian and cycle infrastructure in accordance with DfT Local Transport Note 1/20 'Cycle Infrastructure Design'.

4.2.8. The highway corridor has been designed as a separate movement corridor to the existing internal University infrastructure and the Crab and Winkle Way. Where the alignment either shares the same corridor or crosses the Crab and Winkle Way careful consideration will be made to preserve the priority of this strategic pedestrian and cycle corridor, integrating with it where appropriate.

4.2.9. The access road would also have the benefit of facilitating the ambitions of the University Masterplan to deliver a new access onto Whitstable Road and allow access to the new parking areas proposed within the masterplan.

4.2.10. 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 24.**

Figure 24 – Whitstable Road Junction (Source: PBA Access and Movement Study)



4.2.11. Construction of a new highway corridor across the University will have an impact on existing facilities on the Campus and this would need to be fully considered within a Construction Traffic Management Plan.

Pedestrians and Cyclists

4.2.12. Pedestrians and cyclists would be afforded a high level of priority within the proposed masterplan to ensure that active travel can be a genuine alternative for shorter distance trips than the private car. To deliver this the following access infrastructure is proposed:

- Provision of footways and cycleways on the key movement corridors into and out of the site
- Integration of the on-site provision with the Crab and Winkle Way and surrounding infrastructure
- Improvements to Public Rights of Way in the local area to enhance connectivity with local destinations.

4.3 Public Transport Strategy

4.3.1. A key principle of the transport strategy is the delivery of a transport hub on the development site to focus and provide access to a range of transport options, with the overarching aim of reducing reliance on the private car (**Figure 25**). A mobility hub can be understood as a ‘place’ or interchange providing different and connected transport modes supplemented with enhanced facilities to both attract and benefit the traveller. They are usually focussed around mass public transport (e.g. bus stops or rail station) and last mile mobility solutions (e.g. cycles). The transport hub would be located adjacent to the local centre and be complimentary to the uses within the local centre itself. Whilst the principle of a mobility hub (transport hub) is still evolving the key transport components of the facility would include:

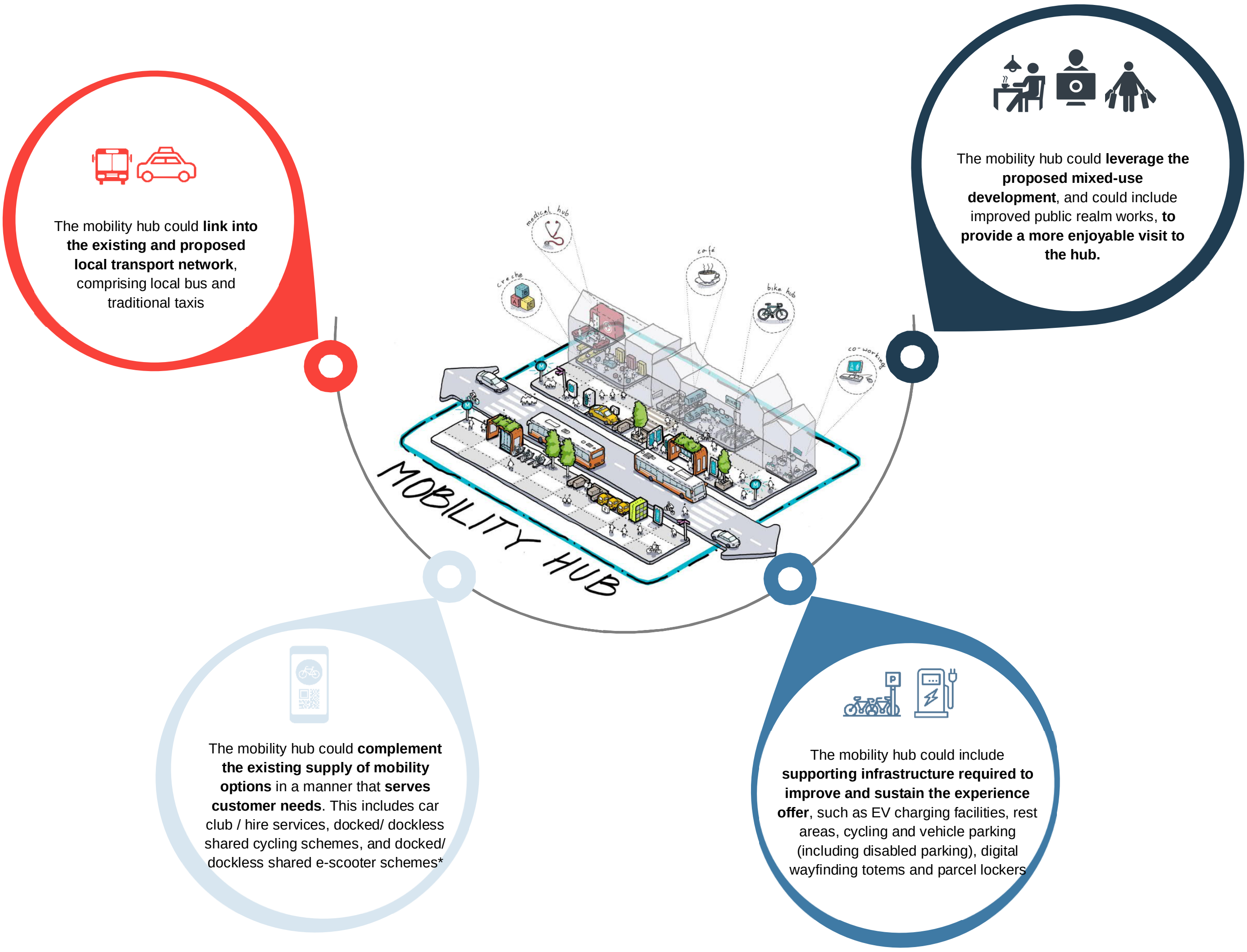
- Bus stop including access to real time passenger information
- Cycle parking to facilitate modal interchange including bike pump and repair facilities
- A focal point for ride sharing and hailing services (such as Uber)
- Car club spaces
- Micro-mobility (bike and scooter hire docking stations)
- Rapid electric vehicle charging

4.3.2. Complimentary facilities may include:

- Micro-consolidation facilities such as parcel lockers (e.g. Amazon lockers)
- Retail
- Digital services (real time public transport information, community news etc)

4.3.3. The deployment of mobility hubs has already started across the UK with proposals emerging in Manchester (Ancoates and New Islington) and incorporation within the new garden settlement at Otterpool near Folkestone in Kent.

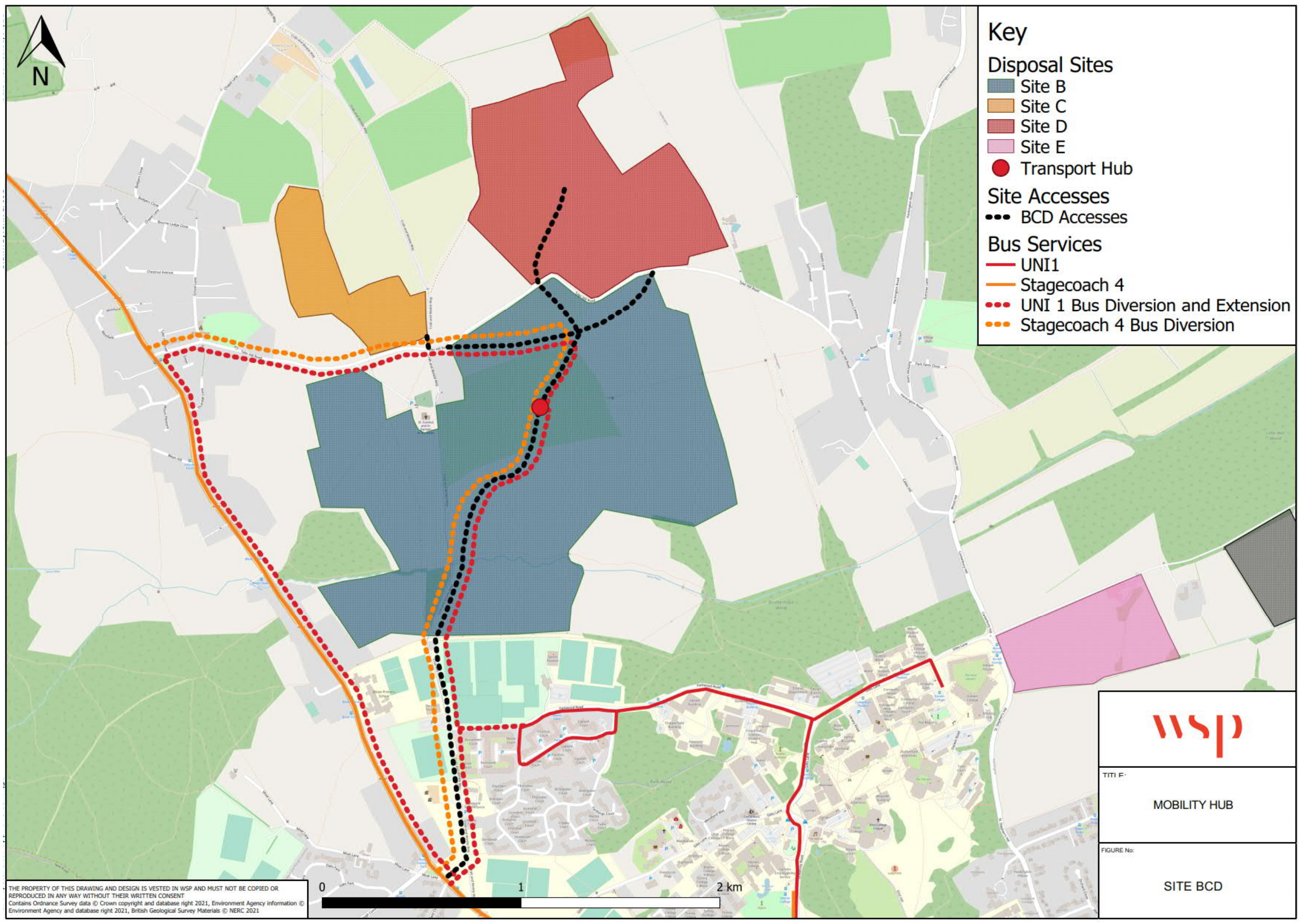
Figure 25 – Illustration of Transport Hub



4.3.4. Alongside the emergence of mobility hubs technology has facilitated the development of personalised journey planning platforms. When combined across modes these are known as Mobility as a Service (MaaS). KCC are currently developing a MaaS platform for deployment across Dartford and Gravesham with a focus on the Ebbsfleet Garden Community. This app-based platform enables access to a wide range of mobility services (traditional bus, rail and taxi services) as well as emerging technologies such as car clubs and e-scooter and cycle hire. By providing access to information about all the services in one place people can make informed decisions about the most appropriate mode or multiple modes for their entire journey. Deployment of this platform could be done on a regional basis (as per the KCC example) or on a development specific basis (Enterprise Car Club for instance have developed their own platform which is being deployed in parts of Scotland). The use of a MaaS is considered a key element of future developments alongside the provision of the Transport Hub to offer a range of services to residents and visitors of the site.

4.3.5. The Sites benefit from the high levels of public transport that access the University Campus. The public transport strategy will seek to build on the existing network of bus routes by extension of existing services to serve the on-site public transport hub located on the site. **Figure 26** indicates how existing bus routes could be extended to serve the development's on-site transport hub.

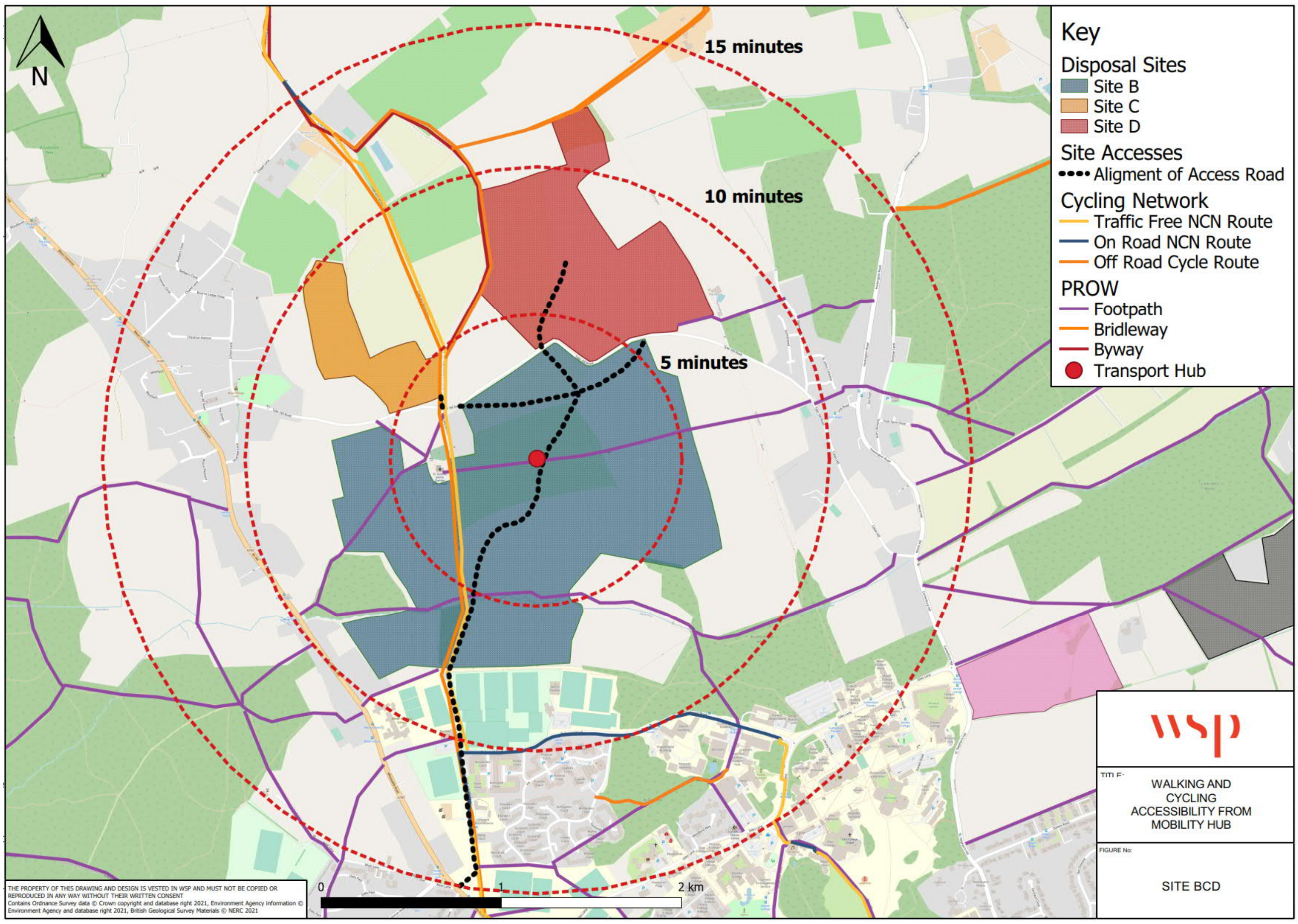
Figure 26: Public Transport Strategy



4.3.6. The strategy currently assumes an extension to Uni1 to serve the on-site transport hub. This would provide a daytime frequency of every 30 minutes. This would be further enhanced with the diversion of Route 4 southbound through the site to increase connectivity to the City Centre. However, further discussions would be held with the University and Stagecoach as local bus operator to ensure integration of the site with the public transport network.

4.3.7. **Figure 27** provides indicative walking times from the transport hub to all parts of the development site. These walking times would be further reduced through development of the site infrastructure and final siting of the public transport hub.

Figure 27: Public Transport Hub Walking Distances



4.4 Walking, Cycling and Micro-mobility Strategy

4.4.1. The emergence of new forms of personal mobility (e-scooters, e-bikes, cargo bikes, electric skateboards, shared bicycles and scooters) are collectively referred to as Micro-mobility. Whilst some of these modes may be personal (owned by the user) there is a growing trend towards shared usage (Santander cycle hire in London for instance). Through the MaaS platform mentioned previously residents and visitors of the site would have access to a range of mobility services to facilitate travel to and from the development.

4.4.2. The development site benefits from access to the Crab and Winkle Way which facilitates active mode connections to the University, City Centre and Whitstable to the north. To deliver a sustainable development, improvements to existing connections across the City would be investigated and enhancements made where necessary.

4.5 Parking Strategy

4.5.1. The vision for the Proposed Development is to provide a sustainable new residential community. The site will prioritise pedestrian and cycle movements over that of vehicles, and to achieve this, it is envisaged that the development will be an early adopter of innovative transport and servicing solutions based around the "Future Mobility" agenda, namely mechanisation and shared and autonomous transport solutions.

4.5.2. Whilst walking, cycling and public transport will be the primary modes of transport adopted for travel to and from the site, there will still be a role for personal vehicle travel. It is anticipated that a proportion of this demand can be catered for through shared mobility services such as car clubs and taxis. However, there will still be, particularly in the early years of the development a demand for private vehicle ownership and use which will drive a demand for parking.

4.5.3. The final level of parking to be provided will be determined at a later stage of design. However, reference will be made to KCCs vehicle parking standards with due regard given to demand for electric vehicle parking.

4.5.4. A key consideration will also be cycle parking and ensuring this is sufficient for the needs and vision of the development. Sufficient space will be provided to accommodate parking on plot with space for adaptive cycles and trailers. Visitor parking will also be conveniently located to facilitate access to the site by cycle.

4.6 Servicing and Waste Strategy

4.6.1. The Covid Pandemic has resulted in an acceleration of online shopping trends. It is anticipated that this form of shopping will continue to grow as traditional retail responds to this growing demand. However, one detractor of the growth in online shopping has been the increase in delivery vehicles to accommodate demand.

4.6.2. Micro-consolidation offers the ability to reduce the number of deliveries and total mileage driven by couriers. The transport hub would be able to accommodate facilities such as parcel lockers offering a consolidated location for delivery of certain items that could then be picked up by residents at their own convenience and by active mode.

4.6.3. The waste strategy for the site will be developed in conjunction with CCC in due course but will need to have due regard to the Environment Bill which is currently being considered by national government and will standardise and mandate certain recycling requirements for households.

4.7 Future Trends Strategy

4.7.1. Technology is playing an increasing role in our day to day lives and this is having a transformative effect. The Covid-19 Pandemic has brought this further into focus and opportunities to accelerate the process of change have emerged.

4.7.2. Research undertaken by WSPs Future Ready team anticipates the following changes emerging:

- Initially, the continued evolution of new mobility business models will increase the breadth of mobility services available and offer a viable alternative to personal vehicle ownership. These mobility business models capitalise on the ability to match customers and trips in real-time, to offer customers a more personalised form of mobility. Examples include:
    - **Ride Sharing** – Schemes/digital platforms that match drivers and passengers who share similar destinations. These operate at both individual and corporation levels. E.g. Faxi, Liftshare;
    - **Ride Sourcing** – Real-time, dynamic allocation of customers to drivers based on origin and destination and payment services using pre-approved accounts. Usually rides are in private hire vehicles however increasing offering of micro-transit vehicles to use operating model. E.g. Uber, ArrivaClick, ViaVan;
    - **Car Sharing** – On-demand short-term car rentals with the vehicle owned and managed by a fleet operator or private individual. E.g. Zipcar.
    - **Micro mobility** – On demand services are increasingly being introduced initially in the form of bikes but now with e-scooters

- Emergence of MaaS schemes, which unlock the use and adoption of both shared and public transport through seamless and personalised information, reservation, booking and payments integration. e.g. Whim.
- Lastly, the adoption of increasingly automated, connected and autonomous vehicles which enable travellers to migrate to shared assets; they also provide door-to-door transport whilst providing access on a personal or shared basis. These advances are expected to be commercially deployed at scale within private hire and city taxi fleets from 2025.

4.7.3. In addition, the recent Covid-19 Pandemic has seen the emergence of new policies promoting a shift towards walking and cycling as the primary modes of transport. The recent Emergency Active Travel Fund grant has seen urban areas closed to vehicular traffic and the re-prioritisation of walking and cycling which should in the longer term increase the use of these modes.

4.7.4. The continued growth and evolution of these new forms of mobility is very dependent on future external levers, such as the regulatory environment, the affordability and acceptability of technology, and the customers' willingness to share. However, wider automotive sector trends already indicate how transport offerings are influencing customer behaviours:

- Driving licencing amongst young people has been falling since a peak of 48% (17-20 year olds) and 75% (21-29year olds) in 1993, to 29% and 63% respectively in 2014; with

research suggesting that changing behaviours are more than just a postponement of driving[5]
- The uptake of car clubs within urban areas has created an opportunity for car free living without compromising on the ability to have access to a car for leisure and recreational purposes. Most car club providers now offer a partially electrified fleet with E-Car Club being a fully electric car club
- Traditional car manufacturers, concerned about losing customer ownership, are actively planning and investing in integrated mobility services. Volvo has recently launched ‘Care’ a monthly car subscription service[6] with no long-term commitments
- Rates of urbanisation are increasing and city residents are being pressed to reassess the benefits of personal vehicle ownership as the breadth of mobility services available increases[7]
- Increasing prevalence of telecommuting which has been an area of focus during the recent Covid-19 Pandemic.

4.7.5. The transport strategy outlined in this section has reflected upon the most recent trends and innovations across the transport industry and will be developed and refined as the proposals are developed.

[5] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/673176/young-peoples-travel-whats-changed.pdf
[6] https://www.volvocars.com/uk/care-by-volvo/
[7] https://www.bbc.co.uk/news/uk-44482291

5 Provisional Trip Generation and Impact Assessment

5.1 Introduction

5.1.1. This section outlines the currently assumed development quantum to then provide a provisional trip generation and distribution. Consideration is then given to likely transport impacts based upon the multi-modal trip generation and informed by initial modelling undertaken by Jacobs to inform the Local Plan Process.

5.2 Development Quantum

5.2.1. For the purposes of this Transport Strategy the development proposals that have been considered are as follows:

- 2,000 dwellings with a mixture of housing and tenure type
- Local Centre to serve the needs of the new community including a transport hub
- Primary School to accommodate the students living on site
- Public open space to accommodate the needs of the development

5.2.2. The proposed mix of uses, to include both primary school provision and a local centre, will encourage internalisation of trips.

5.3 Residential Trip Generation

5.3.1. The residential trip generation has been calculated on the basis of 2,000 dwellings.

5.3.2. The TRICS trip generation database has been interrogated to identify trip rates for the residential land use. 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 (source: TRICS Land use definitions). Multi-modal trip rates were selected to allow for the person trip generation to be calculated.

5.3.3. The TRICS search was then further refined to sites within England excluding Central London, and sites with more than 99 residential units. A total of 23 site surveys were identified through this method. A review of the 23 sites was then undertaken to determine whether any of the site characteristics could affect the trip making behaviour and therefore undermine the person trip rate approach proposed. Three sites were removed from the trip rate calculation.

5.3.4. The AM and PM peak person trip rates (per dwelling) extracted from TRICS are shown in **Table 5** along with the resultant person trip generation. The TRICS output is contained in Appendix A.

Table 5 - Provisional Residential Person Trip Rates and Trip Generation

	AM Peak (08:00 - 09:00)			PM Peak (17:00 - 18:00)		
	Arrivals	Departures	Total	Arrivals	Departures	Total
Residential Person Trip Rate (per dwelling)	0.187	0.738	0.925	0.601	0.242	0.843
Residential Person Trip Generation (2000 dwellings)	374	1476	1850	1202	484	1686

5.3.5. The anticipated multi-modal trip generation has then been split down by mode with reference to the TRICS database and Census Travel to Work data. Mode share data was extracted from the TRICS database for the 20 sites. The mode share data represents the split of total two-way trips throughout the survey duration. The 2011 Census dataset 'Location of usual residence and place of work by method of travel to work' data at the MSOA level (WU02EW) was extracted from Nomis to provide the journey to work data by mode for the output area covering the development site (Canterbury 012). The TRICS mode share and 2011 census journey to work mode share is provided in **Table 6.**

5.3.6. To reflect the sustainable aspirations of the development site a target mode share has then been calculated based on the 2011 census mode share. This target applies a 10% point reduction in car driver trips generated by the residential land use at the Proposed Development when compared to the Census Travel to Work Data. This 10% point reduction has then been re-distributed between bus (4%), walking (3%) and cycling (3%). It is considered that this would be achievable with the aspirations of the development site and a robust Travel Plan. The target mode share is also provided in **Table 6.**

Table 6: Mode Share Targets

Mode	Data Source		
	TRICS Database	2011 Census	Target
Rail (incl. Underground)	0.6%	5.4%	5.4%
Bus	2.7%	8.0%	12.0%
Taxi	Not specified	0.8%	0.8%
Motorcycle	Not specified	0.5%	0.5%
Car	32.4% (single occupant) 55.6% (multi vehicle occupants)	58.3% (Car Driver) 4.9% (Car Passenger)	48.3% (Car Driver) 4.9% (Car Passenger)
Bicycle and Micro-mobility	1.3%	4.2%	7.2%
On Foot	7.4%	17.8%	20.8%
Other	0.0%	0.0%	0.0%
Total	**100.0%**	**100.0%**	**100.0%**

5.3.7. The anticipated resultant residential trip generation based on the target mode share is provided in **Table 7.**

Table 7: Provisional Trip Generation by Mode (using Target Mode Shares) (2000 dwellings)

Mode	AM Peak (08:00 - 09:00)			PM Peak (17:00 - 18:00)		
	Arrivals	Departures	Total	Arrivals	Departures	Total
Rail (incl. Underground)	20	80	100	65	26	91
Bus	45	178	223	145	58	203
Taxi	3	12	15	10	4	14
Motorcycle	2	7	9	6	2	8
Car Driver	181	713	894	581	234	815
Car Passenger	18	72	90	59	24	83
Bicycle and Micro-mobility	27	106	133	87	35	122
On Foot	78	307	385	250	101	351
Other	0	0	0	0	0	0
Total	**374**	**1476**	**1850**	**1202**	**484**	**1686**

5.3.8. **Table 7** identifies that the Proposed Development could result in 894 two-way car driver trips during the AM peak hour and 815 two-way car driver trips during the PM peak hour. This trip generation is considered to represent a worst case as it does not take account of the potential for internalisation of trips or the number of trips that could be destined for/arriving from the University Campus itself as a major employer in the City. Further analysis would be undertaken in due course to refine the trip generation.

5.4 Other Land Use Trip Generation

Local Centre

5.4.1. The local centre is proposed to serve the needs of the Proposed Development and as such will not have an external trip generation. The only trips associated with this land use will be servicing trips which would be detailed as part of a future planning application.

Primary school

5.4.2. The primary school is proposed to serve the needs of the Proposed Development and pupils attending the school will not have an external trip generation. The only trips associated with this land use will be staff and servicing trips which would be detailed as part of a future planning application.

Relocated sports pitches

5.4.3. As discussed, any sports pitches affected by the proposed access strategy would be relocated from the main University Campus to Site E to allow for the access proposals to be accommodated.

5.4.4. The relocation of the sports facility will result in a transfer of trips from the existing location to the new location. The quantum of trips is expected to be low, and would be detailed as part of any future planning application.

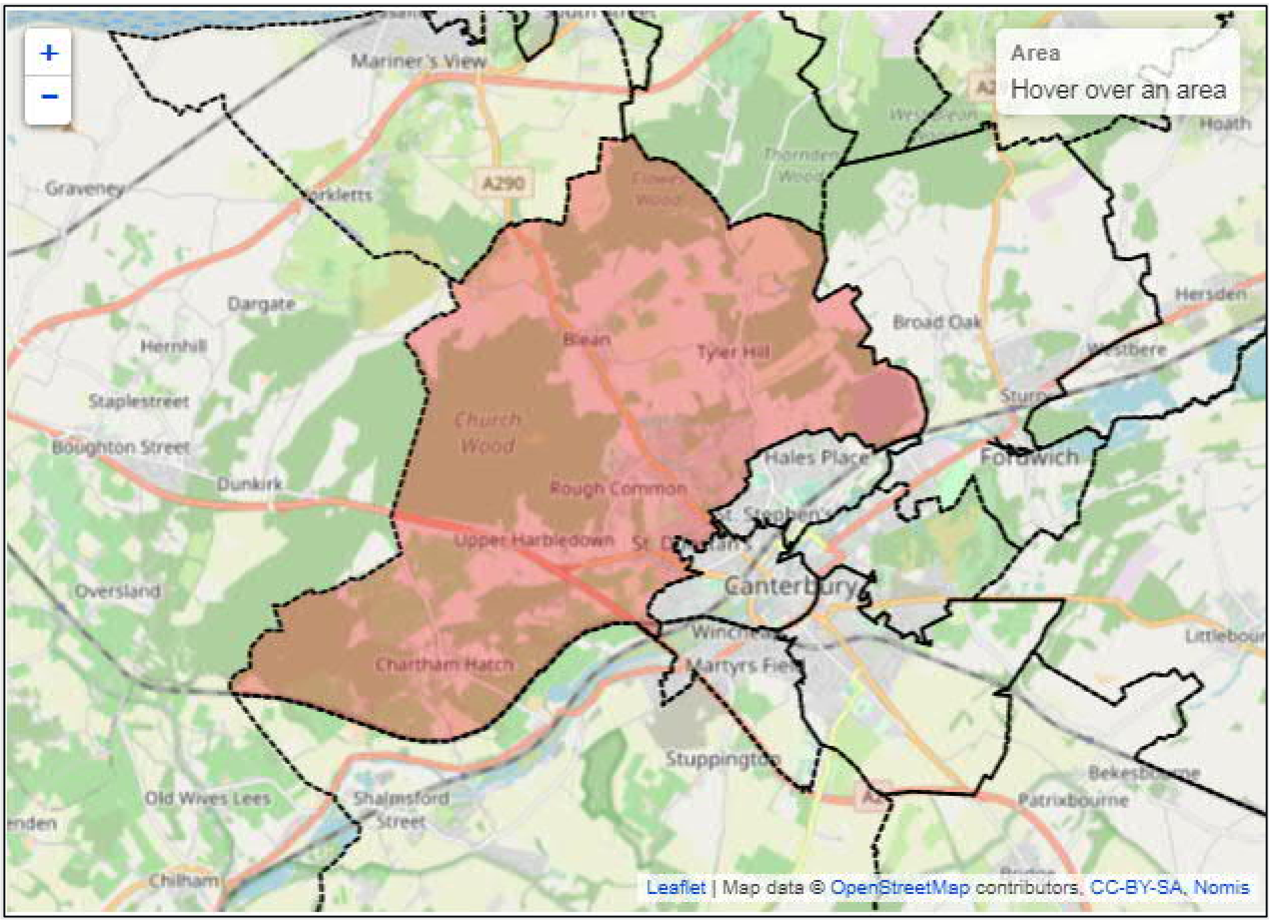
Public open space

5.4.5. Public open space will be provided to accommodate the needs of the development, and this will not have an external trip generation.

5.5 Anticipated trip distribution

5.5.1. A two-stage trip distribution has been adopted to calculate the anticipated trip distribution for the residential trips. Firstly, 2011 Census, ‘Location of usual residence and place of work by method of travel to work’ data at the MSOA level (WU02EW) was extracted from the Nomis database to provide the proportion of trips to each MSOA across the Country from the MSOA used to derive the mode share for the Site (Canterbury 012), as shown in **Figure 28.**

Figure 28 - MSOA Canterbury 012 Source: Nomis

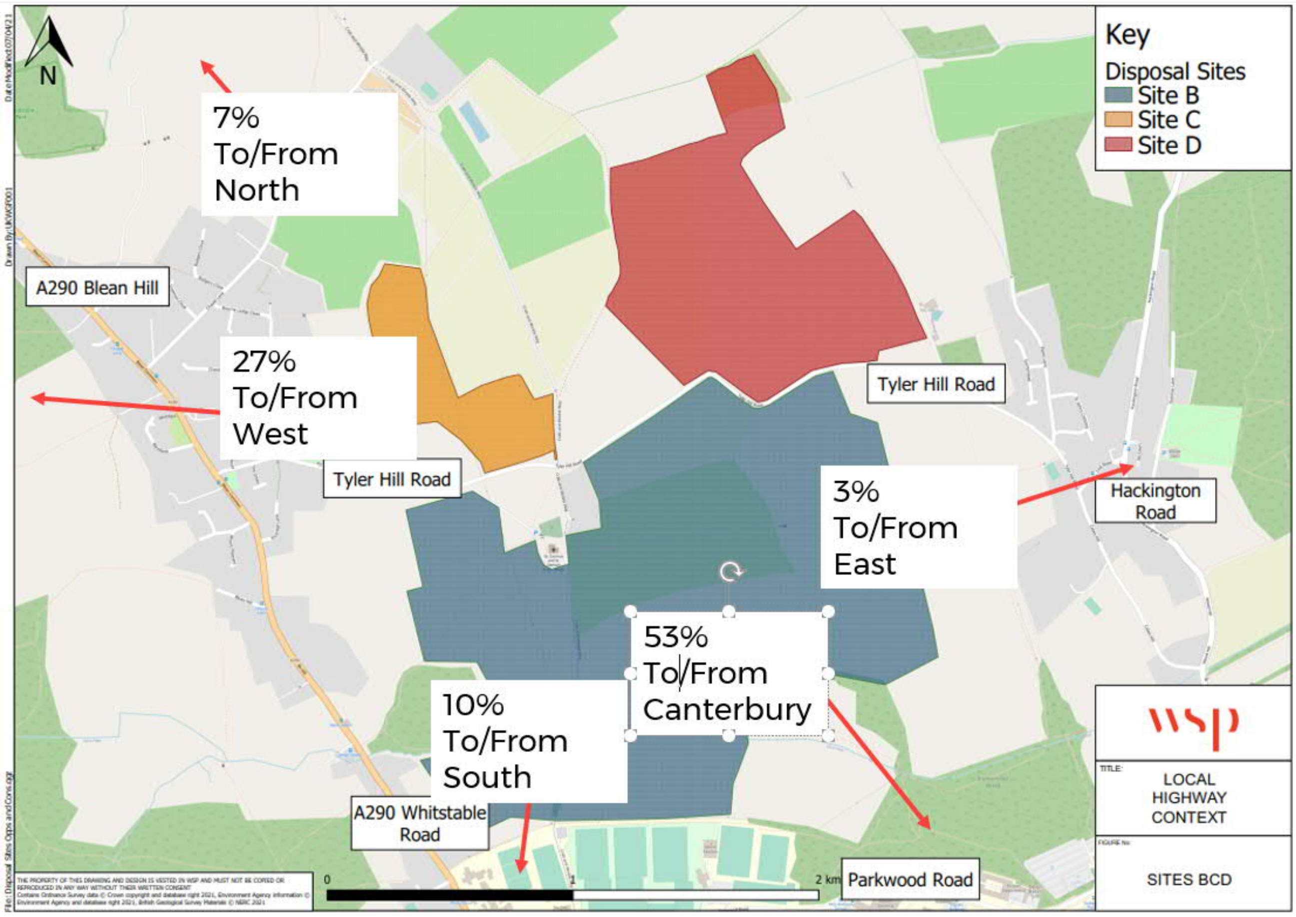


5.5.2. Data for the mode car driver was used to ensure that trip patterns replicated the mode used in the traffic flow section of this strategy. An online journey planner was then used to find the quickest route to the destination MSOA from the Site in order to assign the trips to the network.

5.5.3. The analysis identified that 63% of trips remained within Canterbury, with other key destinations including Ashford, Dover and Swale.

5.5.4. From the 2011 census, the vehicle routing from the proposed development can be calculated. It is anticipated that the residential development will have the following broad distribution of trips, as detailed in **Figure 29.**

Figure 29: Trip Distribution



5.5.5. At this stage the precise volume of traffic that would access onto Tyler Hill Road and the volume of traffic that uses Tyler Hill Road but would divert to use the new access road is not known. Therefore, to present a robust assessment it has been assumed that all of the residential development traffic would access the local highway network via the access onto Whitstable Road. The trip distribution shown in **Figure 29** indicates that 66% of traffic would turn left out of the development access, and 34% turn right. The same distribution has been considered for arrivals. A summary of turning movements resulting from the Proposed Residential Development is provided in **Table 8.**

Table 8: Whitstable Road / Proposed Development Access – Traffic Flows

Movement		AM Peak (08:00 – 09:00)	PM Peak (17:00 – 18:00)
From	To		
Whitstable Road N	Proposed Development	61	198
Whitstable Road S	Proposed Development	119	383
Proposed Development	Whitstable Road N	243	80
Proposed Development	Whitstable Road S	471	154

5.5.6. **Table 8** illustrates that the Proposed Residential Development is anticipated to result in 894 two-way trips during the AM peak hour and 815 two-way trips during the PM peak hour. The majority of traffic will route via Whitstable Road S.

5.5.7. Comment was raised during the stakeholder engagement about potential demand for retail trips to/from the east of Canterbury as a result of the development proposals. The reason for this comment relates to the potential for additional demand through the University Campus resulting from the Proposed Development. A review of National Travel Survey data (Table 0502)[8] identifies that during the AM and PM network peak hours shopping and Other work, escort or personal business trips account for 18% and 32% of trips starting in those hours respectively. On the basis that these trips start/end in the development site and 50% will be destined for East Canterbury **Table 9** shows the number of trips that could be destined for/arriving from East Canterbury.

Table 9: Retail Trips To/From East Canterbury

Movement		AM Peak (08:00 – 09:00)	PM Peak (17:00 – 18:00)
From	To		
Proposed Development	East Canterbury	64	37
East Canterbury	Proposed Development	16	93
Total	-	80	130

[8] https://www.gov.uk/government/statistical-data-sets/nts04-purpose-of-trips

5.6 Highway Impacts and Local Plan Modelling

5.6.1. In May 2021, Jacobs published the findings of their Local Canterbury Transport Model to inform spatial assessments for early decision making on the Canterbury Local Plan Review (LPR). Five LPR option testing scenarios were developed as part of the work, two of which are relevant to this Transport Strategy. In Options 4 and 5, a Western Bypass scheme has been coded. This Western Bypass runs between Whitstable Road and the A2050, to the east of Rough Common Road. The Western Bypass is anticipated to accommodate traffic flows peripheral to the city centre, providing an alternative option to Rough Common Road.

5.6.2. If the Western Bypass was implemented, the distribution of traffic from the development access would change. **Figure 29** indicates that 27% of traffic will travel to destinations to the west. These trips were previously assumed to turn right out of the development access and along Rough Common Road, but with the Western Bypass in place, this traffic would turn left out of the development access and along the Bypass. For traffic arriving at the development access, vehicles which would previously have travelled from the west via Rough Common Road, turning left into the development access, would instead travel along the Western Bypass, turning right into the development access.

5.6.3. The Jacobs report indicates that Option 4 would result in an increase in traffic in both peaks on the following links: Whitstable Road (north of the Western Bypass) and Giles Lane, and a decrease in traffic on the following links: Rough Common Road, University Road, Whitstable Road (south of the Western Bypass).

5.6.4. Option 5 also includes the introduction of a blocker on University Road, stopping through traffic. The Jacobs report indicates that Option 5 would result in an increase in traffic in both peaks on the following links: Whitstable Road (north of the Western Bypass) and Tyler Hill Road, and a decrease in traffic on the following links: Rough Common Road, University Road, Whitstable Road (south of the Western Bypass).

5.6.5. The Jacobs report indicates that southbound journey times along Whitstable Road (between Rough Common Road and Pound Lane) increase in Options 4 and 5 during the AM peak (by circa 25 seconds), but reduce during the PM peak (by between circa 10 and 25 seconds) compared to the forecast baseline scenario.

5.6.6. Whilst Options 4 and 5 include the development proposals outlined in this Transport Strategy the methodology adopted to apply the development to the modelled network (at an MSOA level) will result in only a high level understanding of the potential impacts of the Proposed development in the context of the Local Plan.

5.6.7. Based upon the modelling results presented to date it is evident that future traffic flows will have the potential to increase through the University Campus unless mitigation measures are implemented. However, the modelling indicates in Option 5 that the introduction of mitigation measures on Giles Lane will result in increases in traffic on Tyler Hill Road, the next east-west link north from Giles Lane. The proposed access strategy seeks to manage traffic flows on Tyler Hill Road but has not yet been incorporated into the modelling undertaken by Jacobs. A run of the model incorporating the access strategy would help to better understand impacts and how these could be mitigated.

5.6.8. In terms of impacts resulting from the development proposals these would be subject to further modelling and analysis in due course. However, the initial strategic modelling undertaken by Jacobs does include for the level of development anticipated from this site and at a strategic level provides an initial indication of impacts in combination with the wider local plan growth.

5.7 Next Steps

5.7.1. The provisional trip generation exercise that has been presented will need to be refined as part of any development proposals that come forwards on the site.

5.7.2. At present, the trip generation has been calculated based on the ‘predict and provide’ methodology. This approach uses historical traffic and socio-economic trends to determine the future need for infrastructure. In February 2021, ‘The Decide and Provide Approach’ Guidance Note was released by TRICS. This method takes account of how the trip rate could be influenced by the design of the new settlement, and takes into account the significant changes that have occurred in terms of mobility and the digital age, which has impacted the way individuals live and work. The ‘decide and provide’ methodology should be utilised as part of any future assessment.

5.7.3. The person trip rates extracted from TRICS and the subsequent trip generation should be disaggregated by journey purpose and mode. This approach will enable detailed consideration of internalisation as well as providing an opportunity for different mode shares to be applied to each journey purpose.

5.7.4. Further modelling will be required to better understand the impact of the Proposed Development on the surrounding transport network and ensure compatibility with emerging proposals as part of the Local Plan process.

6 Summary and Conclusion

6.1.1. 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.

6.1.2. This Transport Strategy has been prepared to document the process undertaken to develop the Transport Strategy and present the findings of the Strategy to inform the Canterbury City Council Local Plan process.

6.1.3. Initially a constraints and opportunities analysis was undertaken to identify the potential for development on five sites surrounding the University's Campus.

6.1.4. The constraints and opportunities analysis identified at an early stage that the sites with the greatest potential for built development were sites BCD that lie to the north of the University Campus. Constraints to access, visual impact and the presence of a Scheduled Ancient Monument (SAM) limited the potential uses on Sites E and F located to the east of the University Campus.

6.1.5. Sites BCD benefit from close proximity to the University Campus and as such are able to access the high frequency bus services available as well as amenities and facilities on and beyond the University.

6.1.6. Vehicular access to Sites BCD is 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. 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 considered suitable to accommodate a significant increase in volumes of traffic. Due to the limited frontage available from Sites BCD 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.

6.1.7. The proposed access strategy sought to respond to the limited connectivity available via Tyler Hill Road through provision of a new north-south route through the University Campus with an access onto A290 Whitstable Road.

6.1.8. A range of alignments were considered for the new access road to minimise impacts on the existing University Campus and other constraints such as the ancient woodland and watercourse contained within Site B. Acknowledging that the access strategy relies upon creating a new route through the ancient woodland the overall footprint of the road would be minimised and where it crosses the watercourse a bridge used rather than a culvert.

6.1.9. The access strategy will facilitate delivery of the existing University Masterplan and help to unlock the parking strategy which seeks to locate parking on the periphery of the University Campus enabling traffic volumes in the centre of the Campus to be reduced.

6.1.10. Pedestrian and cycle access to Sites BCD would be achieved via the new access road but also via the Crab and Winkle Way (National Cycle Route 1) that runs through Site B and through improvements to the network of Public Rights of Way in the local area.

6.1.11. A range of supporting strategies have been developed to ensure delivery of sustainable development can be achieved on Sites BCD. These include an outline public transport strategy that seeks to provide a transport hub at the centre of the development offering access to a range of modes of transport. Supported by a Mobility as a Service (MaaS) and Micro-mobility offer this will ensure that active travel and public transport can be prioritised above the private car.

6.1.12. A provisional trip generation for the proposed development has been developed to understand potential traffic volumes and consideration given to the findings of the Jacobs Local Plan modelling work when considering off-site highway impacts.

6.1.13. The provision of a new access road between Whitstable Road and Tyler Hill Road will alter the highway network in this part of Canterbury and further strategic modelling may be required to understand this in more detail.

6.1.14. The Transport Strategy demonstrates that the development proposals are deliverable and with appropriate design development and a package of mitigation measures can deliver a sustainable development.

Appendix A

TRICS Data

Calculation Reference: AUDIT-100321-210702-0722

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	ES	EAST SUSSEX	1 days
	HF	HERTFORDSHIRE	1 days
	KC	KENT	4 days
	SC	SURREY	2 days
	WS	WEST SUSSEX	4 days
03	SOUTH WEST		
	DV	DEVON	1 days
04	EAST ANGLIA		
	NF	NORFOLK	3 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
06	WEST MIDLANDS		
	ST	STAFFORDSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NE	NORTH EAST LINCOLNSHIRE	1 days
09	NORTH		
	DH	DURHAM	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
Actual Range: 99 to 1817 (units:)
Range Selected by User: 99 to 1817 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/13 to 08/10/20

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	5 days
Tuesday	4 days
Wednesday	4 days
Thursday	5 days
Friday	2 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	20 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	2
Edge of Town	14
Neighbourhood Centre (PPS6 Local Centre)	4

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3	20 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Population within 1 mile:

1,001 to 5,000	4 days
5,001 to 10,000	5 days
10,001 to 15,000	7 days
15,001 to 20,000	2 days
20,001 to 25,000	2 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	3 days
25,001 to 50,000	2 days
50,001 to 75,000	3 days
75,001 to 100,000	4 days
125,001 to 250,000	8 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	6 days
1.1 to 1.5	11 days
1.6 to 2.0	3 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	10 days
No	10 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	20 days

This data displays the number of selected surveys with PTAL Ratings.

Covid-19 Restrictions	Yes	At least one survey within the selected data set was undertaken at a time of Covid-19 restrictions

LIST OF SITES relevant to selection parameters

1 DH-03-A-02 MIXED HOUSES DURHAM
LEAZES LANE
BISHOP AUCKLAND
ST HELEN AUCKLAND
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total No of Dwellings: 125
Survey date: MONDAY 27/03/17 Survey Type: MANUAL

2 DS-03-A-02 MIXED HOUSES DERBYSHIRE
RADBOURNE LANE
DERBY

Edge of Town
Residential Zone
Total No of Dwellings: 371
Survey date: TUESDAY 10/07/18 Survey Type: MANUAL

3 DV-03-A-02 HOUSES & BUNGALOWS DEVON
MILLHEAD ROAD
HONITON

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 116
Survey date: FRIDAY 25/09/15 Survey Type: MANUAL

4 ES-03-A-05 MIXED HOUSES & FLATS EAST SUSSEX
RATTLE ROAD
NEAR EASTBOURNE
STONE CROSS
Edge of Town
Residential Zone
Total No of Dwellings: 99
Survey date: WEDNESDAY 05/06/19 Survey Type: MANUAL

5 HF-03-A-03 MIXED HOUSES HERTFORDSHIRE
HARE STREET ROAD
BUNTINGFORD

Edge of Town
Residential Zone
Total No of Dwellings: 160
Survey date: MONDAY 08/07/19 Survey Type: MANUAL

6 KC-03-A-04 SEMI-DETACHED & TERRACED KENT
KILN BARN ROAD
AYLESFORD
DITTON
Edge of Town
Residential Zone
Total No of Dwellings: 110
Survey date: FRIDAY 22/09/17 Survey Type: MANUAL

7 KC-03-A-06 MIXED HOUSES & FLATS KENT
MARGATE ROAD
HERNE BAY

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 363
Survey date: WEDNESDAY 27/09/17 Survey Type: MANUAL

8 KC-03-A-07 MIXED HOUSES KENT
RECULVER ROAD
HERNE BAY

Edge of Town
Residential Zone
Total No of Dwellings: 288
Survey date: WEDNESDAY 27/09/17 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

9 KC-03-A-08 MIXED HOUSES KENT
MAIDSTONE ROAD
CHARING

Neighbourhood Centre (PPS6 Local Centre)
Village
Total No of Dwellings: 159
Survey date: TUESDAY 22/05/18 Survey Type: MANUAL

10 NE-03-A-02 SEMI DETACHED & DETACHED NORTH EAST LINCOLNSHIRE
HANOVER WALK
SCUNTHORPE

Edge of Town
No Sub Category
Total No of Dwellings: 432
Survey date: MONDAY 12/05/14 Survey Type: MANUAL

11 NF-03-A-06 MIXED HOUSES NORFOLK
BEAUFORT WAY
GREAT YARMOUTH
BRADWELL
Edge of Town
Residential Zone
Total No of Dwellings: 275
Survey date: MONDAY 23/09/19 Survey Type: MANUAL

12 NF-03-A-08 MIXED HOUSES & FLATS NORFOLK
SIR ALFRED MUNNINGS RD
NEAR NORWICH
COSTESSEY
Neighbourhood Centre (PPS6 Local Centre)
Village
Total No of Dwellings: 1817
Survey date: THURSDAY 19/09/19 Survey Type: MANUAL

13 NF-03-A-09 MIXED HOUSES & FLATS NORFOLK
ROUND HOUSE WAY
NORWICH
CRINGLEFORD
Edge of Town
Residential Zone
Total No of Dwellings: 984
Survey date: TUESDAY 24/09/19 Survey Type: MANUAL

14 SC-03-A-05 MIXED HOUSES SURREY
REIGATE ROAD
HORLEY

Edge of Town
Residential Zone
Total No of Dwellings: 207
Survey date: MONDAY 01/04/19 Survey Type: MANUAL

15 SC-03-A-06 MIXED HOUSES & FLATS SURREY
AMLETS LANE
CRANLEIGH

Neighbourhood Centre (PPS6 Local Centre)
Village
Total No of Dwellings: 116
Survey date: THURSDAY 08/10/20 Survey Type: MANUAL

16 ST-03-A-07 DETACHED & SEMI-DETACHED STAFFORDSHIRE
BEACONSIDE
STAFFORD
MARSTON GATE
Edge of Town
Residential Zone
Total No of Dwellings: 248
Survey date: WEDNESDAY 22/11/17 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

17 WS-03-A-04 MIXED HOUSES WEST SUSSEX
HILLS FARM LANE
HORSHAM
BROADBRIDGE HEATH
Edge of Town
Residential Zone
Total No of Dwellings: 151
Survey date: THURSDAY 11/12/14 Survey Type: MANUAL

18 WS-03-A-08 MIXED HOUSES WEST SUSSEX
ROUNDSTONE LANE
ANGMERING

Edge of Town
Residential Zone
Total No of Dwellings: 180
Survey date: THURSDAY 19/04/18 Survey Type: MANUAL

19 WS-03-A-09 MIXED HOUSES & FLATS WEST SUSSEX
LITTLEHAMPTON ROAD
WORTHING
WEST DURRINGTON
Edge of Town
Residential Zone
Total No of Dwellings: 197
Survey date: THURSDAY 05/07/18 Survey Type: MANUAL

20 WS-03-A-11 MIXED HOUSES WEST SUSSEX
ELLIS ROAD
WEST HORSHAM
S BROADBRIDGE HEATH
Edge of Town
Residential Zone
Total No of Dwellings: 918
Survey date: TUESDAY 02/04/19 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
ES-03-A-03	Site location not comparable to proposed site
ES-03-A-04	Site location not comparable to proposed site

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.065	20	366	0.307	20	366	0.372
08:00 - 09:00	20	366	0.119	**20**	**366**	**0.357**	20	366	0.476
09:00 - 10:00	20	366	0.131	20	366	0.156	20	366	0.287
10:00 - 11:00	20	366	0.108	20	366	0.132	20	366	0.240
11:00 - 12:00	20	366	0.110	20	366	0.112	20	366	0.222
12:00 - 13:00	20	366	0.132	20	366	0.129	20	366	0.261
13:00 - 14:00	20	366	0.137	20	366	0.128	20	366	0.265
14:00 - 15:00	20	366	0.150	20	366	0.155	20	366	0.305
15:00 - 16:00	20	366	0.218	20	366	0.154	20	366	0.372
16:00 - 17:00	20	366	0.247	20	366	0.144	20	366	0.391
17:00 - 18:00	**20**	**366**	**0.333**	20	366	0.145	**20**	**366**	**0.478**
18:00 - 19:00	20	366	0.299	20	366	0.157	20	366	0.456
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.049			2.076			4.125

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	99 - 1817 (units:)
Survey date date range:	01/01/13 - 08/10/20
Number of weekdays (Monday-Friday):	20
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	2

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TAXIS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.002	20	366	0.002	20	366	0.004
08:00 - 09:00	**20**	**366**	**0.003**	**20**	**366**	**0.003**	**20**	**366**	**0.006**
09:00 - 10:00	20	366	0.002	20	366	0.001	20	366	0.003
10:00 - 11:00	20	366	0.001	20	366	0.001	20	366	0.002
11:00 - 12:00	20	366	0.000	20	366	0.001	20	366	0.001
12:00 - 13:00	20	366	0.001	20	366	0.001	20	366	0.002
13:00 - 14:00	20	366	0.001	20	366	0.001	20	366	0.002
14:00 - 15:00	20	366	0.001	20	366	0.001	20	366	0.002
15:00 - 16:00	20	366	0.003	20	366	0.003	20	366	0.006
16:00 - 17:00	20	366	0.002	20	366	0.002	20	366	0.004
17:00 - 18:00	20	366	0.002	20	366	0.002	20	366	0.004
18:00 - 19:00	20	366	0.002	20	366	0.002	20	366	0.004
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.020			0.020			0.040

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL OGVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.001	20	366	0.002	20	366	0.003
08:00 - 09:00	20	366	0.002	20	366	0.002	20	366	0.004
09:00 - 10:00	20	366	0.003	20	366	0.002	**20**	**366**	**0.005**
10:00 - 11:00	20	366	0.002	20	366	0.002	20	366	0.004
11:00 - 12:00	20	366	0.002	20	366	0.002	20	366	0.004
12:00 - 13:00	20	366	0.002	**20**	**366**	**0.003**	20	366	0.005
13:00 - 14:00	20	366	0.002	20	366	0.002	20	366	0.004
14:00 - 15:00	**20**	**366**	**0.003**	20	366	0.002	20	366	0.005
15:00 - 16:00	20	366	0.002	20	366	0.003	20	366	0.005
16:00 - 17:00	20	366	0.002	20	366	0.002	20	366	0.004
17:00 - 18:00	20	366	0.002	20	366	0.001	20	366	0.003
18:00 - 19:00	20	366	0.001	20	366	0.001	20	366	0.002
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.024			0.024			0.048

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PSVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.001	20	366	0.001	20	366	0.002
08:00 - 09:00	20	366	0.001	20	366	0.001	20	366	0.002
09:00 - 10:00	20	366	0.001	20	366	0.001	20	366	0.002
10:00 - 11:00	20	366	0.001	20	366	0.001	20	366	0.002
11:00 - 12:00	20	366	0.001	20	366	0.001	20	366	0.002
12:00 - 13:00	20	366	0.001	20	366	0.001	20	366	0.002
13:00 - 14:00	20	366	0.001	20	366	0.001	20	366	0.002
14:00 - 15:00	20	366	0.001	20	366	0.001	20	366	0.002
15:00 - 16:00	20	366	0.001	20	366	0.001	20	366	0.002
16:00 - 17:00	20	366	0.001	20	366	0.001	20	366	0.002
17:00 - 18:00	20	366	0.001	20	366	0.001	20	366	0.002
18:00 - 19:00	20	366	0.000	20	366	0.000	20	366	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.011			0.011			0.022

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL CYCLISTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.003	20	366	0.004	20	366	0.007
08:00 - 09:00	20	366	0.005	**20**	**366**	**0.011**	**20**	**366**	**0.016**
09:00 - 10:00	20	366	0.001	20	366	0.003	20	366	0.004
10:00 - 11:00	20	366	0.002	20	366	0.003	20	366	0.005
11:00 - 12:00	20	366	0.002	20	366	0.003	20	366	0.005
12:00 - 13:00	20	366	0.003	20	366	0.003	20	366	0.006
13:00 - 14:00	20	366	0.002	20	366	0.001	20	366	0.003
14:00 - 15:00	20	366	0.003	20	366	0.002	20	366	0.005
15:00 - 16:00	20	366	0.004	20	366	0.003	20	366	0.007
16:00 - 17:00	20	366	0.008	20	366	0.006	20	366	0.014
17:00 - 18:00	**20**	**366**	**0.009**	20	366	0.005	20	366	0.014
18:00 - 19:00	20	366	0.007	20	366	0.006	20	366	0.013
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.049			0.050			0.099

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.083	20	366	0.487	20	366	0.570
08:00 - 09:00	20	366	0.158	**20**	**366**	**0.634**	**20**	**366**	**0.792**
09:00 - 10:00	20	366	0.180	20	366	0.246	20	366	0.426
10:00 - 11:00	20	366	0.154	20	366	0.202	20	366	0.356
11:00 - 12:00	20	366	0.163	20	366	0.169	20	366	0.332
12:00 - 13:00	20	366	0.195	20	366	0.185	20	366	0.380
13:00 - 14:00	20	366	0.204	20	366	0.187	20	366	0.391
14:00 - 15:00	20	366	0.236	20	366	0.218	20	366	0.454
15:00 - 16:00	20	366	0.394	20	366	0.223	20	366	0.617
16:00 - 17:00	20	366	0.436	20	366	0.221	20	366	0.657
17:00 - 18:00	**20**	**366**	**0.545**	20	366	0.217	20	366	0.762
18:00 - 19:00	20	366	0.470	20	366	0.251	20	366	0.721
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.218			3.240			6.458

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PEDESTRIANS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.010	20	366	0.027	20	366	0.037
08:00 - 09:00	20	366	0.022	**20**	**366**	**0.065**	**20**	**366**	**0.087**
09:00 - 10:00	20	366	0.019	20	366	0.022	20	366	0.041
10:00 - 11:00	20	366	0.015	20	366	0.019	20	366	0.034
11:00 - 12:00	20	366	0.015	20	366	0.015	20	366	0.030
12:00 - 13:00	20	366	0.017	20	366	0.010	20	366	0.027
13:00 - 14:00	20	366	0.012	20	366	0.016	20	366	0.028
14:00 - 15:00	20	366	0.019	20	366	0.020	20	366	0.039
15:00 - 16:00	**20**	**366**	**0.051**	20	366	0.022	20	366	0.073
16:00 - 17:00	20	366	0.035	20	366	0.016	20	366	0.051
17:00 - 18:00	20	366	0.027	20	366	0.015	20	366	0.042
18:00 - 19:00	20	366	0.028	20	366	0.025	20	366	0.053
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.270			0.272			0.542

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL BUS/TRAM PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.001	20	366	0.019	20	366	0.020
08:00 - 09:00	20	366	0.002	**20**	**366**	**0.022**	20	366	0.024
09:00 - 10:00	20	366	0.004	20	366	0.010	20	366	0.014
10:00 - 11:00	20	366	0.005	20	366	0.007	20	366	0.012
11:00 - 12:00	20	366	0.004	20	366	0.008	20	366	0.012
12:00 - 13:00	20	366	0.006	20	366	0.006	20	366	0.012
13:00 - 14:00	20	366	0.006	20	366	0.005	20	366	0.011
14:00 - 15:00	20	366	0.009	20	366	0.004	20	366	0.013
15:00 - 16:00	20	366	0.017	20	366	0.008	**20**	**366**	**0.025**
16:00 - 17:00	**20**	**366**	**0.018**	20	366	0.005	20	366	0.023
17:00 - 18:00	20	366	0.014	20	366	0.004	20	366	0.018
18:00 - 19:00	20	366	0.013	20	366	0.004	20	366	0.017
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.099			0.102			0.201

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL RAIL PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.001	20	366	0.004	20	366	0.005
08:00 - 09:00	20	366	0.000	**20**	**366**	**0.006**	**20**	**366**	**0.006**
09:00 - 10:00	20	366	0.001	20	366	0.004	20	366	0.005
10:00 - 11:00	20	366	0.001	20	366	0.001	20	366	0.002
11:00 - 12:00	20	366	0.001	20	366	0.001	20	366	0.002
12:00 - 13:00	20	366	0.002	20	366	0.002	20	366	0.004
13:00 - 14:00	20	366	0.001	20	366	0.000	20	366	0.001
14:00 - 15:00	20	366	0.001	20	366	0.000	20	366	0.001
15:00 - 16:00	20	366	0.002	20	366	0.000	20	366	0.002
16:00 - 17:00	20	366	0.002	20	366	0.000	20	366	0.002
17:00 - 18:00	20	366	0.005	20	366	0.001	20	366	0.006
18:00 - 19:00	**20**	**366**	**0.005**	20	366	0.001	20	366	0.006
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.022			0.020			0.042

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL COACH PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.000	20	366	0.000	20	366	0.000
08:00 - 09:00	20	366	0.000	20	366	0.000	20	366	0.000
09:00 - 10:00	20	366	0.000	20	366	0.000	20	366	0.000
10:00 - 11:00	20	366	0.000	20	366	0.000	20	366	0.000
11:00 - 12:00	20	366	0.000	20	366	0.000	20	366	0.000
12:00 - 13:00	20	366	0.000	20	366	0.000	20	366	0.000
13:00 - 14:00	20	366	0.000	20	366	0.000	20	366	0.000
14:00 - 15:00	20	366	0.000	20	366	0.000	20	366	0.000
15:00 - 16:00	20	366	0.000	20	366	0.000	20	366	0.000
16:00 - 17:00	20	366	0.000	20	366	0.000	20	366	0.000
17:00 - 18:00	20	366	0.000	20	366	0.000	20	366	0.000
18:00 - 19:00	20	366	0.000	20	366	0.000	20	366	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.000			0.000

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PUBLIC TRANSPORT USERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.002	20	366	0.023	20	366	0.025
08:00 - 09:00	20	366	0.002	**20**	**366**	**0.028**	**20**	**366**	**0.030**
09:00 - 10:00	20	366	0.005	20	366	0.014	20	366	0.019
10:00 - 11:00	20	366	0.006	20	366	0.008	20	366	0.014
11:00 - 12:00	20	366	0.006	20	366	0.008	20	366	0.014
12:00 - 13:00	20	366	0.008	20	366	0.007	20	366	0.015
13:00 - 14:00	20	366	0.007	20	366	0.005	20	366	0.012
14:00 - 15:00	20	366	0.010	20	366	0.005	20	366	0.015
15:00 - 16:00	20	366	0.019	20	366	0.008	20	366	0.027
16:00 - 17:00	**20**	**366**	**0.021**	20	366	0.006	20	366	0.027
17:00 - 18:00	20	366	0.020	20	366	0.005	20	366	0.025
18:00 - 19:00	20	366	0.018	20	366	0.005	20	366	0.023
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.124			0.122			0.246

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.098	20	366	0.540	20	366	0.638
08:00 - 09:00	20	366	0.187	**20**	**366**	**0.738**	**20**	**366**	**0.925**
09:00 - 10:00	20	366	0.204	20	366	0.285	20	366	0.489
10:00 - 11:00	20	366	0.178	20	366	0.231	20	366	0.409
11:00 - 12:00	20	366	0.185	20	366	0.195	20	366	0.380
12:00 - 13:00	20	366	0.223	20	366	0.205	20	366	0.428
13:00 - 14:00	20	366	0.224	20	366	0.209	20	366	0.433
14:00 - 15:00	20	366	0.267	20	366	0.244	20	366	0.511
15:00 - 16:00	20	366	0.468	20	366	0.257	20	366	0.725
16:00 - 17:00	20	366	0.500	20	366	0.249	20	366	0.749
17:00 - 18:00	**20**	**366**	**0.601**	20	366	0.242	20	366	0.843
18:00 - 19:00	20	366	0.523	20	366	0.286	20	366	0.809
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.658			3.681			7.339

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL CARS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.047	20	366	0.265	20	366	0.312
08:00 - 09:00	20	366	0.097	**20**	**366**	**0.308**	20	366	0.405
09:00 - 10:00	20	366	0.103	20	366	0.131	20	366	0.234
10:00 - 11:00	20	366	0.083	20	366	0.105	20	366	0.188
11:00 - 12:00	20	366	0.088	20	366	0.088	20	366	0.176
12:00 - 13:00	20	366	0.107	20	366	0.105	20	366	0.212
13:00 - 14:00	20	366	0.109	20	366	0.100	20	366	0.209
14:00 - 15:00	20	366	0.120	20	366	0.125	20	366	0.245
15:00 - 16:00	20	366	0.182	20	366	0.119	20	366	0.301
16:00 - 17:00	20	366	0.207	20	366	0.115	20	366	0.322
17:00 - 18:00	**20**	**366**	**0.290**	20	366	0.120	**20**	**366**	**0.410**
18:00 - 19:00	20	366	0.264	20	366	0.133	20	366	0.397
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.697			1.714			3.411

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL LGVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.012	**20**	**366**	**0.024**	**20**	**366**	**0.036**
08:00 - 09:00	20	366	0.013	20	366	0.019	20	366	0.032
09:00 - 10:00	20	366	0.016	20	366	0.014	20	366	0.030
10:00 - 11:00	20	366	0.014	20	366	0.015	20	366	0.029
11:00 - 12:00	20	366	0.013	20	366	0.014	20	366	0.027
12:00 - 13:00	20	366	0.013	20	366	0.011	20	366	0.024
13:00 - 14:00	20	366	0.017	20	366	0.016	20	366	0.033
14:00 - 15:00	20	366	0.014	20	366	0.013	20	366	0.027
15:00 - 16:00	20	366	0.015	20	366	0.016	20	366	0.031
16:00 - 17:00	20	366	0.018	20	366	0.014	20	366	0.032
17:00 - 18:00	**20**	**366**	**0.023**	20	366	0.011	20	366	0.034
18:00 - 19:00	20	366	0.015	20	366	0.010	20	366	0.025
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.183			0.177			0.360

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL MOTOR CYCLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	20	366	0.001	20	366	0.003	20	366	0.004
08:00 - 09:00	20	366	0.000	20	366	0.003	20	366	0.003
09:00 - 10:00	20	366	0.000	20	366	0.000	20	366	0.000
10:00 - 11:00	20	366	0.001	20	366	0.000	20	366	0.001
11:00 - 12:00	20	366	0.001	20	366	0.001	20	366	0.002
12:00 - 13:00	20	366	0.001	20	366	0.001	20	366	0.002
13:00 - 14:00	20	366	0.001	20	366	0.001	20	366	0.002
14:00 - 15:00	20	366	0.002	20	366	0.002	20	366	0.004
15:00 - 16:00	20	366	0.001	20	366	0.001	20	366	0.002
16:00 - 17:00	20	366	0.002	20	366	0.002	20	366	0.004
17:00 - 18:00	20	366	0.002	20	366	0.001	20	366	0.003
18:00 - 19:00	20	366	0.003	20	366	0.001	20	366	0.004
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.015			0.016			0.031

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

wsp.com

Appendix B

2022 PTA

University of Kent, Canterbury Campus

Preliminary Transport Appraisal: Disposal Sites BCD

February 2022

Public

University of Kent, Canterbury Campus

Preliminary Transport Appraisal: Disposal Sites BCD

Type of document (version) Public

Project no. 70080896

Date: February 2022

WSP

2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

Phone: +44 148 352 8400

WSP.com

Quality control

Issue/revision	First issue	1st Issue		
Remarks	Draft for client comment	Final		
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Signature				
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Contents

Appendices

Executive summary

1.1.1. 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.

1.1.2. In August 2021 UoK submitted representations to Canterbury City Council's (CCC) Preferred Options Local Plan Consultation. This submission included proposals for development of a residential led new community on land to the north of the University's Campus referred to as Sites BCD. As part of that submission a Transport Strategy (August 2021) was included to consider the potential transport impacts of the Proposed Development.

1.1.3. This Preliminary Transport Appraisal (PTA) has been prepared to supplement the information presented in the Transport Strategy and has been developed in accordance with a scope agreed with Kent County Council (KCC) as highway authority.

1.1.4. The Proposed Development site benefits from access by a range of modes of transport and provisional strategies have been developed to ensure that access by sustainable modes is prioritised above that of the private car.

1.1.5. The trip generation for the Proposed Development has been developed using person trip rates and split down by land use and journey purpose allowing for consideration of internalisation. No account has been made at this stage for travel planning which would further reduce the vehicular trip making characteristics of the site.

1.1.6. A highway network assessment has been developed based around a manual spreadsheet-based trip generation, distribution and assignment. The impact of the Proposed Development on the highway network has then been tested at 13 locations surrounding the site that were agreed with KCC.

1.1.7. The highway network assessment identified a number of locations where the existing highway network is anticipated to operate at/above capacity in the future year of 2040 and the Proposed Development was likely to increase queueing and delay.

1.1.8. Mitigation measures were developed at four locations which effectively reduced the impacts of the Proposed Development and improved the performance of the highway network when compared to the Do Nothing scenario.

1.1.9. At two locations (Junction 4 – Whitstable Road/Giles Lane and Junction 6 – Whitstable Road/London Road) a review of the junction layouts identified limited opportunities for improvements within the highway boundary. At Junction 4 it was noted that queueing and delay was limited to the Giles Lane minor arm. Traffic would likely re-distribute to the University Road junction where no capacity issues were identified.

1.1.10. At Junction 6 it was noted that the level crossing on St Dunstan's Street is likely to affect the level of queueing and delay that occurs in this location as well as the attractiveness of this junction for journeys within Canterbury. Whilst no specific mitigation has been proposed at this location it is likely that drivers will either re-route or re-time their journey should delays in this location increase significantly. The other junctions in the study area that could be used by re-routing traffic (Junction 3, Junction 7 and Junction 12) did not indicate significant capacity constraints that would prevent traffic from re-routing, even once growth through to 2040 had been accounted for. As such, whilst no cost-effective solution within the highway boundary has been identified for either Junction 4 or Junction 6 at this time, further testing of these junctions and the wider highway network within the strategic model is likely to identify opportunities for re-routing which will likely reduce impacts to an acceptable level.

1.1.11. It was therefore concluded that the Proposed Development can be accommodated on the highway network and from a transport perspective following development of a number of mitigation and re-routing options together with sustainable travel planning measures, as such there are no reasons why the site should not be allocated within the forthcoming Local Plan.

Contact name Justin Sherlock

Contact details 07920247432 | justin.sherlock@wsp.com

2 Introduction

2.1 Background

2.1.1. 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.

2.1.2. In August 2021 UoK submitted representations to Canterbury City Council's (CCC) Preferred Options Local Plan Consultation. As part of this submission a Transport Strategy was included that identified how land to the north of the University's Campus could be unlocked to facilitate a residential led new community.

2.1.3. Kent County Council (KCC), in their capacity as highway authority reviewed the Transport Strategy[1] and requested further information regarding the likely impacts of the Proposed Development on the transport network with a focus on likely highway impacts.

2.1.4. This Preliminary Transport Appraisal (PTA) has been prepared to outline the results of an initial highway impact assessment undertaken to better understand the deliverability of the Proposed Development.

2.1.5. At this early stage in the development of proposals a full Transport Assessment (as would be expected to accompany a planning application) has not been prepared. Instead, an initial assessment has been undertaken based upon a scope agreed with KCC, acknowledging that further, more detailed assessment will likely be required in due course as the proposals are further developed.

2.2 Scope

2.2.1. WSP approached KCC Highways to discuss and agree the scope of this PTA prior to its preparation. It was acknowledged at that time that two potential approaches could be utilised to understand the impacts of the Proposed Development on the highway network:

- Utilising the Canterbury strategic transport model developed by Jacobs; or
- A manual spreadsheet-based trip assignment with individual junction capacity assessments

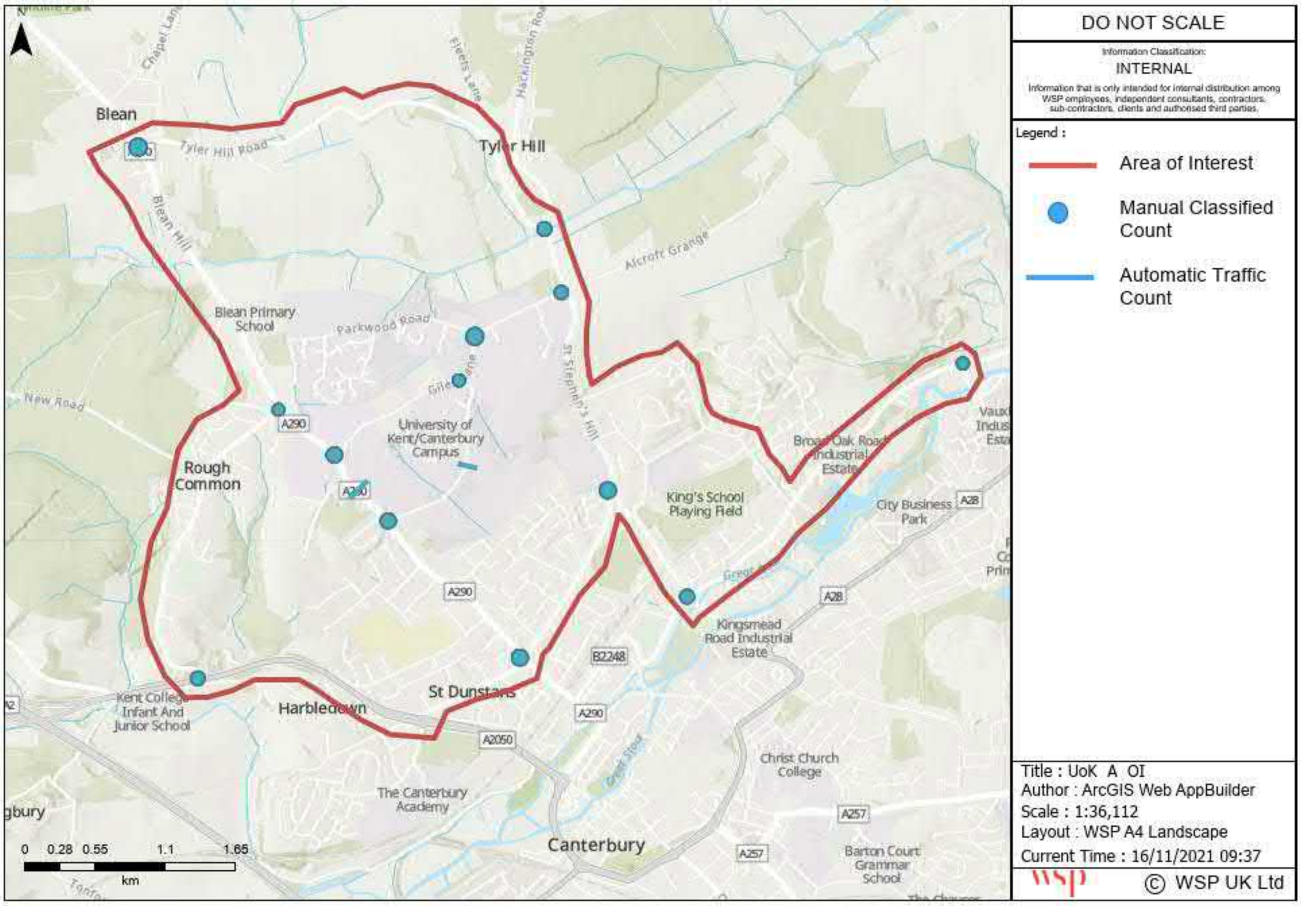
2.2.2. Both options were explored and it was agreed that owing to the work required to the Canterbury strategic transport model to make it suitable for use in PTA that met the timescales requested by CCC to inform the Local Plan process a manual spreadsheet-based trip assignment and individual junction capacity assessments was the most

[1] WSP Transport Strategy: Disposal Sites (August 2021)

appropriate for this stage of the process and would be utilised to understand the likely impacts arising from the Proposed Development.

2.2.3. A study area consisting of 13 key junctions was agreed with KCC Highways. This study area is shown in **Figure 1**.

Figure 1: PTA Area of Interest



2.2.4. Junction turning counts were undertaken at the key junctions identified and agreed with KCC on Tuesday 7th December 2021. In addition, two week-long surveys were undertaken on Whitstable Road and University Road. These surveys were used to verify the results of the counts undertaken on the 7th December 2021 and for the purposes of producing data suitable for use within the separately prepared air quality assessment.

2.3 Report structure

2.3.1. Following this introduction, the remainder of this PTA is set out as follows:

- Section 2 considers the existing site and transport conditions
- Section 3 provides an overview of the emerging development proposals and transport strategy
- Section 4 provides a trip generation for the development proposals
- Section 5 considers the impacts of the development proposals on the highway network

- Section 6 considers potential mitigation; and
- Section 7 provides a summary, conclusion and considers next steps.

3 Existing Transport Conditions

3.1 Introduction

3.1.1. This section outlines the existing transport conditions in the vicinity of the disposal sites, assessing the walking, cycling, public transport and local highway network facilities and accessibility.

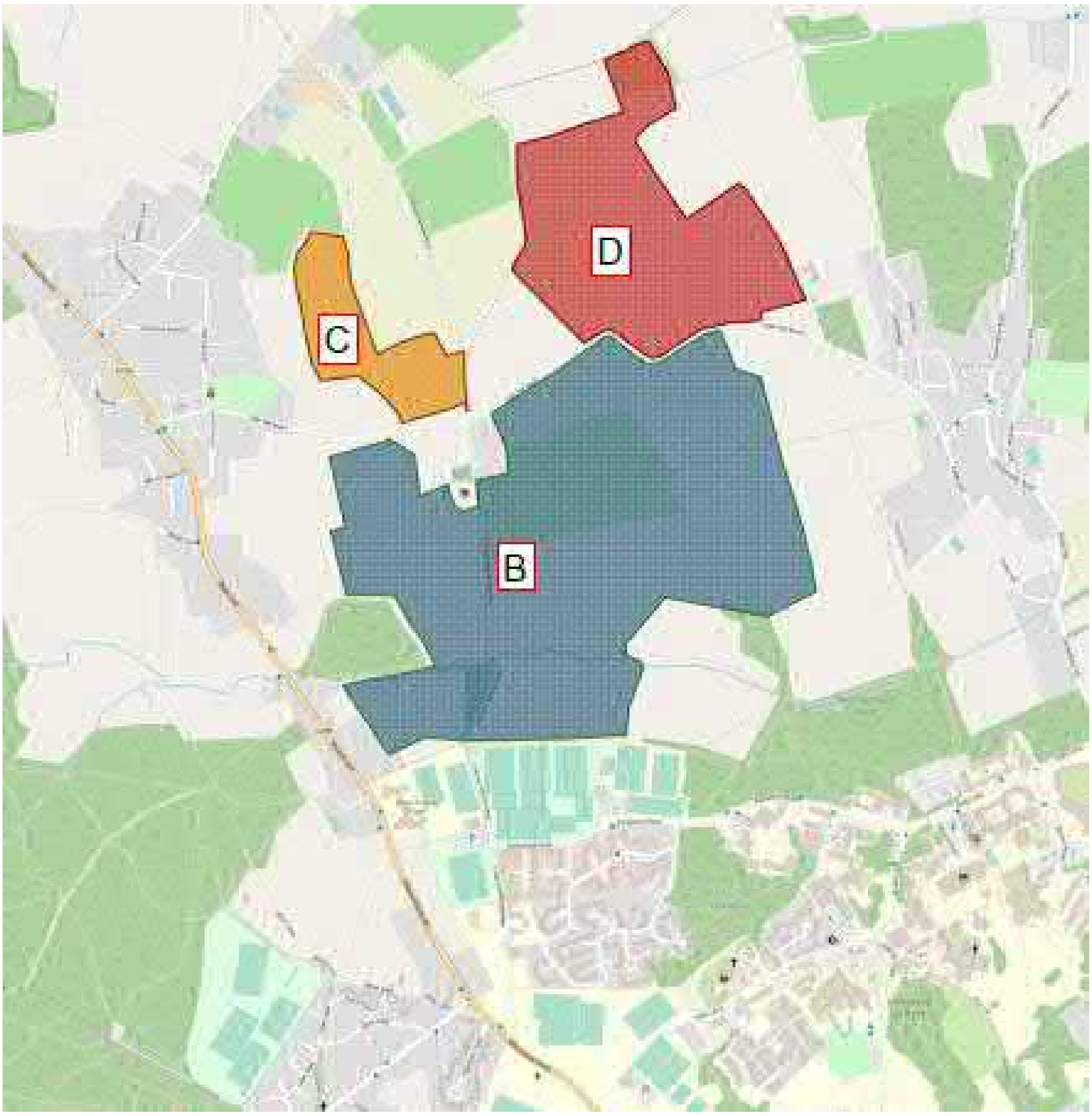
3.2 Site location

3.2.1. The UoK Canterbury Campus is located to the north of the centre of Canterbury on the urban fringe of the City. Covering an area of approximately 105 hectares the University Campus features a mixture of academic and student accommodation buildings alongside associated sports and recreational facilities.

3.2.2. The focus of this PTA is land that the University has identified to the north of the University Campus and referred to as sites BCD. Sites BCD are currently accessed from Tyler Hill Road, an unclassified rural road that runs approximately east west between Blean and the A290 Whitstable Road in the west to the village of Tyler Hill in the east. Frontage to this road from Sites BCD is limited with third party land between the site boundary and adopted highway.

3.2.3. **Figure 2** identifies the location of Sites BCD in the context of the surrounding highway network.

Figure 2: UoK Disposal Sites BCD Site Location



3.3 Pedestrians

3.3.1. The area benefits from a combination of pedestrian footways bounding highway routes in the local area and a series of public rights of way that provide connections across the surrounding rural hinterland.

3.3.2. Several footways, bridleways and byways provide pedestrian access to the University campus and the surrounding surplus land. The main footways are provided along the neighbouring Whitstable Road in the west and St Stephen's Hill in the east. The University Campus is then accessed via either University Road or Giles Lane. Both Giles Lane and University Road feature footways along their length albeit in some locations these are only provided along one side of the carriageway. Continuous pedestrian routes are therefore provided east west through the University Campus to connect Whitstable Road in the west with St Stephen's Hill in the east.

3.3.3. CB24A (The Crab and Winkle Way) provides a strategic walking connection between Canterbury and Whitstable (a distance of approximately 7.2km). The route commences on Whitstable Road in the west of the University Campus and heads north directly through the Campus on a combination of dedicated off road shared use pedestrian/footway and shared surface (used by both vehicles and active mode users). To the north of the University Campus the route continues across open farmland as a shared footway/cycleway within Site B before reaching Tyler Hill Road. The route from Whitstable Road to Tyler Hill Road is a designated bridleway. The route then crosses Tyler Hill Road at an uncontrolled crossing point before continuing north along the boundary of Site C and is designated as a byway. North of Site C the route continues towards Whitstable on a combination of bridleway and footpaths.

3.3.4. A series of public footpaths run east west across Site B including CB12 which follows the alignment of the watercourse and connects Blean in the west with Tyler Hill in the east. CB12 also connects with footpath CB13 which connects into the University Campus and Giles Lane. Footpath CB14 runs east west between Tyler Hill Road and Tyler Hill.

3.3.5. Site C is bound by byway CB27 in the east along with footpath CB16 both of which form part of the Crab and Winkle Way. Site C is also bound to the north by footpath CB18A which connects with Blean in the west.

3.3.6. Site D is bound in the west by byway CB27 and in the north by bridleway CB24.

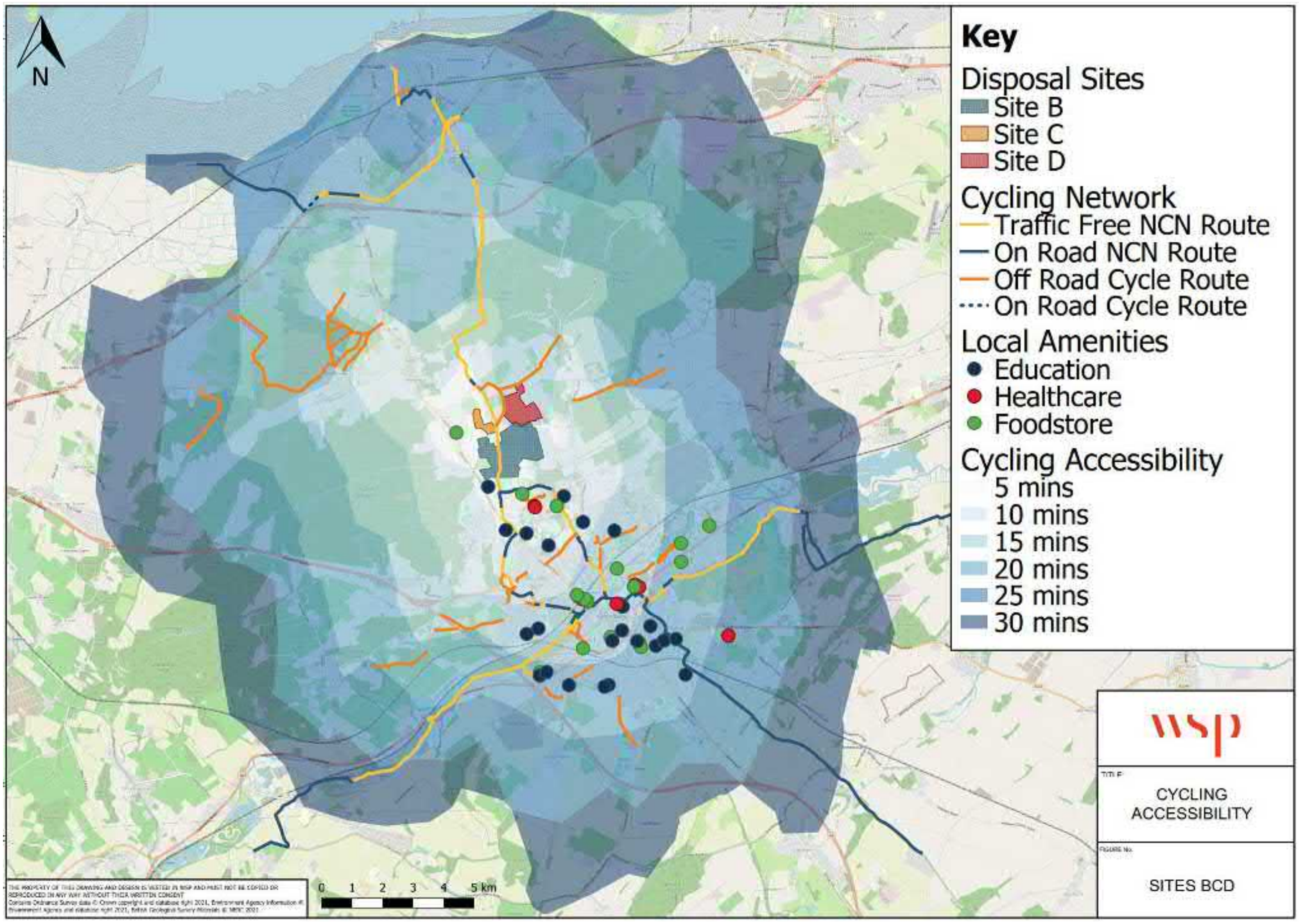
3.4 Cyclists

3.4.1. There are several cycle paths that currently provide access to the University Campus and surplus land. The National Cycle Network (NCN) route 1, also known as the Crab and Winkle Way runs from north to south, part on carriageway and part traffic free through the University Campus and Site B and bounds Site C in the east. Locally the route runs between Canterbury in the south and Whitstable in the north. In addition to the NCN route, there are several off-road cycle routes that run through the University Campus east to west.

3.4.2. As shown in **Figure 3** the whole of Canterbury and areas to the north including Whitstable are all accessible within a five mile (30 minute) cycle of the centre of these sites. Five miles is considered to be the maximum distance that people could realistically swap car-based travel for cycling[2]. A range of amenities and facilities can be accessed within these existing settlements including schools, convenience retail and healthcare.

[2] Department for Transport's Local Transport Note 1/20: Cycle Infrastructure Design (2020) Paragraph 2.2.2

Figure 3 – Sites BCD Cycling Isochrone



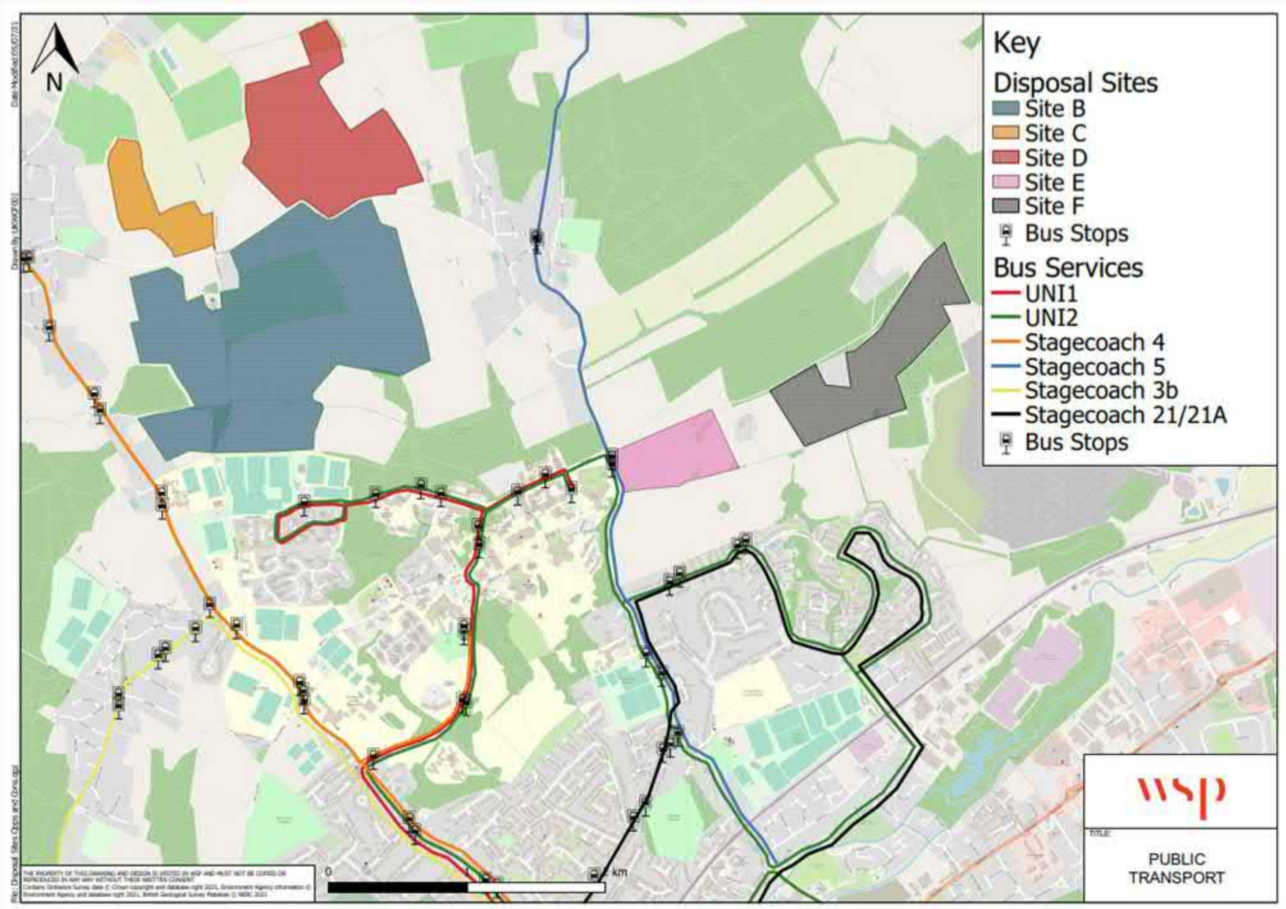
3.5 Public Transport

3.5.1. The University Campus and surrounding land benefits from access to a range of public transport services that primarily connect the University with wider Canterbury and destinations further afield. At the time of preparation of this study Covid-19 travel restrictions meant that some bus services were not operating. However, for the purposes of this Strategy pre-covid timetable information has been used to inform the assessment of accessibility on the basis that services will return in the near future.

Bus Services

3.5.2. **Figure 4** illustrates the bus stops and bus routes that are accessible from the bus stops in the vicinity of the University Campus and surrounding area.

Figure 4 – Local Bus Stops and Routes



3.5.3. **Figure 4** demonstrates that the University is served directly by three bus services whilst further services are accessible from both Whitstable Road in the west and St Stephen's Hill in the east.

3.5.4. **Table 1** provides a summary of the bus services accessible from the University Campus, Whitstable Road and St Stephen's Hill that could be utilised by users of Sites BCD.

Table 1 - Bus Services in the Vicinity of the Sites

Bus Service	Route	First Bus	Last Bus	Frequency		
				Mon - Fri	Sat	Sun
3 / 333 / 3x	Canterbury - Sittingbourne	07:40	21:00	Hourly	Hourly	Hourly
4	Canterbury - University of Kent – Whitstable – Tankerton - Greenhill	07:58	17:20	30 minutes	30 minutes	N/A
5	Canterbury – Tyler Hill – Chestfield – Whitstable - Seasalter	07:22	17:02	Hourly	Hourly	N/A
21/21A	City Centre - St. Dunstan's - Hales Place - City Centre	06:28	22:45	15 minutes	15 minutes	Hourly
UNI1	University of Kent – Canterbury City Centre	08:27	17:38	30 minutes	30 minutes	N/A
UNI2	Canterbury – Westgate Towers, University of Kent	09:00	18:04	30 minutes	30 minutes	N/A

3.5.5. **Table 1** demonstrates that a range of services are available in the area surrounding the sites that operate on a range of frequencies up to every 15 minutes. Key destinations served include Canterbury City Centre, Canterbury West Railway Station, Sittingbourne, Whitstable and Herne Bay.

Rail services

3.5.6. Canterbury West Railway Station is located approximately 1.7 km from the closest access point to the University and 2.7 km from the heart of the University Campus. To Sites BCD the station is 3.7 km. **Tables 2-4** provide details of the rail services from Canterbury West Station from Monday to Friday and Saturday and Sunday Respectively. All timings are from Canterbury West Station.

Table 2 - Rail Services (Monday – Friday)

Direct Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West - London Victoria	07:03	22:03	Hourly	123 minutes
Margate – Canterbury West – London St Pancras	05:18	22:26	Hourly	54 minutes
Canterbury to Ashford International	05:18	23:26	Hourly	15 minutes

Table 3 - Rail Services (Saturday)

Direct Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West - London Victoria	06:05	22:05	Hourly	121 minutes
Margate – Canterbury West – London St Pancras	05:26	22:26	Hourly	55 minutes
Canterbury to Ashford International	06:05	23:26	Hourly	15 minutes

Table 4 - Rail Services (Sunday)

Direct Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West - London Victoria	08:03	21:03	Hourly	133 minutes
Margate – Canterbury West – London St Pancras	05:26	22:26	Hourly	55 minutes
Canterbury to Ashford International	06:05	23:26	Hourly	15 minutes

3.5.7. **Tables 2-4** demonstrate that Canterbury West Station provides train services to a range of locations including London Victoria, London St Pancras, and Ashford International.

3.5.8. The analysis presented above demonstrates that the railway station is accessible by either bus or by cycling from the disposal sites. Space for 134 cycles is provided at Canterbury West Station[3].

3.6 Highway Network

3.6.1. The local highway network in the vicinity of Sites BCD is characterised by a series of north south radial routes that converge on Canterbury City Centre in the south and connect with the settlements of Herne Bay and Whitstable in the north. In the west the A290 Whitstable Road provides a connection between the City Centre Ring Road, the University, Blean and north towards the A299 and Whitstable. This road also connects in the vicinity of the University with Rough Common Road which provides a connection to the A2050 and A2 in the west.

3.6.2. In the east St Stephen's Hill connects the City Centre and areas to the east of Canterbury along the A28 corridor with the University and north towards the A299 and Herne Bay.

3.6.3. The University Campus itself is accessible from either Whitstable Road or St Stephen's Hill. Giles Lane provides a continuous east-west connection through the University Campus between Whitstable Road and St Stephen's Hill. However, its width is constrained within part of the University resulting in an informal priority working system. University Road provides a connection between Whitstable Road in the west and Giles Lane in the centre of the University Campus. The road forms a priority junction with Giles Lane. Within the centre of the University Campus both Giles Lane and University Road are subject to a 20mph speed limit.

3.6.4. Park Wood Road is a private internal university road that connects Giles Lane with areas in the north of the University.

3.6.5. Tyler Hill Road provides an east-west connection between the villages of Blean and Tyler Hill and runs between Sites BCD. The road is a rural country lane which whilst subject to national speed limit (60mph speed limit) features constrained geometry which limits the speed of vehicles.

3.7 Summary

3.7.1. This Section has provided a summary of the existing transport conditions in the vicinity of the site. It is evident from this that Sites BCD could benefit from access to a range of modes of transport. The proposed transport strategy is identified in Section 4.

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[3] Source: National Rail Website

4 Development Proposals

4.1 Introduction

4.1.1. This section provides an overview of the Development Proposals that have been considered within this PTA.

4.2 Development Proposals

4.2.1. A residential led mixed-use development is proposed to the north of the University Campus on Sites BCD. Initial masterplanning optioneering indicated potential for approximately 2000 homes supported by a local centre (incorporating transport hub) and primary school to serve the new population.

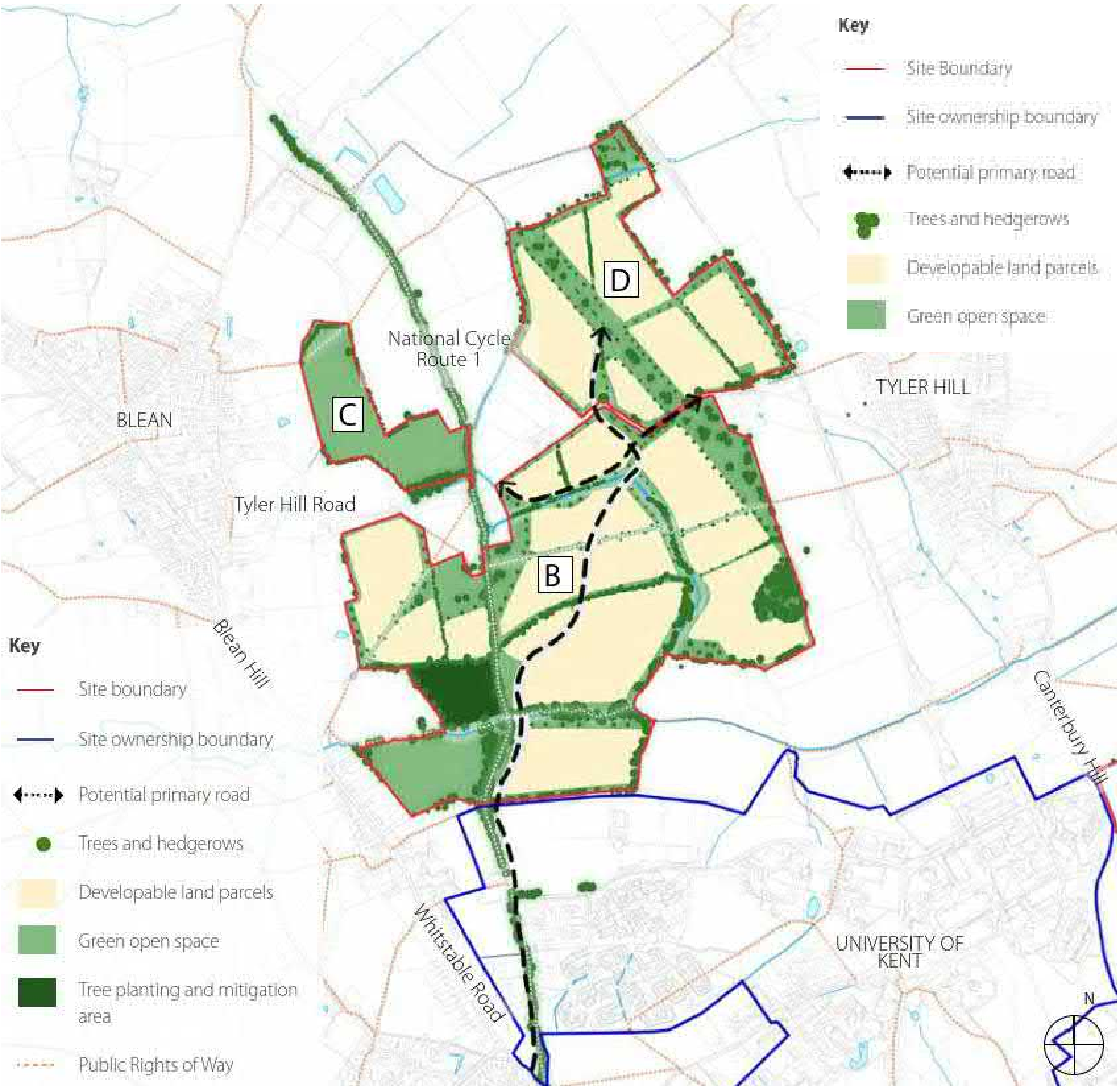
4.2.2. Access to the site would focus movement towards a north-south axis with movement to/from Tyler Hill Road managed through incorporation of the road within the site where it bounds the site.

4.2.3. A new access road for all users (pedestrians, cyclists and vehicles) would be delivered through the University Campus and access onto the public highway on Whitstable Road (A290). Previous work undertaken for the University Masterplan identified the potential for a traffic signal junction on Whitstable Road to facilitate access in this location. The form of access proposed is considered in more detail within Section 5.

4.2.4. Limited vehicular access to Site C would lend the site to provision of open space to contribute towards the overall provision across Sites BCD albeit acknowledging that should alternative access opportunities arise (for instance in the form of third party land) then there may be opportunity to deliver further residential development.

4.2.5. **Figure 5** outlines the current emerging masterplan for Sites BCD.

Figure 5: Emerging Masterplan Option (Source: PRP)



4.3 Access Strategy

Vehicular Access

4.3.1. 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 (**Figures 6-9**).

Figure 6 – View west along Tyler Hill Road adjacent to Hothe Lodge

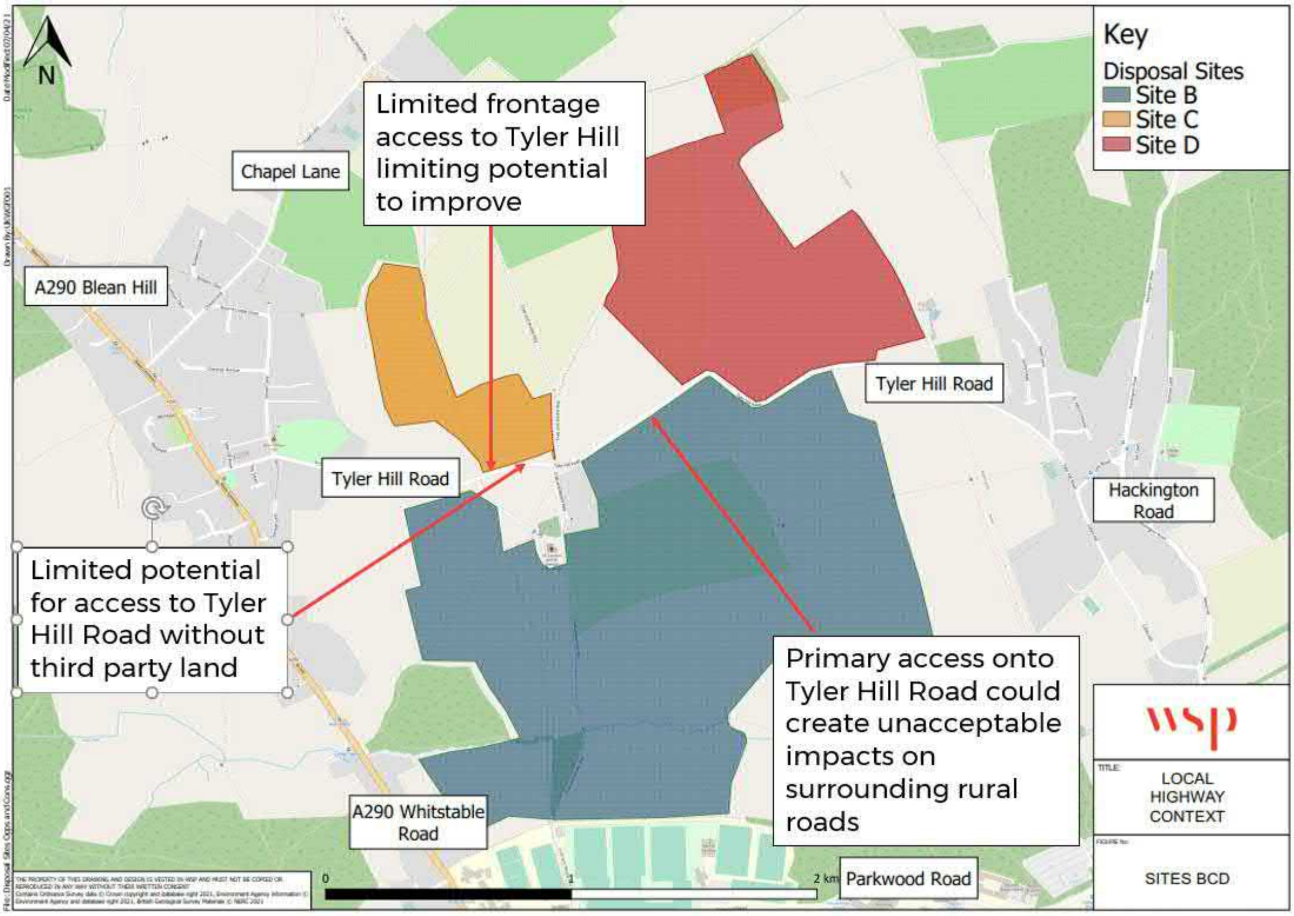
Figure 7 – View east along Tyler Hill Road adjacent to Hothe Lodge

Figure 8 – View east along Tyler Hill Road from Blean Village

Figure 9 – View east along Tyler Hill Road from Hothe Court Farm

4.3.2. 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 (**Figure 10**).

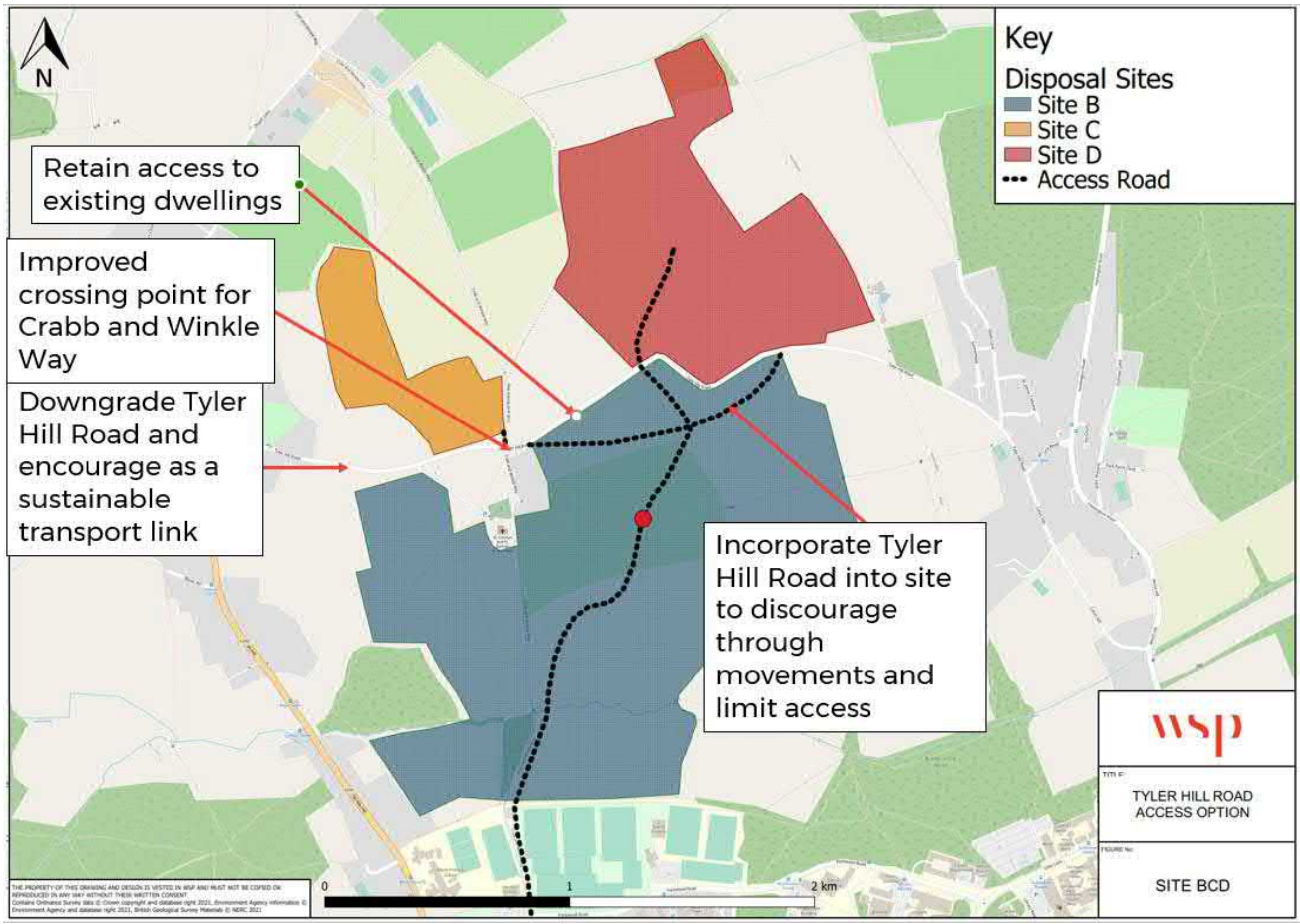
Figure 10 – Access Constraints



4.3.3. Consideration has been 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 KCC as a concern.

4.3.4. 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 (**Figure 11**).

Figure 11 – Access Strategy



4.3.5. A range of alignments were considered for the new access road (**Figure 12**) to minimise impacts on the existing University Campus and other constraints such as the ancient woodland and watercourse.

Figure 12 – Access Road Alignment Options

4.3.6. The road itself would be designed in accordance with the principles established within the Department for Transport's (DfT) 'Manual for Streets' and likely feature a 30mph design speed. For the purposes of the initial feasibility design work a highway corridor of 15m was assumed to ensure sufficient space to accommodate the carriageway, pedestrian and cycle infrastructure in accordance with DfT Local Transport Note 1/20 'Cycle Infrastructure Design'.

4.3.7. The highway corridor has been designed as a separate movement corridor to the existing internal University infrastructure and the Crab and Winkle Way. Where the alignment either shares the same corridor or crosses the Crab and Winkle Way careful consideration will be made to preserve the priority of this strategic pedestrian and cycle corridor, integrating with it where appropriate.

4.3.8. The access road would also have the benefit of facilitating the ambitions of the University Masterplan to deliver a new access onto Whitstable Road and allow access to the new parking areas proposed within the masterplan.

4.3.9. The form of the access road junction with Whitstable Road is considered in more detail in Section 5.

4.3.10. Construction of a new highway corridor across the University will have an impact on existing facilities on the Campus and this would need to be fully considered within a Construction Traffic Management Plan.

Pedestrians and Cyclists

4.3.11. Pedestrians and cyclists would be afforded a high level of priority within the proposed masterplan to ensure that active travel can be a genuine alternative for shorter distance trips than the private car. To deliver this the following access infrastructure is proposed:

- Provision of footways and cycleways on the key movement corridors into and out of the site
- Integration of the on-site provision with the Crab and Winkle Way and surrounding infrastructure
- Improvements to Public Rights of Way in the local area to enhance connectivity with local destinations.

4.4 Public Transport Strategy

4.4.1. A key principle of the transport strategy is the delivery of a transport hub on the development site to focus and provide access to a range of transport options, with the overarching aim of reducing reliance on the private car (**Figure 13**). A mobility hub can be understood as a 'place' or interchange providing different and connected transport modes supplemented with enhanced facilities to both attract and benefit the traveller. They are usually focussed around mass public transport (e.g. bus stops or rail station) and last mile mobility solutions (e.g. cycles). The transport hub would be located adjacent to the local centre and be complimentary to the uses within the local centre itself. Whilst the principle of a mobility hub (transport hub) is still evolving the key transport components of the facility would include:

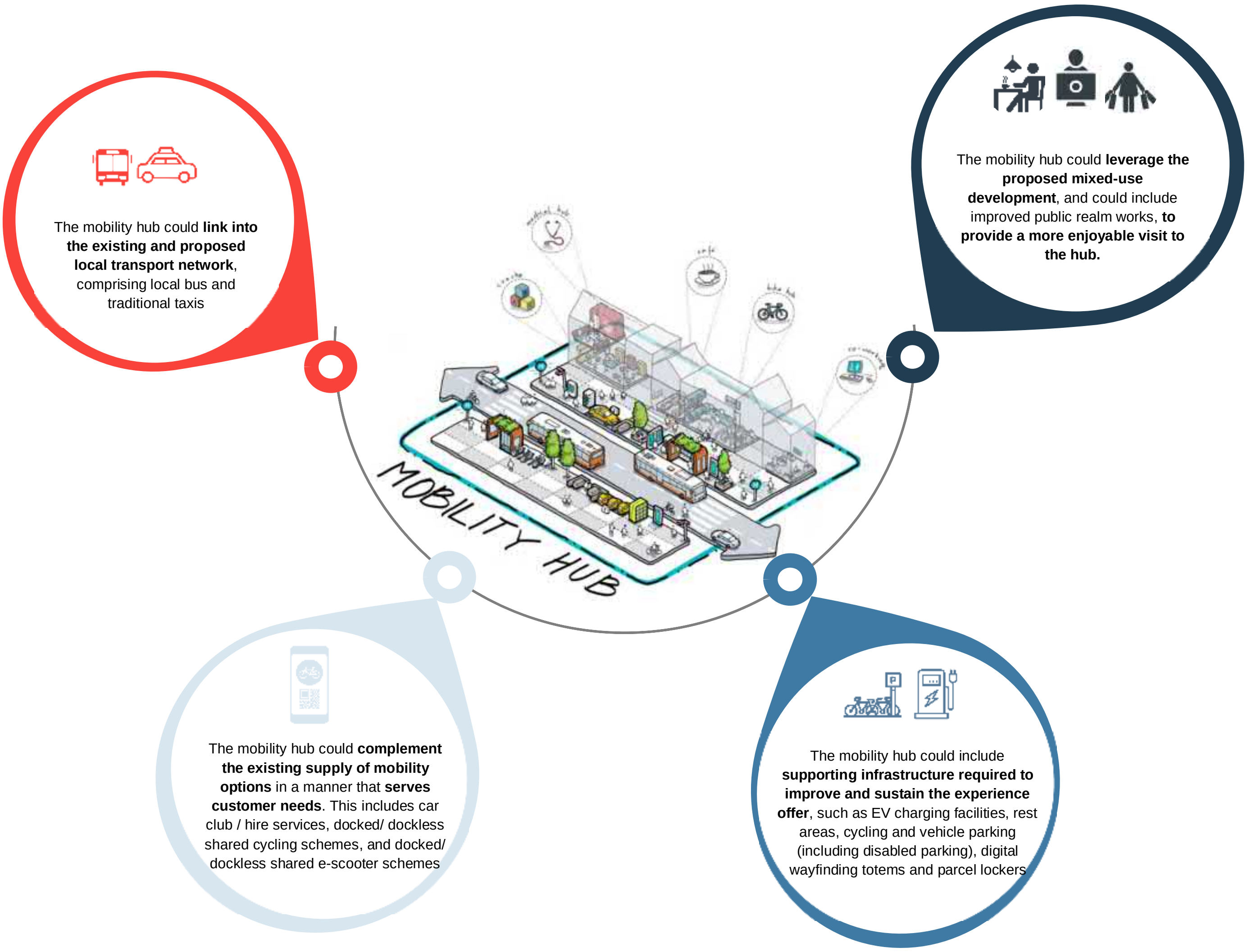
- Bus stop including access to real time passenger information
- Cycle parking to facilitate modal interchange including bike pump and repair facilities
- A focal point for ride sharing and hailing services (such as Uber)
- Car club spaces
- Micro-mobility (bike and scooter hire docking stations)
- Rapid electric vehicle charging

4.4.2. Complimentary facilities may include:

- Micro-consolidation facilities such as parcel lockers (e.g. Amazon lockers)
- Retail
- Digital services (real time public transport information, community news etc)

4.4.3. The deployment of mobility hubs has already started across the UK with proposals emerging in Manchester (Ancoates and New Islington) and incorporation within the new garden settlement at Otterpool near Folkestone in Kent.

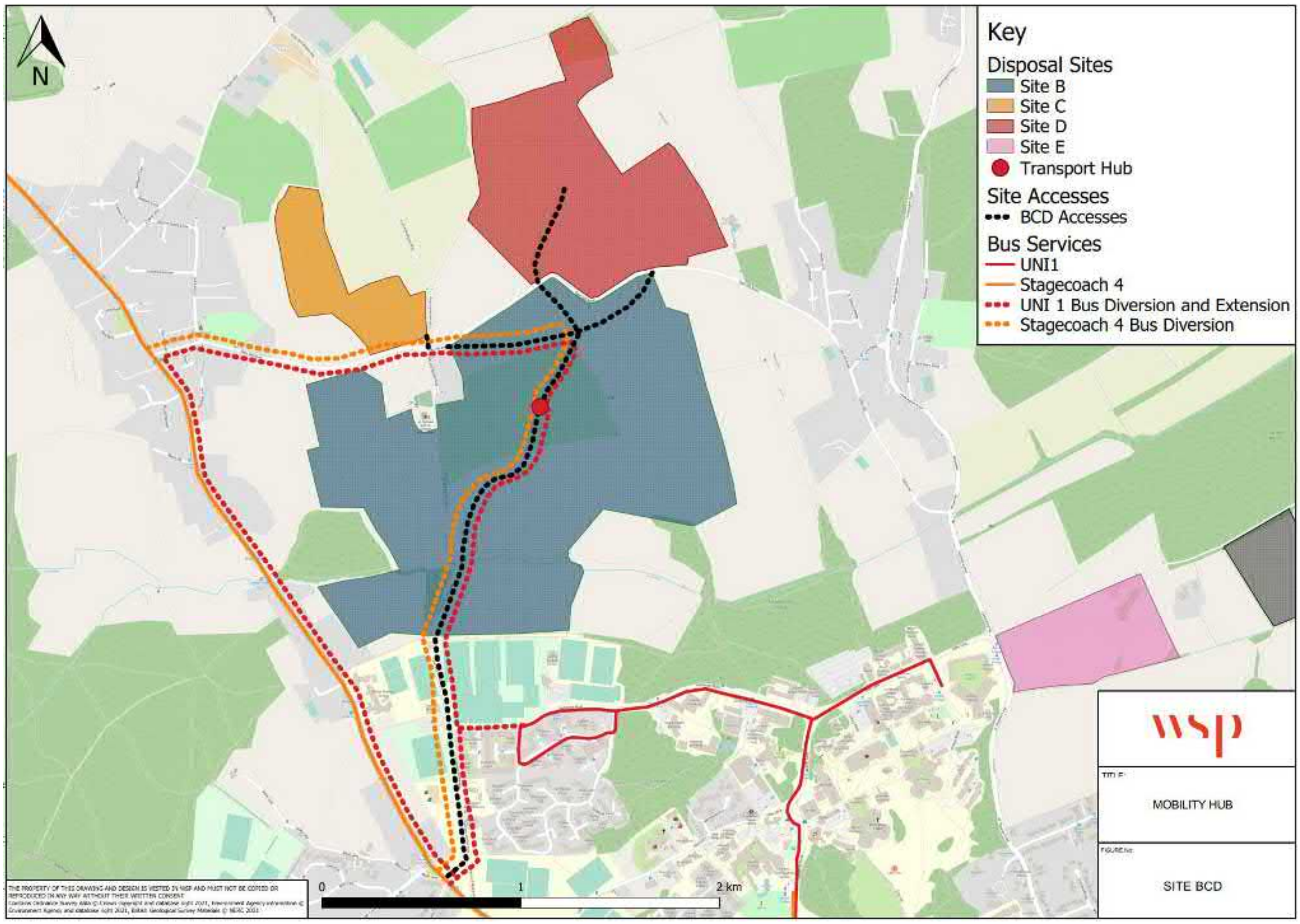
Figure 13 – Illustration of Transport Hub



4.4.4. Alongside the emergence of mobility hubs technology has facilitated the development of personalised journey planning platforms. When combined across modes these are known as Mobility as a Service (MaaS). KCC are currently developing a MaaS platform for deployment across Dartford and Gravesham with a focus on the Ebbsfleet Garden Community. This app-based platform enables access to a wide range of mobility services (traditional bus, rail and taxi services) as well as emerging technologies such as car clubs and e-scooter and cycle hire. By providing access to information about all the services in one place people can make informed decisions about the most appropriate mode or multiple modes for their entire journey. Deployment of this platform could be done on a regional basis (as per the KCC example) or on a development specific basis (Enterprise Car Club for instance have developed their own platform which is being deployed in parts of Scotland). The use of a MaaS is considered a key element of future developments alongside the provision of the Transport Hub to offer a range of services to residents and visitors of the site.

4.4.5. The Sites benefit from the high levels of public transport that access the University Campus. The public transport strategy will seek to build on the existing network of bus routes by extension of existing services to serve the on-site public transport hub located on the site. **Figure 14** indicates how existing bus routes could be extended to serve the development's on-site transport hub.

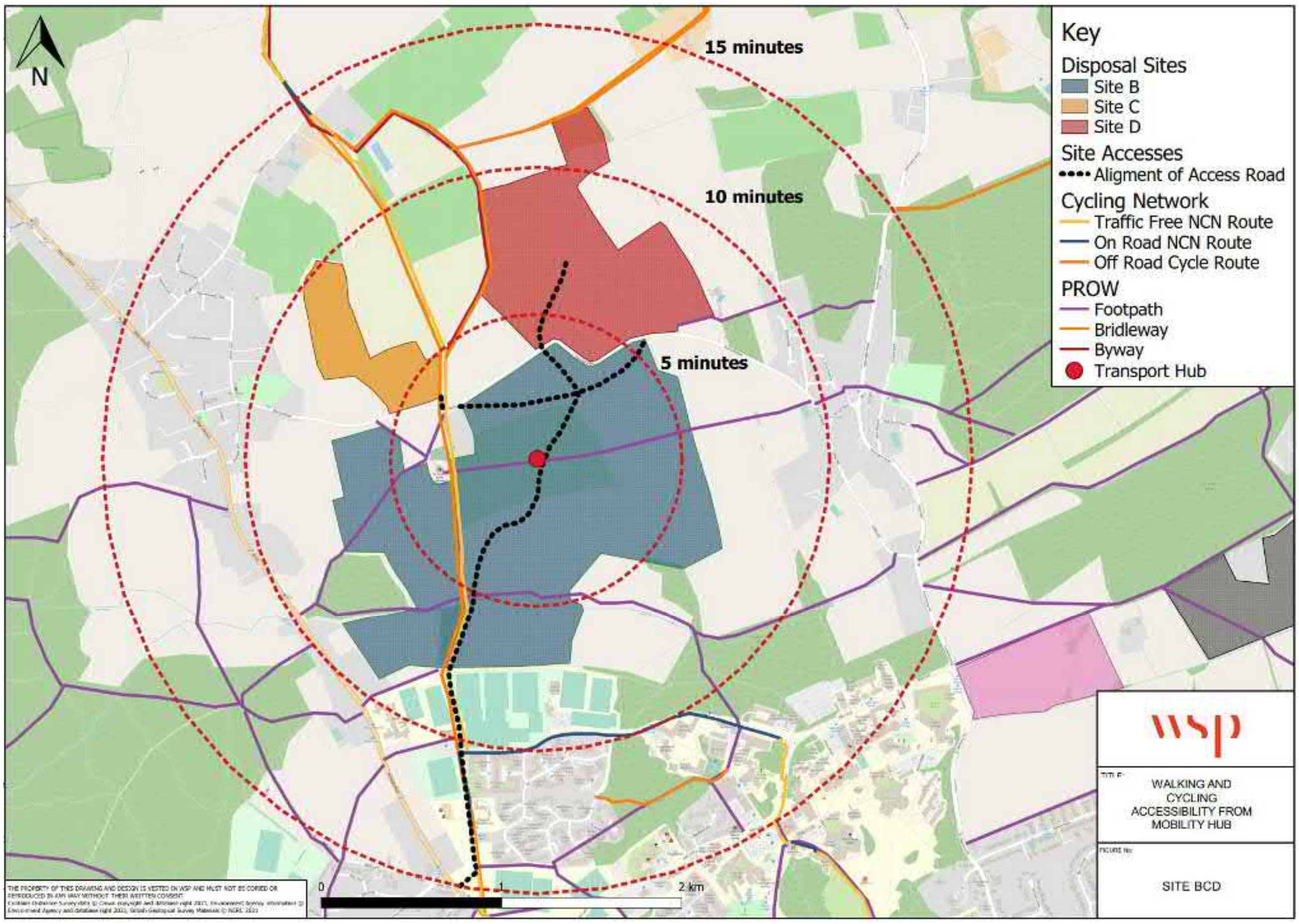
Figure 14: Public Transport Strategy



4.4.6. The strategy currently assumes an extension to Uni1 to serve the on-site transport hub. This would provide a daytime frequency of every 30 minutes. This would be further enhanced with the diversion of Route 4 southbound through the site to increase connectivity to the City Centre. However, further discussions would be held with the University and Stagecoach as local bus operator to ensure integration of the site with the public transport network.

4.4.7. **Figure 15** provides indicative walking times from the transport hub to all parts of the development site. These walking times would be further reduced through development of the site infrastructure and final siting of the public transport hub.

Figure 15: Public Transport Hub Walking Distances



4.5 Walking, Cycling and Micro-mobility Strategy

4.5.1. The emergence of new forms of personal mobility (e-scooters, e-bikes, cargo bikes, electric skateboards, shared bicycles and scooters) are collectively referred to as Micro-mobility. Whilst some of these modes may be personal (owned by the user) there is a growing trend towards shared usage (Santander cycle hire in London for instance). Through the MaaS platform mentioned previously residents and visitors of the site would have access to a range of mobility services to facilitate travel to and from the development.

4.5.2. The development site benefits from access to the Crab and Winkle Way and as identified in **Figure 3** the site benefits from access to the whole of Canterbury within a 30 minute cycle distance. The proximity of Canterbury to the site and available infrastructure alongside any enhancements that may be identified make travel by micro-mobility mobility an attractive option for future residents and visitors to the site.

4.6 Parking Strategy

4.6.1. The vision for the Proposed Development is to provide a sustainable new residential community. The site will prioritise pedestrian and cycle movements over that of vehicles, and to achieve this, it is envisaged that the development will be an early adopter of innovative transport and servicing solutions based around the “Future Mobility” agenda, namely mechanisation and shared and autonomous transport solutions.

4.6.2. Whilst walking, cycling and public transport will be the primary modes of transport adopted for travel to and from the site, there will still be a role for personal vehicle travel. It is anticipated that a proportion of this demand can be catered for through shared mobility services such as car clubs and taxis. However, there will still be, particularly in the early years of the development a demand for private vehicle ownership and use which will drive a demand for parking.

4.6.3. The final level of parking to be provided will be determined at a later stage of design. However, reference will be made to KCCs vehicle parking standards with due regard given to demand for electric vehicle parking.

4.6.4. A key consideration will also be cycle parking and ensuring this is sufficient for the needs and vision of the development. Sufficient space will be provided to accommodate parking on plot with space for adaptive cycles and trailers. Visitor cycle parking will also be conveniently located to facilitate access to the site by cycle.

4.7 Servicing and Waste Strategy

4.7.1. The Covid Pandemic has resulted in an acceleration of online shopping trends. It is anticipated that this form of shopping will continue to grow as traditional retail responds to this growing demand. However, one detractor of the growth in online shopping has been the increase in delivery vehicles to accommodate demand.

4.7.2. Micro-consolidation offers the ability to reduce the number of deliveries and total mileage driven by couriers. The transport hub would be able to accommodate facilities such as parcel lockers offering a consolidated location for delivery of certain items that could then be picked up by residents at their own convenience and by active mode.

4.7.3. The waste strategy for the site will be developed in conjunction with CCC in due course but will need to have due regard to the Environment Bill which has recently been approved.

4.8 Future Trends Strategy

4.8.1. Technology is playing an increasing role in our day to day lives and this is having a transformative effect. The Covid-19 Pandemic has brought this further into focus and opportunities to accelerate the process of change have emerged.

4.8.2. Research undertaken by WSPs Future Ready team anticipates the following changes emerging:

- Initially, the continued evolution of new mobility business models will increase the breadth of mobility services available and offer a viable alternative to personal vehicle ownership. These mobility business models capitalise on the ability to match customers and trips in real-time, to offer customers a more personalised form of mobility. Examples include:

- **Ride Sharing** – Schemes/digital platforms that match drivers and passengers who share similar destinations. These operate at both individual and corporation levels. E.g. Faxi, Liftshare;
    - **Ride Sourcing** – Real-time, dynamic allocation of customers to drivers based on origin and destination and payment services using pre-approved accounts. Usually rides are in private hire vehicles however increasing offering of micro-transit vehicles to use operating model. E.g. Uber, ArrivaClick, ViaVan;
    - **Car Sharing** – On-demand short-term car rentals with the vehicle owned and managed by a fleet operator or private individual. E.g. Zipcar.
    - **Micro mobility** – On demand services are increasingly being introduced initially in the form of bikes but now with e-scooters

- Emergence of MaaS schemes, which unlock the use and adoption of both shared and public transport through seamless and personalised information, reservation, booking and payments integration. e.g. Whim.
- Lastly, the adoption of increasingly automated, connected and autonomous vehicles which enable travellers to migrate to shared assets; they also provide door-to-door transport whilst providing access on a personal or shared basis. These advances are expected to be commercially deployed at scale within private hire and city taxi fleets from 2025.

4.8.3. In addition, the recent Covid-19 Pandemic has seen the emergence of new policies promoting a shift towards walking and cycling as the primary modes of transport. The recent Emergency Active Travel Fund grant has seen urban areas closed to vehicular traffic and the re-prioritisation of walking and cycling which should in the longer term increase the use of these modes.

4.8.4. The continued growth and evolution of these new forms of mobility is very dependent on future external levers, such as the regulatory environment, the affordability and acceptability of technology, and the customers' willingness to share. However, wider automotive sector trends already indicate how transport offerings are influencing customer behaviours:

- Driving licencing amongst young people has been falling since a peak of 48% (17-20 year olds) and 75% (21-29year olds) in 1993, to 29% and 63% respectively in 2014; with research suggesting that changing behaviours are more than just a postponement of driving[4]

[4] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/673176/young-peoples-travel-whats-changed.pdf

- The uptake of car clubs within urban areas has created an opportunity for car free living without compromising on the ability to have access to a car for leisure and recreational purposes. Canterbury currently has a car club operated by Co-wheels for instance.
- Traditional car manufacturers, concerned about losing customer ownership, are actively planning and investing in integrated mobility services. Volvo has recently launched ‘Care’ a monthly car subscription service[5] with no long-term commitments
- Rates of urbanisation are increasing and city residents are being pressed to reassess the benefits of personal vehicle ownership as the breadth of mobility services available increases[6]
- Increasing prevalence of telecommuting which has been an area of focus during the recent Covid-19 Pandemic.

4.8.5. The transport strategy outlined in this section has reflected upon the most recent trends and innovations across the transport industry and will be developed and refined as the proposals are developed.

[5] https://www.volvocars.com/uk/care-by-volvo/
[6] https://www.bbc.co.uk/news/uk-44482291

5 Trip Generation and Distribution

5.1 Introduction

5.1.1. This section outlines a trip generation for the Proposed Development along with detailing how the trip distribution has been derived. The trip generation is presented for both the peak hours and across the day as a whole. The daily trip generation is utilised in the separately prepared air quality assessment.

5.2 Development Quantum

5.2.1. For the purposes of this PTA the development proposals that have been considered are as follows:

- 2,000 dwellings with a mixture of housing and tenure type. Based upon the emerging masterplan the residential development quantum has been split down with 1447 dwellings assumed on Site B and 553 dwellings assumed on Site D.
- Local Centre located on Site B to serve the needs of the new community including a transport hub
- Primary School located on Site B to accommodate the primary school age pupils living on site
- Public open space to accommodate the needs of the development

5.3 Residential Trip Generation

5.3.1. The industry standard TRICS trip generation database has been interrogated to identify trip rates for the residential land use. 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 (source: TRICS Land use definitions). Multi-modal trip rates were selected to allow for the person trip generation to be calculated.

5.3.2. The AM and PM peak person trip rates (per dwelling) extracted from TRICS are shown in **Table 5** along with the resultant person trip generation. The TRICS output is contained in **Appendix A.**

Table 5 - Residential Person Trip Rates and Trip Generation

	AM Peak (08:00 - 09:00)			PM Peak (17:00 - 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Residential Person Trip Rate (per dwelling)	0.173	0.754	0.927	0.590	0.300	0.890	3.557	3.621	7.178
Residential Person Trip Generation (2000 dwellings)	346	1508	1854	1180	600	1780	7114	7242	14356

5.3.3. As seen in **Table 5** above, the provisional person trip generation would total 1854 in the AM peak and 1780 in the PM peak.

5.3.4. 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.

5.3.5. The methodology utilised the National Travel Survey (NTS0502) data which identified journey purpose by time of day as shown in **Table 6**.

Table 6 – NTS0502 Journey Purpose By Start Time (2019)

Journey Purpose	AM Peak (08:00-09:00)	PM Peak (17:00 – 18:00)	Daily
Commuting	20%	32%	18%
Business	3%	3%	4%
Education	29%	3%	9%
Escort Education	23%	2%	8%
Shopping	4%	12%	17%
Other work, other escort or personal business	14%	20%	19%
Visiting friends / entertainment / sport	3%	20%	18%
Holiday / Day trip / Other	4%	8%	9%

5.3.6. The journey purposes outlined in **Table 6** were then combined to reduce the number of individual trip generations required as follows:

- Commuting and Business
- Education
- Education Escort
- Shopping
- Other work, visiting friends, holiday

5.3.7. **Table 7** presents the person trip generation for Sites B and D split by journey purpose based upon the person trip generation shown in **Table 5.**

Table 7 – Residential Person Trip Generation By Journey Purpose and Site

Journey Purpose/ Peak Period	Private Houses (Total)	Commuting / Business	Retail	Education	Education Escort	Other Work, visiting friends, holiday
Site B						
AM Peak (08:00-09:00)	1341	307	56	383	307	288
PM Peak (17:00 – 18:00)	1288	458	155	38	28	608
Daily	10387	2314	1718	1013	831	4511
Site D						
AM Peak (08:00-09:00)	513	117	22	146	117	110
PM Peak (17:00 – 18:00)	492	175	59	15	11	233
Daily	3969	884	656	387	317	1724

5.3.8. Education trips are separated within NTS 0502 into those that are escorted and those that are not. For the purpose of the trip generation, it was assumed that unescorted trips represent those undertaken by secondary, further and higher education pupils, whilst education escort trips were assumed to be undertaken by primary school pupils.

5.3.9. The following mode share and internalisation assumptions were applied after the trips were split by journey purpose.

- Retail – 10% of the residential trips were internalised reflecting the presence of a local centre on site to serve the needs of the development.
- Escort Education – 100% of the residential trips were internalised to reflect the presence of a primary school on site.

5.3.10. The residential person trip generation by site taking account of the internalisation factors outlined above is detailed in **Table 8**.

Table 8 – Residential Person Trip Generation By Journey Purpose and Site (Including Internalisation)

Journey Purpose/ Peak Period	Private Houses (Total)	Commuting / Business	Retail	Education	Education Escort	Other Work, visiting friends, holiday
Site B						
AM Peak (08:00-09:00)	1029	307	51	383	0	288
PM Peak (17:00 – 18:00)	1244	458	140	38	0	608
Daily	9384	2314	1546	1013	0	4511
Site D						
AM Peak (08:00-09:00)	393	117	19	146	0	110
PM Peak (17:00 – 18:00)	475	175	53	15	0	233
Daily	3586	884	591	387	0	1724

5.3.11. A review of 2011 Census Travel to Work data was undertaken to identify the likely mode share of residential external trip making by all journey purposes. **Table 9** illustrates the mode share derived for the Mid Layer Super Output Area (MSOA) that the site is located within.

Table 9: 2011 Census Travel to Work Mode Share

Mode	Percentage (based upon Canterbury 012 and Census Table WU03EW)
Rail (including underground)	5.41%
Bus	8.04%
Taxi	0.84%
Motorcycle	0.48%
Car Driver	58.33%
Car Passenger	4.90%
Bicycle	4.20%
Foot	17.80%
Other	0.00%
Total	100%

5.3.12. **Tables 10** and **11** show the residential trip generation my mode for Sites B and D.

Table 10 – Site B Residential Development Trip Generation

Mode	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	26	113	138	111	56	167	632	630	1262
Taxi	2	7	9	7	4	11	39	39	79
Motorcycle	1	4	5	4	2	6	22	22	45
Car Driver	112	488	600	481	245	726	2741	2733	5474
Car Passenger	9	41	50	40	21	61	230	229	460
Cycle	8	35	43	35	18	52	197	197	394
Pedestrian	34	149	183	147	75	221	836	834	1670
Total	192	837	1029	825	421	1246	4699	4685	9384
Vehicular Total	136	499	614	492	263	742	2803	2795	5598

Table 11 – Site D Residential Development Trip Generation

Mode	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	10	43	53	42	22	64	242	241	482
Taxi	1	3	4	3	1	4	15	15	30
Motorcycle	0	2	2	1	1	2	9	9	17
Car Driver	43	187	229	184	93	277	1047	1045	2092
Car Passenger	4	16	19	15	8	23	88	88	176
Cycle	3	13	16	13	7	20	75	75	151
Pedestrian	13	57	70	56	29	85	320	319	638
Total	74	321	395	314	161	475	1796	1791	3586
Vehicular Total	44	191	235	188	96	284	1071	1068	2139

5.3.13. The resultant residential trip generation for both Sites B and D combined is shown in **Table 12**.

Table 12 – Total Residential Trip Generation (Sites B and D)

Mode	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	36	156	191	153	78	231	874	871	1745
Taxi	2	10	12	10	5	14	55	54	109
Motorcycle	1	5	7	5	3	8	31	31	62
Car Driver	155	675	830	665	338	1003	3788	3778	7566
Car Passenger	13	57	70	56	28	84	318	317	635
Cycle	11	49	60	48	24	72	273	272	545
Pedestrian	47	206	253	203	103	306	1156	1153	2309
Total	265	1157	1423	1140	580	1720	6494	6476	12970
Vehicular Total	180	690	849	680	359	1026	3874	3863	7737

5.4 Other land use trip generation

Local Centre

5.4.1. The local centre is proposed to serve the needs of the Proposed Development and as such will not attract trips external to the development except a limited number of staff and servicing trips. For the purposes of this PTA no trip generation has been assumed associated with this land use.

Primary school

5.4.2. The primary school is proposed to serve the needs of the Proposed Development. The only trips associated with this land use will therefore be staff trips and a limited number of servicing trips. A provisional external to site trip generation has been developed on the basis of provision of a two-form of entry primary school. **Table 13** presents the staff trip generation on the basis of the following assumptions:

- A two-form of entry primary school would have approximately 42 full time equivalent staff of which 69% would be teaching staff and 31% non-teaching staff
- 20% of these staff are likely to live on the development site
- 50% of teaching staff would arrive and depart in the peak hours. 90% of non-teaching would arrive in the AM peak and 10% depart in the PM peak
- External to site staff trips will be 100% via private vehicle

Table 13 – Primary School Staff Vehicular Trip Generation

	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Primary School Staff Trips	21	0	21	0	13	13	34	34	68

Public open space

5.4.3. Public open space will be provided to accommodate the needs of the development, and this will not have an external trip generation.

Development Trip Generation

5.4.4. **Table 14** illustrates the total trip generation for the proposed development.

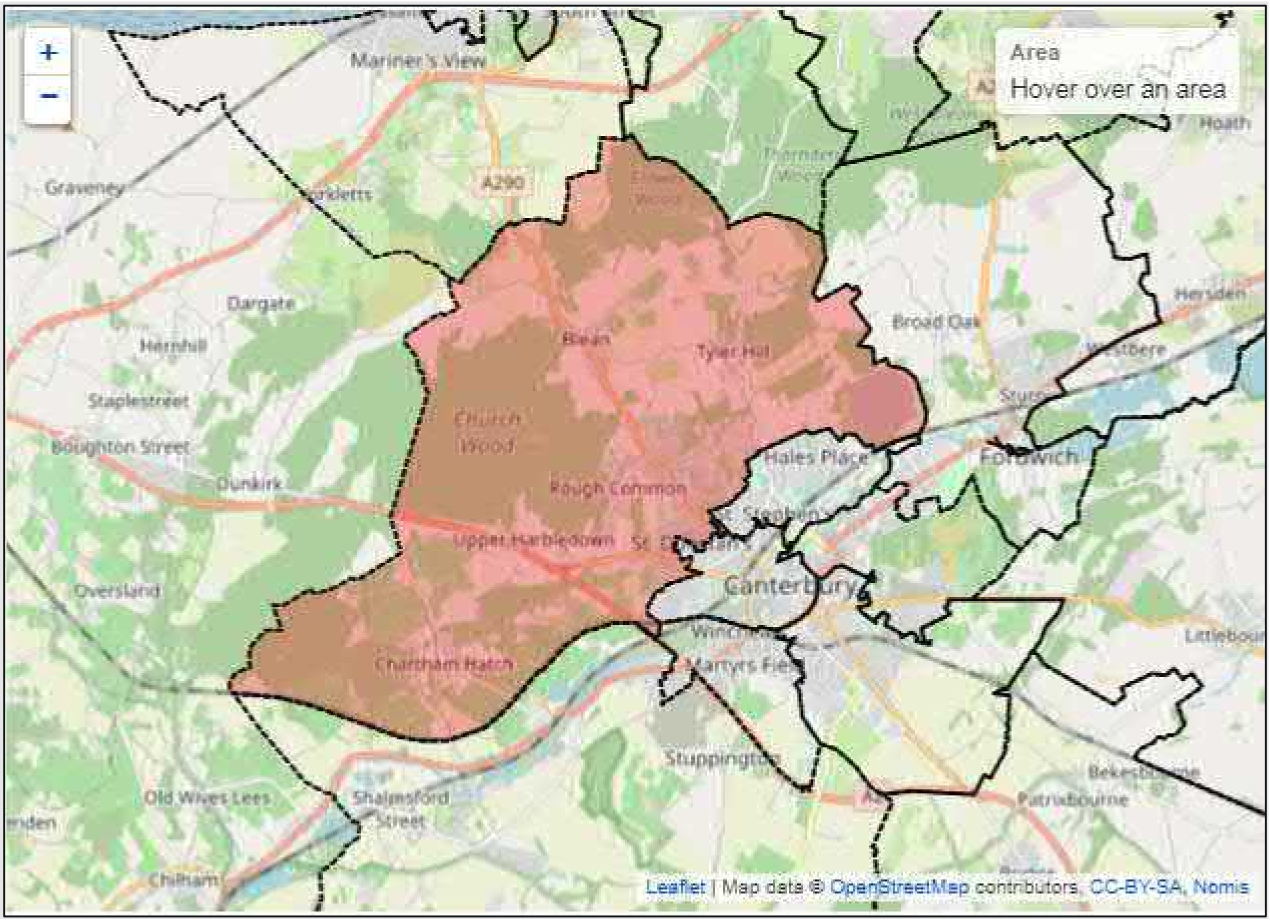
Table 14 ‑ Total Development Trip Generation

Mode	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	36	156	191	153	78	231	874	871	1745
Taxi	2	10	12	10	5	14	55	54	109
Motorcycle	1	5	7	5	3	8	31	31	62
Car Driver	176	675	851	665	351	1016	3822	3812	7634
Car Passenger	13	57	70	56	28	84	318	317	635
Cycle	11	49	60	48	24	72	273	272	545
Pedestrian	47	206	253	203	103	306	1156	1153	2309
Total	287	1157	1444	1140	593	1733	6528	6510	13038
Vehicular Total	180	690	870	680	359	1039	3908	3897	7805

5.5 Trip distribution

5.5.1. A two-stage trip distribution process has been adopted to calculate the anticipated provisional trip distribution for the trips associated with the Proposed Development. Firstly, 2011 Census, 'Location of usual residence and place of work by method of travel to work' data at the MSOA level (Table WU03EW) was extracted from the Nomis database to provide the proportion of trips to each MSOA across the Country from the MSOA used to derive the mode share for the Site (Canterbury 012), as shown in **Figure 16.**

Figure 16 - MSOA Canterbury 012 Source: Nomis



5.5.2. Data for the mode car driver was used to ensure that trip patterns replicated the mode to be used within the highway network assessment. The destination MSOA's were then ranked by the total number of people making the journey per MSOA.

5.5.3. An online journey planner was then used to find the quickest route to the destination MSOA from the Proposed Development in order to assign the trips to the network. The journey planner was set to a weekday 8am start time to ensure that peak period congestion was accounted for.

5.5.4. The initial stage of the trip distribution identified that the majority of car based trips (70%) remained within the Canterbury City Council area, the next most popular destination was identified as Dover (7%) followed by Swale (6%) and Ashford (6%). this was followed by Thanet (4%), Shepway (2%) and Maidstone (2%). Remaining destinations included Medway, Dartford, Tonbridge and Malling and Reigate.

5.5.5. Secondly due to the proposed development having multiple access points a high-level assessment was carried out to determine the site access assignments, based on direction of travel to and from the MSOA's. **Table 15** and **Table 16** show the assignments for each access from each Site.

Table 15 – Site B Site Access Assignments

Parcel B Accesses	To/From			
	North	East	South	West
1 – New Access Road	20%	75%	50%	75%
2 – Tyler Hill Road (West)	80%	0%	0%	25%
3 – Tyler Hill Road (East)	0%	25%	50%	0%

Table 16 – Parcel B Site Access Assignments

Parcel B Accesses	To/From			
	North	East	South	West
1 – New Access Road	0%	0%	80%	50%
2 – Tyler Hill Road (West)	100%	0%	10%	50%
3 – Tyler Hill Road (East)	0%	100%	10%	0%

5.5.6. Traffic flow diagrams showing the resultant trip distribution are contained within **Appendix B**.

6 Highway Network Assessment

6.1 Introduction

6.1.1. This Section provides an overview of the process followed to develop the highway network assessment along with the results.

6.2 Traffic data collection

6.2.1. Traffic surveys were undertaken at 13 key junctions agreed with KCC across Canterbury in December 2021.

6.2.2. The data collected was analysed to identify the AM and PM peak hours at each location and then the network peaks identified across the 13 junctions. This analysis (presented in **Table 17**) identified that the peak hours on the highway network within the study area were 08:00-09:00 in the AM and 16:30-17:30 in the PM.

Table 17– Peak Hour Analysis

Time Interval			Total Flow at Each Junction													Total
			Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Site 12	Site 13	
07:00	-	08:00	1422	1611	1791	517	501	990	668	213	259	782	681	1759	1133	12328
07:15	-	08:15	1806	2207	2109	733	668	1149	855	356	418	1015	858	2021	1375	15571
07:30	-	08:30	2110	2766	2300	1016	894	1372	1046	534	619	1250	1016	2242	1559	18725
07:45	-	08:45	2082	3041	2400	1191	1060	1456	1156	692	830	1383	1073	2384	1620	20369
08:00	-	09:00	1988	3147	2368	1259	1142	1474	1174	874	1068	1431	1032	2356	1617	20931
08:15	-	09:15	1818	2876	2226	1159	1104	1485	1157	854	1066	1368	969	2321	1537	19941
08:30	-	09:30	1614	2477	1993	969	960	1403	1054	763	965	1221	860	2315	1460	18055
08:45	-	09:45	1556	2117	1836	798	805	1335	960	644	790	1080	765	2225	1369	16281
09:00	-	10:00	1512	1924	1671	708	707	1264	874	469	562	916	673	2175	1288	14744
16:00	-	17:00	1863	2568	1873	971	944	1476	1056	563	660	1097	749	2371	1319	17509
16:15	-	17:15	1929	2626	1936	992	1000	1489	1034	636	749	1152	779	2400	1368	18089
16:30	-	17:30	1967	2659	1942	1006	994	1484	1039	696	825	1162	761	2469	1429	18432
16:45	-	17:45	1799	2529	1925	964	970	1487	1008	682	823	1124	732	2493	1438	17973
17:00	-	18:00	1755	2393	1951	893	938	1463	1014	684	826	1112	719	2503	1403	17653
17:15	-	18:15	1627	2241	1895	827	841	1444	978	614	751	1024	649	2435	1345	16670
17:30	-	18:30	1461	2001	1843	749	797	1448	927	552	676	936	580	2297	1214	15480
17:45	-	18:45	1369	1725	1755	647	717	1387	857	500	617	835	497	2142	1102	14149
18:00	-	19:00	1214	1529	1613	586	633	1327	757	422	531	727	424	1962	989	12714

6.2.3. Traffic flows representing the network peak hours were used within the highway network assessment. Traffic flow diagrams showing the 2021 observed network peak traffic flows are contained in **Appendix B**.

6.3 Future year assessment

6.3.1. A future forecast year for assessment of the Development Proposals was agreed with KCC as part of the scoping discussions. To ensure consistency with the local plan and allow for wider growth on the highway network a future forecast year of 2040 was used.

6.3.2. The Trip End Model Presentation Programme (TEMPro) was used to derive growth factors that would allow the 2021 traffic flows to be growthed through to a future forecast year of 2040. TEMPro is an industry standard tool used to estimate traffic growth.

6.3.3. TEMPro version 7.2c was used to create the 2040 future forecast year. The forecasts 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.

6.3.4. 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 pandemic[7] indicated that if people worked from home two days per week this could result in 14% fewer peak time trips.

6.3.5. Traffic monitoring undertaken by the DfT[8] indicated 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.

6.3.6. 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.

6.3.7. For the purposes of this assessment, the geographic area of Canterbury was selected and growth factors for car driver trips selected.

6.3.8. The growth factors used in the assessment are provided in **Table 18**.

Table 18– Traffic Growth Factors

Scenario	AM Peak	PM Peak	Daily
2021 - 2040	1.1413	1.1451	1.1631

6.3.9. Traffic flow diagrams showing the 2040 network peak traffic flows are contained in **Appendix B**.

6.4 Existing Traffic Redistribution

6.4.1. The introduction of a new access to the University along with a new highway link that connects A290 Whitstable Road with Tyler Hill Road may attract some existing traffic to

7 https://www.creds.ac.uk/wp-content/uploads/CREDS-covid-transport-report.pdf
8 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

utilise this new link. The attractiveness of this new highway link will depend upon a number of factors including speed limit, directness, junction form etc. The potential for this re-distribution has not been considered within this PTA. However, it is acknowledged that in due course, as the proposals develop further consideration to potential re-distribution should be taken into account.

6.5 Highway network assessment approach

6.5.1. Junction capacity assessments have been undertaken using the industry standard software PICADY for priority junctions and ARCADY for roundabouts as part of the ‘Junctions 10’ software package and ‘LinSig’ (version 3) for traffic signal junctions.

6.5.2. The output from PICADY and ARCADY provides a number of measurements to provide information on junction operation. These relate to the ‘Ratio of Flow to Capacity’ (RFC), maximum queue length, and delay in seconds per vehicle. The main indication of a junction’s performance is provided by the RFC for each arm. The capacity of a junction is realised when the demand flow at the entry is great enough to cause a continuous queue of vehicles to wait on the approach. This is reached when the RFC attains a value of 1 or more. A junction with an RFC of 1 or above is still able to operate but would be more sensitive to changes in queueing and delay.

6.5.3. To account for daily fluctuations in traffic flow which are generally regarded to be as much as +/- 10%, a junction operating with an RFC of 0.85 or below is considered to be performing satisfactorily[9].

6.5.4. LinSig provides a number of measurements to ascertain information of a junction’s operation. These relate to the ‘Degree of Saturation’ (DoS), mean maximum queue length, Practical Reserve Capacity (PRC) and delay in minutes per arriving vehicle. The main indication of a junction’s performance is provided by the DoS for each arm.

6.5.5. The peak capacity is realised when the demand flow at the entry is such that not all vehicles queueing at the beginning of the green phase are able to clear the junction by the end of the green phase. This is reached when the DoS attains a value of 100% or more. However, to account for daily fluctuations in traffic flow a DoS of 90% is generally used to represent when a junction begins to operate at capacity and the PRC is zero.

6.5.6. RFC and DoS are indicators by which congestion levels at a junction can be considered and are the initial means by which junction capacity is interpreted. However, interpretation of the indicators such as queueing and delay are also required to understand junction

[9] Page 109 Section 10.3. Junctions 10 User Guide (Application Guide 74), TRL, 2021

performance and to understand the likely impact of changes in traffic flow. Where a junction is congested, interpretation of a range of metrics (RFC, DoS, queueing and delay) is required and professional judgement has to be applied to determine the severity of the impact at a junction.

6.6 Baseline model development

6.6.1. The existing conditions on the highway network were determined and assessed using observed data. A series of traffic surveys were commissioned in December 2021, including Automatic Traffic Counts (ATCs), junction turning counts, and queue length surveys. The ATC data covered a two-week period, and the turning counts and queue length surveys were carried out on a mid-week day. Analysis of the ATC data that was collected over 14 days demonstrated that traffic conditions on the days the turning counts and queue length surveys were carried out were ‘typical’, i.e. no major incidents on the network were identified.

6.6.2. Junction capacity assessment models were developed for each of the 13 locations within the agreed study area by following the below approach:

- Geometries were measured by overlaying OS mastermap (1:1250 scale) mapping with aerial photography.
- The geometries were then validated through a site visit undertaken in December 2021 to observe any significant difference between the layouts identified from the desktop geometric calculations and the layouts on-site.
- Adjustments were made to the models using the on-site measurements as these were considered to be the most accurate representation of existing conditions.
- Junction capacity assessment models were then run for the AM and PM peak hours using the actual turning movements at each junction.
- Modelled queue lengths were then compared to the average maximum queue length identified from the queue length surveys on each arm of each of the junctions to identify where the modelled junction differed from that identified from the observed data collected.
- Where the observed queue varied considerably, further consideration was given to the calibration of the model.

6.6.3. Following review of the observed and modelled base junction queueing the following adjustments were made:

- *Junction 6 (A290 Whitstable Road / London Road)* - At this location the level of queuing observed was significantly greater than the modelled queue lengths. The likely reason for this is the presence of the level crossing to the south of the junction on St Dunstan’s Street. The junction capacity assessment is unable to replicate these conditions accurately as the pattern of level crossing closures can be subject to change on a daily basis owing to the variability of train operating conditions. The model was therefore not adjusted and the implications on the junction capacity assessment results are considered in more detail later in this section.

- *Junction 10 (St Stephen's Hill/Giles Lane)* – an intercept adjustment of +100 was made on Arm A – St Stephen's Hill North to reduce the modelled queue to reflect the observed queue
- *Junction 13 (Broad Oak Road/Vauxhall Road)* – an intercept adjustment of +250 was made on Arm B – Broad Oak Road East to reduce the modelled queue to reflect the observed queue.

6.7 Junction impact assessment

6.7.1. This section provides a summary of the results of the modelling undertaken at each of the key junctions identified within the study area.

Junction 1 – A290 Whitstable Road / Tyler Hill Road

6.7.2. The A290 Whitstable Road / Tyler Hill Road priority junction has been assessed using Junctions 10 (PICADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 19.** Full results are contained in **Appendix C.**

Table 19 - Junction 1 – A290 Whitstable Road / Tyler Hill Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base						
B-Tyler Hill Road	0.2	11.24	0.19	0.3	11.63	0.23
C-A290 South	0.1	4.91	0.07	0.3	4.33	0.13
2040						
B-Tyler Hill Road	0.3	12.81	0.23	0.4	13.36	0.28
C-A290 South	0.2	4.89	0.09	0.4	4.27	0.16
2040+Dev						
B-Tyler Hill Road	4.4	53.44	0.84	1.7	28.10	0.64
C-A290 South	0.4	5.22	0.17	1.7	6.94	0.48

6.7.3. The results presented in **Table 19** show that the junction operates with satisfactory performance (RFC below 0.85) in all scenarios assessed.

6.7.4. The impacts of the Proposed Development are not considered to be significant at this junction and mitigation is therefore not necessary as the junction can accommodate traffic associated with the Proposed Development.

Junction 2 – A290 Whitstable Road / Rough Common Road

6.7.5. The A290 Whitstable Road / Rough Common Road priority junction has been assessed using Junctions 10 (ARCADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 20**. Full results are contained in **Appendix C**.

Table 20 - Junction 2 – A290 Whitstable Road / Rough Common Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2020 Base						
A – A290 North	1.6	12.26	0.62	3.1	18.35	0.76
B – A290 South	14.0	79.80	0.97	2.2	18.10	0.69
C – Rough Common Road	2.2	14.10	0.70	0.6	5.71	0.39
2040						
A – A290 North	2.5	17.10	0.72	6.6	35.84	0.88
B – A290 South	54.9	255.72	1.14	4.2	31.84	0.82
C – Rough Common Road	3.8	21.29	0.80	0.8	6.44	0.45
2040+Dev						
A – A290 North	17.1	87.92	0.99	49.9	193.51	1.10
B – A290 South	93.4	513.49	1.25	56.4	335.88	1.16
C – Rough Common Road	13.1	61.39	0.96	1.4	8.78	0.58

6.7.6. The results presented in **Table 20** show that in the 2021 Base scenario, Arm B the A290 South is approaching capacity (RFC of 1) in the AM peak. In the future year of 2040, the A290 South operates at/above capacity (RFC of 1) in the AM peak in the 2040+Dev scenario, Arms A and B operate at/above capacity (RFC of 1) in both the AM and PM Peak

6.7.7. Maximum queueing and delay are 94 vehicles and 513 seconds in the AM peak on Arm B – A290 South and in the PM peak maximum queuing and delay are 56 vehicles and 336 seconds on Arm B – A290 South.

6.7.8. The junction operates at/above capacity (RFC of 1) in the 2040 scenario and the results deteriorate further in the 2040+Dev scenario. Mitigation is therefore considered for this junction and is discussed in Section 6 of this report.

Junction 3 – A2050 / Palmers Cross Hill

6.7.9. The A2050/Palmers Cross Hill is a three arm traffic signal junction. To develop a suitable base model signal specification information was obtained from KCC. This information was used to develop the staging for the junction. The junction is controlled using Microporcessor Optimised Vehicle Actuation (MOVA) which optimises the signal timings based upon demand. To calculate the cycle time the average cycle time as recorded from the CCTV data collected as part of the traffic surveys was utilised.

6.7.10. The A2050 / Palmars Cross Hill traffic signal junction has been assessed using LinSig3. The capacity assessment results for the AM and PM peaks are summarised in **Table 21**. Full results are contained in **Appendix C**.

Table 21 - Junction 3 – A2050/Palmars Cross Hill

Arm Description	AM			PM		
	Mean Max Queue (PCU)	Delay (s/PCU)	Deg Sat (%)	Mean Max Queue (PCU)	Delay (s/PCU)	Deg Sat (%)
2020 Base						
A2050 (West) Left Turn	3.0	5.8	31.2	0.8	7.2	12.9
A2050 (West) Ahead	6.6	13.8	59.9	3.8	17.1	56.0
Rough Common Road Left and Right Turn	4.2	24.4	60.0	3.2	17.4	56.0
A2050 (East) Ahead Right	3.8	11.2	59.3	5.6	11.0	58.5
2040						
A2050 (West) Left Turn	3.6	6.1	35.6	1.0	7.2	14.7
A2050 (West) Ahead	8.1	7.5	68.3	4.6	18.2	64.2
Rough Common Road Left and Right Turn	5.1	26.3	68.5	3.9	19.0	64.2
A2050 (East) Ahead Right	4.6	11.6	67.8	7.0	12.2	66.8
2040+Dev						
A2050 (West) Left Turn	3.9	6.2	38.2	2.0	8.0	27.5
A2050 (West) Ahead	10.1	22.0	78.3	5.0	20.6	70.6
Rough Common Road Left and Right Turn	7.6	24.9	78.7	5.1	20.1	72.0
A2050 (East) Ahead Right	6.1	14.9	71.4	7.5	13.6	75.1

6.7.11. The junction capacity results show that the junction operates within capacity (with a DoS of less that 100%) in all scenarios considered.

Junction 4 – A290 Whitstable Road / Giles Lane

6.7.12. The A290 Whitstable Road / Giles Lane priority junction has been assessed using Junctions 10 (PICADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 22**. Full results are contained in **Appendix C**.

Table 22 - Junction 4 – A290 Whitstable Road / Giles Lane

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base						
B - Giles Lane	1.7	30.07	0.63	3.5	45.44	0.80
C – Whitstable Road South	0.4	6.68	0.21	0.2	5.08	0.11
2040						
B - Giles Lane	3.3	54.64	0.79	10.3	114.12	0.97
C – Whitstable Road South	0.6	7.07	0.26	0.3	5.05	0.14
2040+Dev						
B - Giles Lane	9.3	150.48	0.98	27.4	280.95	1.14
C – Whitstable Road South	0.9	7.56	0.31	0.5	4.55	0.18

6.7.13. The results presented in **Table 22** show that in the 2040 scenario Arm B Giles Lane is approaching capacity (RFC of 1) in the PM peak. With the addition of the development ARM B Giles Lane is shown to operate nearing capacity (RFC of 1) in the AM peak and at/above capacity (RFC of 1) in the PM peak.

6.7.14. The junction operates at/above capacity (RFC of 1) in the 2040 scenario and the results deteriorate further in the 2040+Dev scenario. Mitigation is therefore considered for this junction and is discussed in Section 6 of this report.

Junction 5 – A290 Whitstable Road / University Road

6.7.15. The A290 Whitstable Road / University Road priority junction has been assessed using Junctions 10 (PICADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 23**. Full results are contained in **Appendix C**.

Table 23 - Junction 5 – A290 Whitstable Road / University Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base						
B - University Road (left)	0.3	8.64	0.23	0.7	11.88	0.41
B – University Road (right)	0.3	19.40	0.24	0.5	17.29	0.32
C – Whitstable Road South	1.2	13.25	0.53	0.3	9.06	0.25
2040						
B - University Road (left)	0.4	9.83	0.28	1.0	15.46	0.51
B – University Road (right)	0.4	24.81	0.31	0.7	23.05	0.42
C – Whitstable Road South	1.9	15.88	0.63	0.4	9.78	0.30
2040+Dev						
B - University Road (left)	0.5	12.78	0.34	1.4	21.07	0.59
B – University Road (right)	0.7	40.12	0.42	1.1	37.10	0.54
C – Whitstable Road South	2.9	19.77	0.70	0.5	10.32	0.32

6.7.16. The results presented in **Table 23** show that in all scenarios the junction operates within capacity (RFC of 1) in the AM peak and PM peak.

Junction 6 – A290 Whitstable Road / London Road

6.7.17. The A290 Whitstable Road / London Road mini roundabout junction has been assessed using Junctions 10 (ARCADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 24.** Full results are contained in **Appendix C.**

Table 24 - Junction 6 – A290 Whitstable Road / University Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base						
A – A290 North	3.0	16.87	0.75	2.9	16.71	0.75
B – A290 South	1.0	9.77	0.49	1.6	12.74	0.61
C – London Road	5.3	34.16	0.86	3.0	21.49	0.76
2040						
A – A290 North	5.9	30.13	0.87	5.9	31.04	0.87
B – A290 South	1.5	13.47	0.60	3.0	21.94	0.76
C – London Road	18.3	98.10	1.00	6.9	44.39	0.89
2040+Dev						
A – A290 North	53.2	187.75	1.10	18.0	78.81	0.99
B – A290 South	1.8	14.13	0.65	22.8	111.15	1.03
C – London Road	26.1	133.73	1.04	21.4	127.25	1.03

6.7.18. The results presented in **Table 24** show that in the 2040 scenario, Arm C London Road is forecast to operate at capacity (RFC of 1) in the AM peak. With the addition of the Proposed Development the A290 North and London Road both operate at/above capacity (RFC of 1) in the AM peak. In the PM Peak the A290 South and London Road are forecast to operate at/above capacity (RFC of 1) in both the AM and PM Peak.

6.7.19. The junction operates at/above capacity (RFC of 1) in the 2040 scenario and queueing and delay increase as a result of the Proposed Development. Mitigation is therefore considered for this junction and is discussed in Section 6 of this report.

Junction 7 – St Stephens Hill / Beaconsfield Road

6.7.20. The St Stephens Hill / Beaconsfield Road mini roundabout junction has been assessed using Junctions 10 (ARCADY). Stephenson's Road at this junction is exit only. The mini-roundabout module of ARCADY is not able to include an exit only arm. Therefore, the mini-roundabout has been modelled as three arms instead of four with the traffic flow for Stephen's Road added to the adjacent corresponding movement. The capacity assessment results for the AM and PM peaks are summarised in **Table 25.** Full results are contained in **Appendix C.**

Table 25 - Junction 7 – St Stephens Hill / Beaconsfield Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base						
A – St Stephens Hill North	1.5	8.83	0.60	0.6	5.55	0.37
B – St Stephens Hill South	0.8	7.96	0.43	0.8	7.09	0.45
C – Beaconsfield Road	0.8	9.66	0.46	1.0	10.34	0.50
2040						
A – St Stephens Hill North	2.2	11.65	0.70	0.7	6.18	0.43
B – St Stephens Hill South	1.0	9.56	0.51	1.1	8.25	0.52
C – Beaconsfield Road	1.2	11.88	0.54	1.4	13.12	0.59
2040+Dev						
A – St Stephens Hill North	3.9	17.99	0.80	1.0	7.15	0.50
B – St Stephens Hill South	1.3	10.82	0.57	2.2	12.76	0.69
C – Beaconsfield Road	1.4	13.40	0.58	2.2	20.38	0.70

6.7.21. The results presented in **Table 25** show that in all scenarios the junction operates within capacity (RFC of 1).

Junction 8 – Giles Lane / University Road

6.7.22. The traffic flow diagrams contained in Appendix B indicate that the Proposed Development will not have an impact on this junction. Therefore it has not been considered further within the PTA.

Junction 9 – Giles Lane / Parkwood Road

6.7.23. The traffic flow diagrams contained in Appendix B indicate that the Proposed Development will not have an impact on this junction. Therefore it has not been considered further within the PTA.

Junction 10 – St Stephens Hill / Giles Lane

6.7.24. The St Stephens Hill / Giles Lane mini roundabout junction has been assessed using Junctions 10 (ARCADY). The capacity assessment results for the AM and PM peaks are provided in **Table 26.** Full results are contained in **Appendix C.**

Table 26 - Junction 10 – St Stephens Hill / Giles Lane

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base						
A – St Stephens Hill North	9.0	42.19	0.92	0.4	5.89	0.28
B – Giles Lane (Private Road)	0.0	14.64	0.03	0.0	0.0	0.0
C – St Stephens Hill South	1.9	14.78	0.67	2.0	12.79	0.67
D – Giles Lane	0.4	5.59	0.28	1.3	10.10	0.56
2040						
A – St Stephens Hill North	41.0	146.57	1.06	0.5	6.47	0.33
B – Giles Lane (Private Road)	0.0	18.50	0.04	0.0	0.0	0.0
C – St Stephens Hill South	3.1	21.26	0.77	3.3	18.46	0.77
D – Giles Lane	0.5	6.07	0.33	2.0	13.80	0.67
2040+Dev						
A – St Stephens Hill North	118.3	471.45	1.23	0.7	7.53	0.43
B – Giles Lane (Private Road)	0.0	18.89	0.04	0.0	0.0	0.0
C – St Stephens Hill South	3.7	23.62	0.80	11.6	55.10	0.95
D – Giles Lane	0.5	6.29	0.33	2.7	19.07	0.74

6.7.25. The results presented in **Table 26** show that in the 2021 Base scenario in the AM Peak Arm A – St Stephens Hill North is reaching capacity (RFC of 1) with an RFC of 0.92. In both the 2040 and 2040+Dev scenarios, Arm A operates at/above capacity (RFC of 1).

6.7.26. The junction operates at/above capacity (RFC of 1) in the 2040 scenario and queueing and delay increase as a result of the Proposed Development. Mitigation is therefore considered for this junction and is discussed in Section 6 of this report.

Junction 11 – Calais Hill / Canterbury Hill

6.7.27. The Calais Hill / Canterbury Hill priority junction has been assessed using Junctions 10 (PICADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 27.** Full results are contained in **Appendix C.**

Table 27 - Junction 11 – Calais Hill / Canterbury Hill

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base						
B – Calais Hill (left)	0.0	6.44	0.01	0.0	0.0	0.0
B – Calais Hill (right)	0.5	16.46	0.33	0.1	11.25	0.07
C - Wood Hill	0.0	4.13	0.02	0.0	5.68	0.0
2040						
B – Calais Hill (left)	0.0	6.96	0.01	0.0	0.0	0.0
B – Calais Hill (right)	0.7	20.20	0.41	0.1	12.29	0.09
C - Wood Hill	0.0	3.89	0.02	0.0	5.65	0.0
2040+Dev						
B – Calais Hill (left)	0.2	310.42	0.24	0.0	0.0	0.0
B – Calais Hill (right)	6.9	97.36	0.92	0.3	17.94	0.35
C - Wood Hill	0.0	3.91	0.02	0.0	5.90	0.0

6.7.28. The results presented in **Table 27** show that in all scenarios the junction operates within capacity (RFC of 1) in the AM peak and PM peak. Stream B-A from Calais Hill to Wood Hill is nearing capacity (RFC of 1) in the AM Peak in the 2040+Dev scenario. However, the junction continues to operate within capacity and therefore it is not considered that mitigation is necessary.

Junction 12 – Kingsmead Road / Broad Oak Road

6.7.29. The Kingsmead Road / Broad Oak Road roundabout junction has been assessed using Junctions 10 (ARCADY). The capacity assessment results for the AM and PM peaks are provided in **Table 28.** Full results are contained in **Appendix C.**

Table 28 - Junction 12 – Kingsmead Road / Broad Oak Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base						
A – St Stephens Hill North	1.7	12.08	0.63	1.6	12.54	0.62
B – Broad Oak Road	4.2	23.00	0.82	2.3	13.95	0.70
C – Kingsmead Road	1.7	9.67	0.63	2.7	11.45	0.73
D – St Stephens Hill South	1.3	6.27	0.56	1.7	7.82	0.63
2040						
A – St Stephens Hill North	3.4	21.60	0.78	3.3	23.88	0.78
B – Broad Oak Road	16.9	79.67	0.99	5.0	28.14	0.85
C – Kingsmead Road	2.9	14.79	0.75	5.6	21.56	0.86
D – St Stephens Hill South	2.0	8.41	0.66	3.1	12.5	0.76
2040+Dev						
A – St Stephens Hill North	13.6	72.65	0.97	7.9	50.58	0.91
B – Broad Oak Road	42.3	174.85	1.09	16.9	80.83	0.99
C – Kingsmead Road	3.3	16.33	0.78	21.7	72.17	1.00
D – St Stephens Hill South	2.4	9.99	0.71	5.1	20.50	0.85

6.7.30. The results presented in **Table 28** show that in the 2040 scenario in the AM Peak Arm B – Broad Oak Road is approaching capacity (RFC of 1). In the 2040+Dev scenario in the AM Peak, Arm A – St Stephens Hill is nearing capacity (RFC of 1) and Arm B - Broad Oak Road operates at/above capacity (RFC of 1). In the PM peak Arm B – Broad Oak Road is approaching capacity (RFC of 1) and Arm C – Kingsmead Road operates at/above capacity (RFC of 1).

6.7.31. The junction operates at/above capacity (RFC of 1) in the 2040 scenario and queueing and delay increase as a result of the Proposed Development. Mitigation is therefore considered for this junction and is discussed in Section 6 of this report.

Junction 13 – Broad Oak Road / Vauxhall Road

6.7.32. The Broad Oak Road / Vauxhall Road mini roundabout junction has been assessed using Junctions 10 (PICADY). The capacity assessment results for the AM and PM peaks are provided in **Table 29.** Full results are contained in **Appendix C.**

Table 29 - Junction 13 – Broad Oak Road / Vauxhall Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base						
A – Broad Oak Road West	1.4	7.95	0.59	3.0	13.46	0.75
B – Broad Oak Road East	15.5	79.53	0.98	0.4	6.38	0.27
C – Vauxhall Road	3.3	31.89	0.78	2.9	20.14	0.75
2040						
A – Broad Oak Road West	2.1	10.09	0.68	6.3	25.63	0.88
B – Broad Oak Road East	72.8	305.26	1.19	0.5	7.32	0.33
C – Vauxhall Road	6.0	52.44	0.88	6.1	38.37	0.88
2040+Dev						
A – Broad Oak Road West	2.3	11.0	0.70	7.1	28.32	0.89
B – Broad Oak Road East	82.1	363.09	1.22	0.5	7.46	0.33
C – Vauxhall Road	6.1	52.61	0.88	8.4	50.79	0.92

6.7.33. The results presented in **Table 29** show that in the 2040 scenario in the AM Peak Arm B – Broad Oak Road East operates at/above capacity (RFC of 1).

6.7.34. The junction operates at/above capacity (RFC of 1) in the 2040 scenario and queueing and delay increase as a result of the Proposed Development. Mitigation is therefore considered for this junction and is discussed in Section 6 of this report.

Site Access

6.7.35. The Transport Strategy (August 2021) identified the potential for a traffic signal junction to be provided on Whitstable Road to act as a new access point to the development and University. Initial testing of this option using LinSig for the 2040 Base + Development Scenario indicated that the traffic signal junction layout identified would struggle to accommodate the volume of traffic anticipated. Alternative junction layouts were therefore considered. A staggered priority junction was investigated. A concept design for this staggered junction is shown on drawing 70080896-XX-XX-TP-016 contained in **Appendix D**.

6.7.36. The site access right-left staggered priority junction has been assessed using Junctions 10 (PICADY). The capacity assessment results for the AM and PM peaks are provided in **Table 30.**

Table 30 – Site Access Junction

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
			2021 Base			
Site Access Left	4.4	114.76	0.91	0.2	9.22	0.16
Site Access Right	5.1	126.71	0.90	0.7	26.08	0.41
Whitstable Road North	0.0	7.63	0.02	0.0	8.30	0.01
Whitstable Road South	0.1	15.16	0.07	0.0	12.88	0.05
Stream C-ABD	0.1	10.29	0.10	0.4	10.28	0.29

6.7.37. The results presented in **Table 30** indicate that the site access will operate within capacity (RFC of 1) in the future year of 2040 in both peak hours.

7 Mitigation

7.1 Introduction

7.1.1. This section discusses potential highway mitigation that could be delivered to reduce any impacts associated with the Proposed Development. At this stage the mitigation measures are not fixed proposals but provide a concept for the type of mitigation that could be delivered. In due course, further modelling would be required as part of any planning application and the requirement for mitigation revisited.

7.2 Junction Mitigation

Junction 2 – A290 Whitstable Road / Rough Common Road

7.2.1. The junction capacity assessment results outlined in Section 5 indicated that Junction 2 would operate at/ above capacity (RFC of 1) in the future year of 2040 with queueing and delay increased by the Proposed Development.

7.2.2. A mitigation scheme has been developed to provide widened entries on both Rough Common Road and A290 Whitstable Road.

7.2.3. 70080896-XX-XX-TP-016 **in Appendix D** illustrates the mitigation scheme for Junction 2. **Table 31** provides a summary of the modelling results both pre and post mitigation with full results contained in **Appendix C.**

Table 31 Junction 2 – A290 Whitstable Road / Rough Common Mitigate Scheme Results

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base (Pre-mitigation)						
A – A290 North	1.6	12.26	0.62	3.1	18.35	0.76
B – A290 South	14.0	79.80	0.97	2.2	18.10	0.69
C – Rough Common Road	2.2	14.10	0.70	0.6	5.71	0.39
2040 (Pre-mitigation)						
A – A290 North	2.5	17.10	0.72	6.6	35.84	0.88
B – A290 South	54.9	255.72	1.14	4.2	31.84	0.82
C – Rough Common Road	3.8	21.29	0.80	0.8	6.44	0.45
2040+Dev (Pre-mitigation)						
A – A290 North	17.1	87.92	0.99	49.9	193.51	1.10
B – A290 South	93.4	513.49	1.25	56.4	335.88	1.16
C – Rough Common Road	13.1	61.39	0.96	1.4	8.78	0.58
2040+Dev (Post-mitigation)						
A – A290 North	3.4	17.69	0.78	6.3	27.88	0.88
B – A290 South	7.8	37.49	0.90	4.9	27.35	0.84
C – Rough Common Road	11.5	54.27	0.95	1.2	7.97	0.55

7.2.4. **Table 31** illustrates that the mitigation measures address the capacity issues identified with the maximum RFC reducing to below 1 in both 2040 + Dev scenarios tested. It is therefore considered that the mitigation provides an acceptable improvement that would accommodate traffic associated with the Proposed Development.

Junction 4 – A290 Whitstable Road / Giles Lane

7.2.5. The A290 Whitstable Road / Giles Lane priority junction was assessed using Junctions 10 (PICADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 32**.

Table 32 - Junction 4 – A290 Whitstable Road / Giles Lane

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base (Pre-mitigation)						
B - Giles Lane	1.7	30.07	0.63	3.5	45.44	0.80
C – Whitstable Road South	0.4	6.68	0.21	0.2	5.08	0.11
2040 (Pre-mitigation)						
B - Giles Lane	3.3	54.64	0.79	10.3	114.12	0.97
C – Whitstable Road South	0.6	7.07	0.26	0.3	5.05	0.14
2040+Dev (Pre-mitigation)						
B - Giles Lane	9.3	150.48	0.98	27.4	280.95	1.14
C – Whitstable Road South	0.9	7.56	0.31	0.5	4.55	0.18

7.2.6. The results presented in **Table 32** indicate that with the Proposed Development in place queueing and delay is increased at this junction and the RFC is increased to above 1, indicating that the junction would operate at/above capacity. A review of the junction layout identified limited opportunities for improvement within the highway boundary. However, it should be noted that the additional queueing and delay is limited to Giles Lane only. Through traffic on Whitstable Road is therefore no constrained by this delay. It is likely that traffic on Giles Lane would divert to alternative routes such as via University Road which showed no capacity constraint. It is therefore concluded that no mitigation is required in this location. Further testing within the strategic model would be undertaken to demonstrate the impacts of re-routing traffic.

Junction 6 – A290 Whitstable Road / London Road

7.2.7. The A290 Whitstable Road / London Road mini roundabout junction was assessed using Junctions 10 (ARCADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 33.**

Table 33 - Junction 6 – A290 Whitstable Road / University Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base (Pre-mitigation)						
A – A290 North	3.0	16.87	0.75	2.9	16.71	0.75
B – A290 South	1.0	9.77	0.49	1.6	12.74	0.61
C – London Road	5.3	34.16	0.86	3.0	21.49	0.76
2040 (Pre-mitigation)						
A – A290 North	5.9	30.13	0.87	5.9	31.04	0.87
B – A290 South	1.5	13.47	0.60	3.0	21.94	0.76
C – London Road	18.3	98.10	1.00	6.9	44.39	0.89
2040+Dev (Pre-mitigation)						
A – A290 North	53.2	187.75	1.10	18.0	78.81	0.99
B – A290 South	1.8	14.13	0.65	22.8	111.15	1.03
C – London Road	26.1	133.73	1.04	21.4	127.25	1.03

7.2.8. The results presented in **Table 33** indicate that with the Proposed Development in place queueing and delay is increased at this junction and the RFC is increased to above 1, indicating that the junction would operate at/above capacity. A review of the junction layout identified limited opportunities for improvement within the highway boundary. However, it should be noted that the level crossing on St Dunstan's Street is likely to affect the level of queueing and delay that occurs in this location as well as the attractiveness of this junction for journeys within Canterbury. It is likely that drivers will either re-route or re-time their journey should delays in this location increase significantly. The other junctions in the study area that could be used by re-routing traffic (Junction 3, Junction 7 and Junction 12) did not indicate significant capacity constraints that would prevent traffic from re-routing, even once growth through to 2040 had been accounted for. As such, whilst no cost-effective solution within the highway boundary has been identified for this location at this time, further testing of this junction and the wider highway network within the strategic model is likely to identify opportunities for re-routing which will likely reduce impacts in this location.

Junction 10 – St Stephens Hill / Giles Lane Mitigation

7.2.9. The junction capacity assessment results outlined in Section 5 indicated that Junction 10 would operate at/ above capacity (RFC of 1) in the future year of 2040 with queueing and delay increased by the Proposed Development.

7.2.10. A mitigation scheme has been developed to provide widened entries on both St Stephen's Hill and Canterbury Hill.

7.2.11. 70080896-XX-XX-TP-017 **in Appendix D** illustrates the mitigation scheme for Junction 10. **Table 34** provides a summary of the modelling results both pre and post mitigation with full results contained in **Appendix C.**

Table 34 - Junction 10 – St Stephens Hill / Giles Lane Mitigation Scheme Results

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base (Pre-Mitigation)						
A – St Stephens Hill North	9.0	42.19	0.92	0.4	5.89	0.28
B – Giles Lane (Private Road)	0.0	14.64	0.03	0.0	0.0	0.0
C – St Stephens Hill South	1.9	14.78	0.67	2.0	12.79	0.67
D – Giles Lane	0.4	5.59	0.28	1.3	10.10	0.56
2040 (Pre-Mitigation)						
A – St Stephens Hill North	41.0	146.57	1.06	0.5	6.47	0.33
B – Giles Lane (Private Road)	0.0	18.50	0.04	0.0	0.0	0.0
C – St Stephens Hill South	3.1	21.26	0.77	3.3	18.46	0.77
D – Giles Lane	0.5	6.07	0.33	2.0	13.80	0.67
2040+Dev (Pre-Mitigation)						
A – St Stephens Hill North	118.3	471.45	1.23	0.7	7.53	0.43
B – Giles Lane (Private Road)	0.0	18.89	0.04	0.0	0.0	0.0
C – St Stephens Hill South	3.7	23.62	0.80	11.6	55.10	0.95
D – Giles Lane	0.5	6.29	0.33	2.7	19.07	0.74
2040+Dev (Post Mitigation)						
A – St Stephens Hill North	18.1	61.67	0.98	0.5	5.21	0.34
B – Giles Lane (Private Road)	0.1	49.36	0.11	0.0	0.0	0.00
C – St Stephens Hill South	4.5	29.37	0.83	11.6	55.10	0.95
D – Giles Lane	0.5	5.93	0.32	2.3	16.13	0.7

7.2.12. The results of the mitigation modelling indicate that the junction is expected to operate below capacity (RFC of 1) in the future year scenarios. It is therefore considered that the mitigation provides an acceptable improvement that would accommodate traffic associated with the Proposed Development.

Junction 12 – Kingsmead Road / Broad Oak Road

7.2.13. The junction capacity assessment results outlined in Section 5 indicated that Junction 12 would operate at/ above capacity (RFC of 1) in the future year of 2040 with queueing and delay increased by the Proposed Development.

7.2.14. A mitigation scheme has been developed to provide widened entries on both St Stephen's Road, Kingsmead Road and Broad Oak Road.

7.2.15. 70080896-XX-XX-TP-018 **in Appendix D** illustrates the mitigation scheme for Junction 10. **Table 35** provides a summary of the modelling results both pre and post mitigation with full results contained in **Appendix C.**

Table 35 - Junction 12 – Kingsmead Road / Broad Oak Road Mitigation Scheme Results

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base (Pre Mitigation)						
A – St Stephens Hill North	1.7	12.08	0.63	1.6	12.54	0.62
B – Broad Oak Road	4.2	23.00	0.82	2.3	13.95	0.70
C – Kingsmead Road	1.7	9.67	0.63	2.7	11.45	0.73
D – St Stephens Hill South	1.3	6.27	0.56	1.7	7.82	0.63
2040						
A – St Stephens Hill North	3.4	21.60	0.78	3.3	23.88	0.78
B – Broad Oak Road	16.9	79.67	0.99	5.0	28.14	0.85
C – Kingsmead Road	2.9	14.79	0.75	5.6	21.56	0.86
D – St Stephens Hill South	2.0	8.41	0.66	3.1	12.5	0.76
2040+Dev						
A – St Stephens Hill North	13.6	72.65	0.97	7.9	50.58	0.91
B – Broad Oak Road	42.3	174.85	1.09	16.9	80.83	0.99
C – Kingsmead Road	3.3	16.33	0.78	21.7	72.17	1.00
D – St Stephens Hill South	2.4	9.99	0.71	5.1	20.50	0.85
2040+Dev (Post Mitigation)						
A – St Stephens Hill North	13.6	72.73	0.97	8.3	52.51	0.92
B – Broad Oak Road	8.4	40.50	0.92	4.6	22.61	0.83
C – Kingsmead Road	1.3	6.31	0.57	2.7	8.93	0.73
D – St Stephens Hill South	2.5	10.12	0.72	5.5	22.19	0.86

7.2.16. The results of the mitigation modelling indicate that the junction is expected to operate below capacity (RFC of 1) in the future year scenarios. It is therefore considered that the mitigation provides an acceptable improvement that would accommodate traffic associated with the Proposed Development.

Junction 13 – Broad Oak Road / Vauxhall Road

7.2.17. The junction capacity assessment results outlined in Section 5 indicated that Junction 13 would operate at/ above capacity (RFC of 1) in the future year of 2040 with queueing and delay increased by the Proposed Development.

7.2.18. A mitigation scheme has been developed to provide widened entries on Broad Oak Road east.

7.2.19. 70080896-XX-XX-TP-019 **in Appendix D** illustrates the mitigation scheme for Junction 10. **Table 36** provides a summary of the modelling results both pre and post mitigation with full results contained in **Appendix C.**

Table 36 - Junction 13 – Broad Oak Road / Vauxhall Road Mitigation Scheme Results

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2021 Base (Pre Mitigation)						
A – Broad Oak Road West	1.4	7.95	0.59	3.0	13.46	0.75
B – Broad Oak Road East	15.5	79.53	0.98	0.4	6.38	0.27
C – Vauxhall Road	3.3	31.89	0.78	2.9	20.14	0.75
2040 (Pre Mitigation)						
A – Broad Oak Road West	2.1	10.09	0.68	6.3	25.63	0.88
B – Broad Oak Road East	72.8	305.26	1.19	0.5	7.32	0.33
C – Vauxhall Road	6.0	52.44	0.88	6.1	38.37	0.88
2040+Dev (Pre Mitigation)						
A – Broad Oak Road West	2.3	11.0	0.70	7.1	28.32	0.89
B – Broad Oak Road East	82.1	363.09	1.22	0.5	7.46	0.33
C – Vauxhall Road	6.1	52.61	0.88	8.4	50.79	0.92
2040+Dev (Post Mitigation)						
A – Broad Oak Road West	2.3	10.99	0.70	7.1	28.32	0.89
B – Broad Oak Road East	70.0	285.61	1.18	0.5	7.10	0.32
C – Vauxhall Road	6.9	58.84	0.90	8.4	50.79	0.92

7.2.20. The results of the mitigation modelling indicate that the junction is expected to operate at/above capacity (RFC of 1) on arm B in the future year scenario 2040+Dev. However, queuing and delay are reduced when compared to the 2040 Base scenario. As such, the mitigation scheme is considered appropriate to address the impacts of the Proposed Development.

8 Summary, Conclusion and Next Steps

8.1 Summary and Conclusion

8.1.1. 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.

8.1.2. This Preliminary Transport Appraisal (PTA) has been prepared to supplement the information presented in the Transport Strategy and has been developed in accordance with a scope agreed with Kent County Council (KCC) as highway authority.

8.1.3. The Proposed Development site benefits from access by a range of modes of transport and provisional strategies have been developed to ensure that access by sustainable modes is prioritised.

8.1.4. The trip generation for the Proposed Development has been developed using person trip rates and split down by land use and journey purpose allowing for consideration of internalisation. No account has been made at this stage for travel planning (Mobility as a Service) which would further reduce the vehicular trip making characteristics of the site.

8.1.5. A highway network assessment has been developed based around a manual spreadsheet-based trip generation, distribution and assignment. The impact of the Proposed Development on the highway network has then been tested at 13 locations surrounding the site that were agreed with KCC.

8.1.6. The highway network assessment identified a number of locations where the existing highway network is anticipated to operate at/above capacity in the future year of 2040 and the Proposed Development was likely to increase queueing and delay.

8.1.7. Mitigation measures were developed at four locations which effectively reduced the impacts of the Proposed Development and improved the performance of the highway network when compared to the Do Nothing scenario.

8.1.8. At two locations (Junction 4 – Whitstable Road/Giles Lane and Junction 6 – Whitstable Road/London Road) a review of the junction layouts identified limited opportunities for improvements within the highway boundary. At Junction 4 it was noted that queueing and delay was limited to the Giles Lane minor arm. Traffic would likely re-distribute to the University Road junction where no capacity issues were identified,

8.1.9. At Junction 6 it was noted that the level crossing on St Dunstan's Street is likely to affect the level of queueing and delay that occurs in this location as well as the attractiveness of this junction for journeys within Canterbury. Whilst no specific mitigation has been proposed at this location it is likely that drivers will either re-route or re-time their journey should delays in this location increase significantly. The other junctions in the study area that could be used by re-routing traffic (Junction 3, Junction 7 and Junction 12) did not indicate significant capacity constraints that would prevent traffic from re-routing, even once growth through to

2040 had been accounted for. As such, whilst no cost-effective solution within the highway boundary has been identified for either Junction 4 or Junction 6 at this time, further testing of these junctions and the wider highway network within the strategic model is likely to identify opportunities for re-routing which will likely reduce impacts to an acceptable level.

8.1.10. It was therefore concluded that the Proposed Development can be accommodated on the highway network and from a transport perspective following development of a number of mitigation and re-routing options together with sustainable travel planning measures, as such there are no reasons why the site should not be allocated within the forthcoming Local Plan.

8.2 Next steps

8.2.1. It is recommended that moving forwards as the development proposals are refined that further testing within the strategic model is undertaken to better account for the potential re-routing of existing traffic on the highway network as a result of the access strategy and further consideration is given to the proposed mitigation options, together with impacts at Junction 6.

Appendix A

TRICS Data

Filtering Summary

Land Use	03/A	RESIDENTIAL/HOUSES PRIVATELY OWNED
Selected Trip Rate Calculation Parameter Range	250-2500 DWELLS	
Actual Trip Rate Calculation Parameter Range	266-918 DWELLS	
Date Range	Minimum: 01/01/11	Maximum: 23/09/21
Parking Spaces Range	All Surveys Included	
Parking Spaces Per Dwelling Range:	Selected: 1 to 3	Actual: 0.23 to 8.75
Bedrooms Per Dwelling Range:	All Surveys Included	
Percentage of dwellings privately owned:	All Surveys Included	
Days of the week selected	Monday	1
	Tuesday	1
	Wednesday	2
	Thursday	1
Main Location Types selected	Suburban Area (PPS6 Out of Centre)	1
	Edge of Town	4
Population within 500m	All Surveys Included	
Population <1 Mile ranges selected	5,001 to 10,000	2
	10,001 to 15,000	2
	20,001 to 25,000	1
Population <5 Mile ranges selected	5,001 to 25,000	1
	25,001 to 50,000	1
	50,001 to 75,000	2
	75,001 to 100,000	1
Car Ownership <5 Mile ranges selected	0.6 to 1.0	1
	1.1 to 1.5	4
PTAL Rating	No PTAL Present	5

Calculation Reference: AUDIT-100321-211222-1258

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	KC	KENT	1 days
	WS	WEST SUSSEX	1 days
04	EAST ANGLIA		
	NF	NORFOLK	2 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NE	NORTH EAST LINCOLNSHIRE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
Actual Range: 266 to 918 (units:)
Range Selected by User: 250 to 2500 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: Selected: 1 to 3 Actual: 0.23 to 8.75

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/11 to 23/09/21

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Tuesday	1 days
Wednesday	2 days
Thursday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	5 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	1
Edge of Town	4

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	3
Out of Town	1
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3	5 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included
Population within 1 mile:

5,001 to 10,000	2 days
10,001 to 15,000	2 days
20,001 to 25,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	1 days
25,001 to 50,000	1 days
50,001 to 75,000	2 days
75,001 to 100,000	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	1 days
1.1 to 1.5	4 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	3 days
No	2 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	5 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

Site(1):	KC-03-A-06	Site area:	8.00 hect
Development Name:	MIXED HOUSES & FLATS	No of Dwellings:	363
Location:	HERNE BAY	Housing density:	73
Postcode:	CT6 6DF	Total Bedrooms:	1007
Main Location Type:	Suburban Area (PPS6 Out of Centre)	Survey Date:	27/09/17
Sub-Location Type:	Residential Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	789
Site(2):	NE-03-A-02	Site area:	12.00 hect
Development Name:	SEMI DETACHED & DETACHED	No of Dwellings:	432
Location:	SCUNTHORPE	Housing density:	133
Postcode:	DN15 8GS	Total Bedrooms:	1174
Main Location Type:	Edge of Town	Survey Date:	12/05/14
Sub-Location Type:	No Sub Category	Survey Day:	Monday
PTAL:	n/a	Parking Spaces:	432
Site(3):	NF-03-A-23	Site area:	26.43 hect
Development Name:	MIXED HOUSES & FLATS	No of Dwellings:	514
Location:	WYMONDHAM	Housing density:	27
Postcode:	NR18 9FP	Total Bedrooms:	1606
Main Location Type:	Edge of Town	Survey Date:	22/09/21
Sub-Location Type:	Out of Town	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	1274
Site(4):	NF-03-A-30	Site area:	11.77 hect
Development Name:	MIXED HOUSES	No of Dwellings:	266
Location:	SWAFFHAM	Housing density:	27
Postcode:	PE37 8JE	Total Bedrooms:	709
Main Location Type:	Edge of Town	Survey Date:	23/09/21
Sub-Location Type:	Residential Zone	Survey Day:	Thursday
PTAL:	n/a	Parking Spaces:	795
Site(5):	WS-03-A-11	Site area:	50.00 hect
Development Name:	MIXED HOUSES	No of Dwellings:	918
Location:	WEST HORSHAM	Housing density:	50
Postcode:	RH12 3LN	Total Bedrooms:	2865
Main Location Type:	Edge of Town	Survey Date:	02/04/19
Sub-Location Type:	Residential Zone	Survey Day:	Tuesday
PTAL:	n/a	Parking Spaces:	1894

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 1.62

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.068	5	499	0.298	5	499	0.366
08:00 - 09:00	5	499	0.125	5	**499**	**0.387**	5	499	0.512
09:00 - 10:00	5	499	0.134	5	499	0.145	5	499	0.279
10:00 - 11:00	5	499	0.106	5	499	0.135	5	499	0.241
11:00 - 12:00	5	499	0.119	5	499	0.133	5	499	0.252
12:00 - 13:00	5	499	0.136	5	499	0.126	5	499	0.262
13:00 - 14:00	5	499	0.141	5	499	0.139	5	499	0.280
14:00 - 15:00	5	499	0.143	5	499	0.177	5	499	0.320
15:00 - 16:00	5	499	0.256	5	499	0.172	5	499	0.428
16:00 - 17:00	5	499	0.294	5	499	0.167	5	499	0.461
17:00 - 18:00	5	**499**	**0.363**	5	499	0.172	5	**499**	**0.535**
18:00 - 19:00	5	499	0.313	5	499	0.185	5	499	0.498
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.198			2.236			4.434

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	266 - 918 (units:)
Survey date date range:	01/01/11 - 23/09/21
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	2
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TAXIS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.002	5	499	0.002	5	499	0.004
08:00 - 09:00	5	499	**0.004**	5	499	**0.004**	5	499	**0.008**
09:00 - 10:00	5	499	0.003	5	499	0.001	5	499	0.004
10:00 - 11:00	5	499	0.000	5	499	0.001	5	499	0.001
11:00 - 12:00	5	499	0.001	5	499	0.001	5	499	0.002
12:00 - 13:00	5	499	0.000	5	499	0.000	5	499	0.000
13:00 - 14:00	5	499	0.000	5	499	0.000	5	499	0.000
14:00 - 15:00	5	499	0.002	5	499	0.002	5	499	0.004
15:00 - 16:00	5	499	0.004	5	499	0.002	5	499	0.006
16:00 - 17:00	5	499	0.002	5	499	0.002	5	499	0.004
17:00 - 18:00	5	499	0.000	5	499	0.000	5	499	0.000
18:00 - 19:00	5	499	0.001	5	499	0.001	5	499	0.002
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.019			0.016			0.035

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL OGVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.000	5	499	0.000	5	499	0.000
08:00 - 09:00	5	499	0.000	5	499	0.001	5	499	0.001
09:00 - 10:00	5	499	0.001	5	499	0.001	5	499	0.002
10:00 - 11:00	5	**499**	**0.002**	5	**499**	**0.003**	5	**499**	**0.005**
11:00 - 12:00	5	499	0.002	5	499	0.002	5	499	0.004
12:00 - 13:00	5	499	0.001	5	499	0.002	5	499	0.003
13:00 - 14:00	5	499	0.000	5	499	0.000	5	499	0.000
14:00 - 15:00	5	499	0.001	5	499	0.000	5	499	0.001
15:00 - 16:00	5	499	0.001	5	499	0.000	5	499	0.001
16:00 - 17:00	5	499	0.002	5	499	0.000	5	499	0.002
17:00 - 18:00	5	499	0.000	5	499	0.001	5	499	0.001
18:00 - 19:00	5	499	0.000	5	499	0.000	5	499	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.010			0.010			0.020

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PSVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.000	5	499	0.000	5	499	0.000
08:00 - 09:00	5	499	0.001	5	499	0.001	5	499	0.002
09:00 - 10:00	5	499	0.000	5	499	0.000	5	499	0.000
10:00 - 11:00	5	499	0.000	5	499	0.000	5	499	0.000
11:00 - 12:00	5	499	0.000	5	499	0.000	5	499	0.000
12:00 - 13:00	5	499	0.000	5	499	0.000	5	499	0.000
13:00 - 14:00	5	499	0.000	5	499	0.000	5	499	0.000
14:00 - 15:00	5	499	0.000	5	499	0.000	5	499	0.000
15:00 - 16:00	5	499	0.000	5	499	0.000	5	499	0.000
16:00 - 17:00	5	499	0.000	5	499	0.000	5	499	0.000
17:00 - 18:00	5	499	0.000	5	499	0.000	5	499	0.000
18:00 - 19:00	5	499	0.000	5	499	0.000	5	499	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.001			0.001			0.002

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL CYCLISTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.002	5	499	0.007	5	499	0.009
08:00 - 09:00	5	499	0.002	5	**499**	**0.014**	5	**499**	**0.016**
09:00 - 10:00	5	499	0.002	5	499	0.002	5	499	0.004
10:00 - 11:00	5	499	0.002	5	499	0.002	5	499	0.004
11:00 - 12:00	5	499	0.002	5	499	0.002	5	499	0.004
12:00 - 13:00	5	499	0.003	5	499	0.002	5	499	0.005
13:00 - 14:00	5	499	0.002	5	499	0.001	5	499	0.003
14:00 - 15:00	5	499	0.003	5	499	0.002	5	499	0.005
15:00 - 16:00	5	499	0.007	5	499	0.002	5	499	0.009
16:00 - 17:00	5	499	0.006	5	499	0.004	5	499	0.010
17:00 - 18:00	5	**499**	**0.010**	5	499	0.006	5	499	0.016
18:00 - 19:00	5	499	0.009	5	499	0.007	5	499	0.016
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.050			0.051			0.101

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.081	5	499	0.395	5	499	0.476
08:00 - 09:00	5	499	0.141	5	**499**	**0.621**	5	499	0.762
09:00 - 10:00	5	499	0.158	5	499	0.188	5	499	0.346
10:00 - 11:00	5	499	0.137	5	499	0.176	5	499	0.313
11:00 - 12:00	5	499	0.153	5	499	0.176	5	499	0.329
12:00 - 13:00	5	499	0.171	5	499	0.160	5	499	0.331
13:00 - 14:00	5	499	0.181	5	499	0.177	5	499	0.358
14:00 - 15:00	5	499	0.185	5	499	0.225	5	499	0.410
15:00 - 16:00	5	499	0.427	5	499	0.222	5	499	0.649
16:00 - 17:00	5	499	0.451	5	499	0.231	5	499	0.682
17:00 - 18:00	5	**499**	**0.521**	5	499	0.245	5	**499**	**0.766**
18:00 - 19:00	5	499	0.443	5	499	0.275	5	499	0.718
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.049			3.091			6.140

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PEDESTRIANS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.015	5	499	0.041	5	499	0.056
08:00 - 09:00	5	499	0.030	5	**499**	**0.111**	5	**499**	**0.141**
09:00 - 10:00	5	499	0.021	5	499	0.018	5	499	0.039
10:00 - 11:00	5	499	0.019	5	499	0.021	5	499	0.040
11:00 - 12:00	5	499	0.015	5	499	0.013	5	499	0.028
12:00 - 13:00	5	499	0.018	5	499	0.016	5	499	0.034
13:00 - 14:00	5	499	0.018	5	499	0.022	5	499	0.040
14:00 - 15:00	5	499	0.031	5	499	0.030	5	499	0.061
15:00 - 16:00	5	**499**	**0.101**	5	499	0.032	5	499	0.133
16:00 - 17:00	5	499	0.039	5	499	0.019	5	499	0.058
17:00 - 18:00	5	499	0.048	5	499	0.048	5	499	0.096
18:00 - 19:00	5	499	0.048	5	499	0.050	5	499	0.098
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.403			0.421			0.824

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

MULTI-MODAL BUS/TRAM PASSENGERS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.002	5	**499**	**0.018**	5	**499**	**0.020**
08:00 - 09:00	5	499	0.000	5	499	0.004	5	499	0.004
09:00 - 10:00	5	499	0.001	5	499	0.006	5	499	0.007
10:00 - 11:00	5	499	0.001	5	499	0.002	5	499	0.003
11:00 - 12:00	5	499	0.002	5	499	0.004	5	499	0.006
12:00 - 13:00	5	499	0.002	5	499	0.002	5	499	0.004
13:00 - 14:00	5	499	0.002	5	499	0.001	5	499	0.003
14:00 - 15:00	5	499	0.003	5	499	0.003	5	499	0.006
15:00 - 16:00	5	**499**	**0.011**	5	499	0.002	5	499	0.013
16:00 - 17:00	5	499	0.010	5	499	0.001	5	499	0.011
17:00 - 18:00	5	499	0.006	5	499	0.001	5	499	0.007
18:00 - 19:00	5	499	0.006	5	499	0.000	5	499	0.006
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.046			0.044			0.090

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL RAIL PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.000	5	**499**	**0.004**	5	**499**	**0.004**
08:00 - 09:00	5	499	0.000	5	499	0.002	5	499	0.002
09:00 - 10:00	5	499	0.000	5	499	0.002	5	499	0.002
10:00 - 11:00	5	499	0.000	5	499	0.000	5	499	0.000
11:00 - 12:00	5	499	0.000	5	499	0.000	5	499	0.000
12:00 - 13:00	5	499	0.000	5	499	0.000	5	499	0.000
13:00 - 14:00	5	499	0.000	5	499	0.000	5	499	0.000
14:00 - 15:00	5	499	0.000	5	499	0.000	5	499	0.000
15:00 - 16:00	5	499	0.000	5	499	0.000	5	499	0.000
16:00 - 17:00	5	499	0.001	5	499	0.000	5	499	0.001
17:00 - 18:00	5	**499**	**0.004**	5	499	0.000	5	499	0.004
18:00 - 19:00	5	499	0.002	5	499	0.000	5	499	0.002
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.007			0.008			0.015

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL COACH PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.000	5	499	0.000	5	499	0.000
08:00 - 09:00	5	499	0.000	5	**499**	**0.001**	5	**499**	**0.001**
09:00 - 10:00	5	499	0.000	5	499	0.000	5	499	0.000
10:00 - 11:00	5	499	0.000	5	499	0.000	5	499	0.000
11:00 - 12:00	5	499	0.000	5	499	0.000	5	499	0.000
12:00 - 13:00	5	499	0.000	5	499	0.000	5	499	0.000
13:00 - 14:00	5	499	0.000	5	499	0.000	5	499	0.000
14:00 - 15:00	5	499	0.000	5	499	0.000	5	499	0.000
15:00 - 16:00	5	**499**	**0.000**	5	499	0.000	5	499	0.000
16:00 - 17:00	5	499	0.000	5	499	0.000	5	499	0.000
17:00 - 18:00	5	499	0.000	5	499	0.000	5	499	0.000
18:00 - 19:00	5	499	0.000	5	499	0.000	5	499	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.001			0.001

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PUBLIC TRANSPORT USERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.002	5	**499**	**0.021**	5	**499**	**0.023**
08:00 - 09:00	5	499	0.000	5	499	0.008	5	499	0.008
09:00 - 10:00	5	499	0.001	5	499	0.008	5	499	0.009
10:00 - 11:00	5	499	0.001	5	499	0.002	5	499	0.003
11:00 - 12:00	5	499	0.002	5	499	0.004	5	499	0.006
12:00 - 13:00	5	499	0.002	5	499	0.002	5	499	0.004
13:00 - 14:00	5	499	0.003	5	499	0.001	5	499	0.004
14:00 - 15:00	5	499	0.004	5	499	0.003	5	499	0.007
15:00 - 16:00	5	**499**	**0.012**	5	499	0.002	5	499	0.014
16:00 - 17:00	5	499	0.011	5	499	0.001	5	499	0.012
17:00 - 18:00	5	499	0.010	5	499	0.002	5	499	0.012
18:00 - 19:00	5	499	0.007	5	499	0.000	5	499	0.007
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.055			0.054			0.109

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 1.62

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.100	5	499	0.464	5	499	0.564
08:00 - 09:00	5	499	0.173	5	**499**	**0.754**	5	**499**	**0.927**
09:00 - 10:00	5	499	0.181	5	499	0.216	5	499	0.397
10:00 - 11:00	5	499	0.159	5	499	0.202	5	499	0.361
11:00 - 12:00	5	499	0.172	5	499	0.195	5	499	0.367
12:00 - 13:00	5	499	0.194	5	499	0.181	5	499	0.375
13:00 - 14:00	5	499	0.205	5	499	0.202	5	499	0.407
14:00 - 15:00	5	499	0.223	5	499	0.260	5	499	0.483
15:00 - 16:00	5	499	0.546	5	499	0.259	5	499	0.805
16:00 - 17:00	5	499	0.507	5	499	0.255	5	499	0.762
17:00 - 18:00	5	**499**	**0.590**	5	499	0.300	5	499	0.890
18:00 - 19:00	5	499	0.507	5	499	0.333	5	499	0.840
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.557			3.621			7.178

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL CARS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.058	5	499	0.265	5	499	0.323
08:00 - 09:00	5	499	0.106	5	**499**	**0.360**	5	499	0.466
09:00 - 10:00	5	499	0.115	5	499	0.130	5	499	0.245
10:00 - 11:00	5	499	0.087	5	499	0.112	5	499	0.199
11:00 - 12:00	5	499	0.098	5	499	0.111	5	499	0.209
12:00 - 13:00	5	499	0.121	5	499	0.112	5	499	0.233
13:00 - 14:00	5	499	0.126	5	499	0.119	5	499	0.245
14:00 - 15:00	5	499	0.125	5	499	0.160	5	499	0.285
15:00 - 16:00	5	499	0.232	5	499	0.154	5	499	0.386
16:00 - 17:00	5	499	0.263	5	499	0.150	5	499	0.413
17:00 - 18:00	5	**499**	**0.336**	5	499	0.157	5	**499**	**0.493**
18:00 - 19:00	5	499	0.289	5	499	0.168	5	499	0.457
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.956			1.998			3.954

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL LGVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.008	5	**499**	**0.030**	5	499	0.038
08:00 - 09:00	5	499	0.012	5	499	0.018	5	499	0.030
09:00 - 10:00	5	499	0.015	5	499	0.012	5	499	0.027
10:00 - 11:00	5	499	0.016	5	499	0.018	5	499	0.034
11:00 - 12:00	5	499	0.018	5	499	0.018	5	499	0.036
12:00 - 13:00	5	499	0.014	5	499	0.012	5	499	0.026
13:00 - 14:00	5	499	0.014	5	499	0.020	5	499	0.034
14:00 - 15:00	5	499	0.015	5	499	0.014	5	499	0.029
15:00 - 16:00	5	499	0.016	5	499	0.014	5	499	0.030
16:00 - 17:00	5	**499**	**0.025**	5	499	0.014	5	**499**	**0.039**
17:00 - 18:00	5	499	0.025	5	499	0.013	5	499	0.038
18:00 - 19:00	5	499	0.019	5	499	0.013	5	499	0.032
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.197			0.196			0.393

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL MOTOR CYCLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

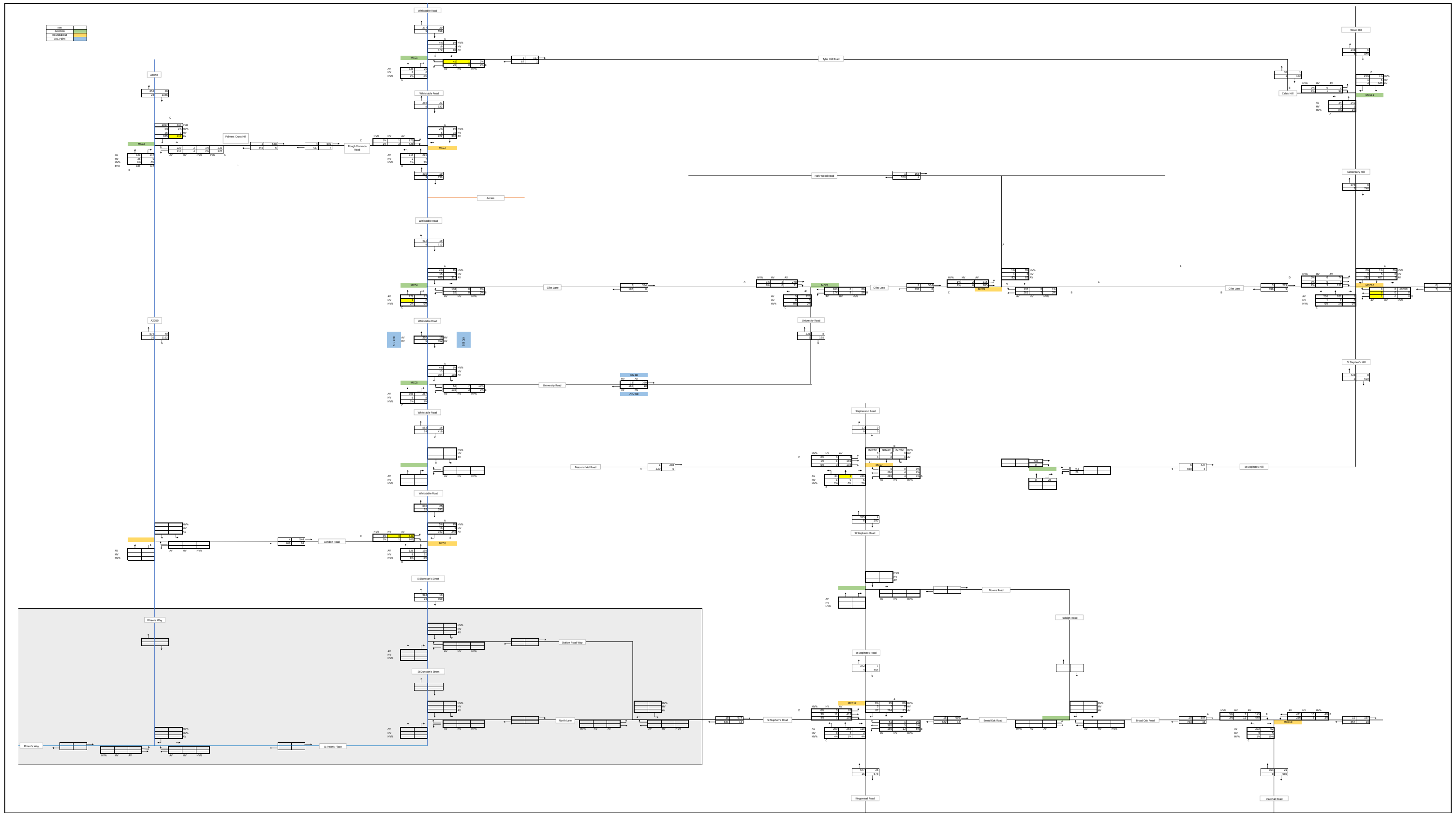
	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.000	5	499	0.001	5	499	0.001
08:00 - 09:00	5	499	0.000	5	**499**	**0.003**	5	499	0.003
09:00 - 10:00	5	499	0.000	5	499	0.000	5	499	0.000
10:00 - 11:00	5	499	0.000	5	499	0.001	5	499	0.001
11:00 - 12:00	5	499	0.000	5	499	0.001	5	499	0.001
12:00 - 13:00	5	499	0.000	5	499	0.001	5	499	0.001
13:00 - 14:00	5	499	0.000	5	499	0.000	5	499	0.000
14:00 - 15:00	5	499	0.000	5	499	0.000	5	499	0.000
15:00 - 16:00	5	499	0.002	5	499	0.001	5	499	0.003
16:00 - 17:00	5	499	0.002	5	499	0.001	5	499	0.003
17:00 - 18:00	5	499	0.002	5	499	0.001	5	499	0.003
18:00 - 19:00	5	**499**	**0.004**	5	499	0.003	5	**499**	**0.007**
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.010			0.013			0.023

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

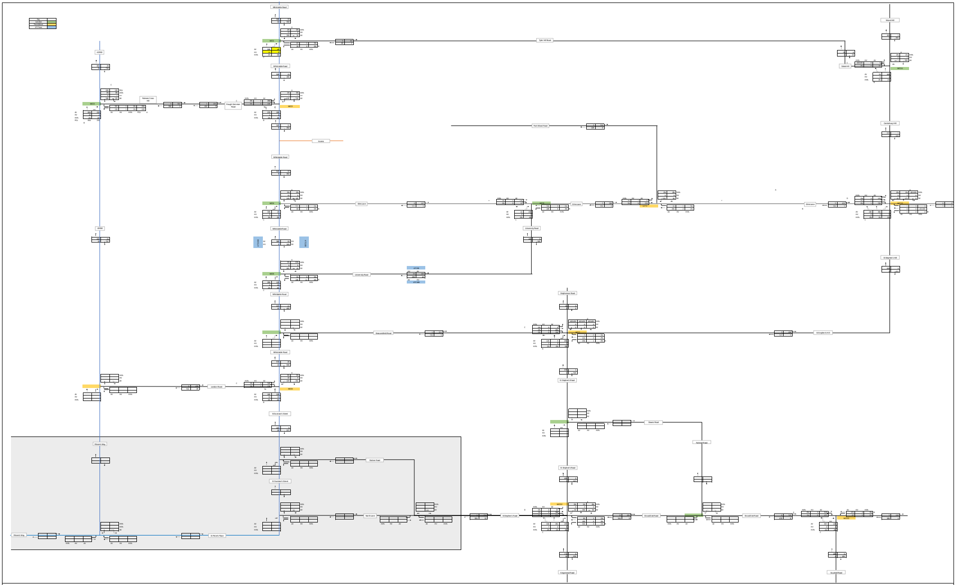
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Appendix B

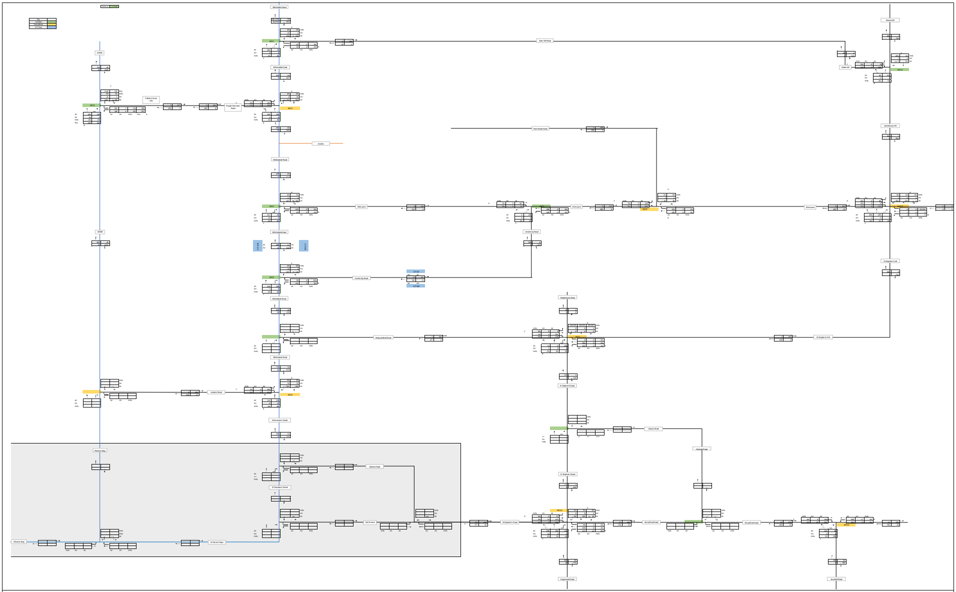
Traffic Flow Diagrams



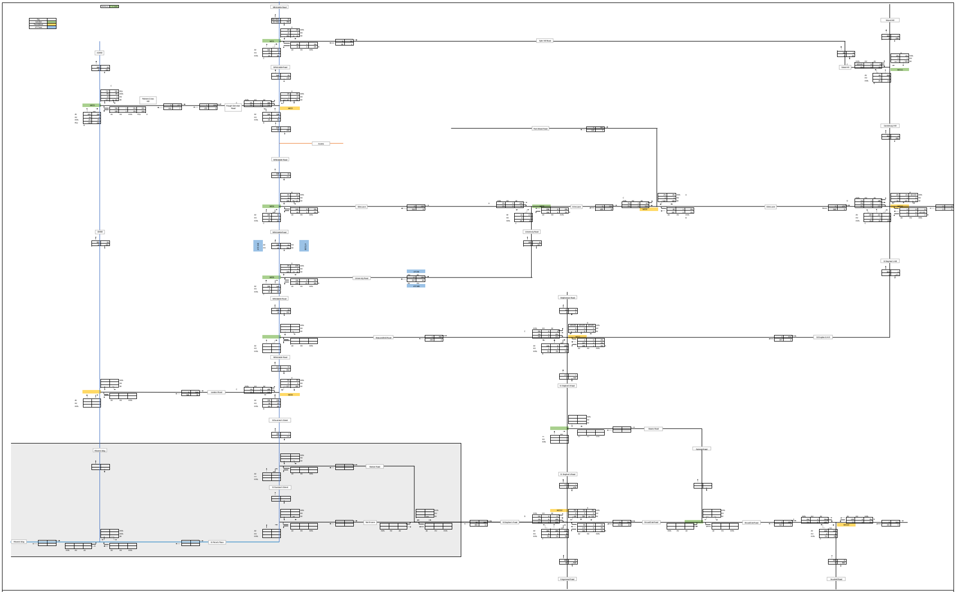
University of Kent, Canterbury
Traffic Flow Diagrams
2021 Base
AM Peak Hour (08:00 - 09:00)



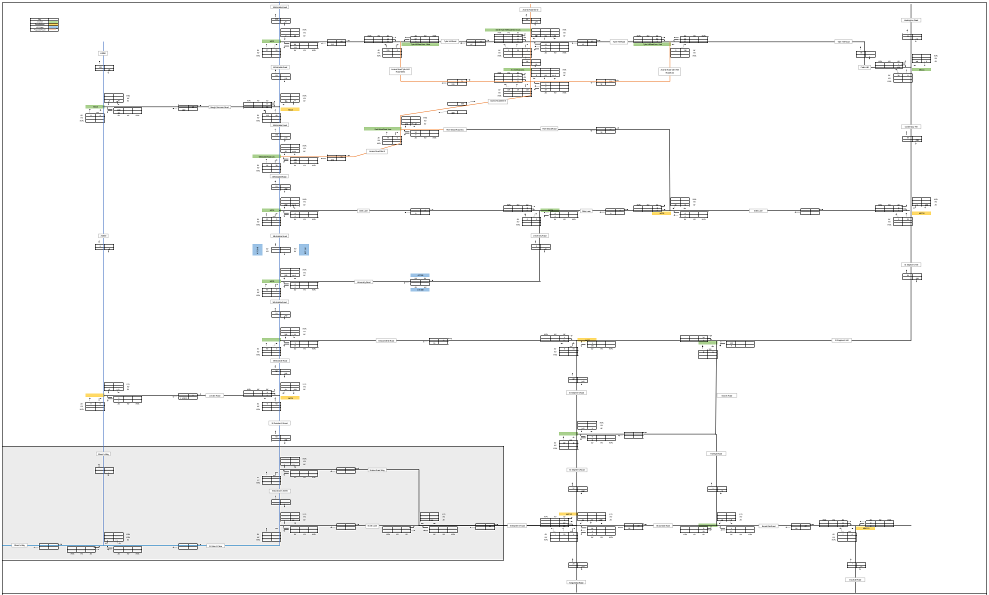
University of Kent, Canterbury
Traffic Flow Diagrams
2021 Base
PM Peak Hour (17:00 - 18:00)



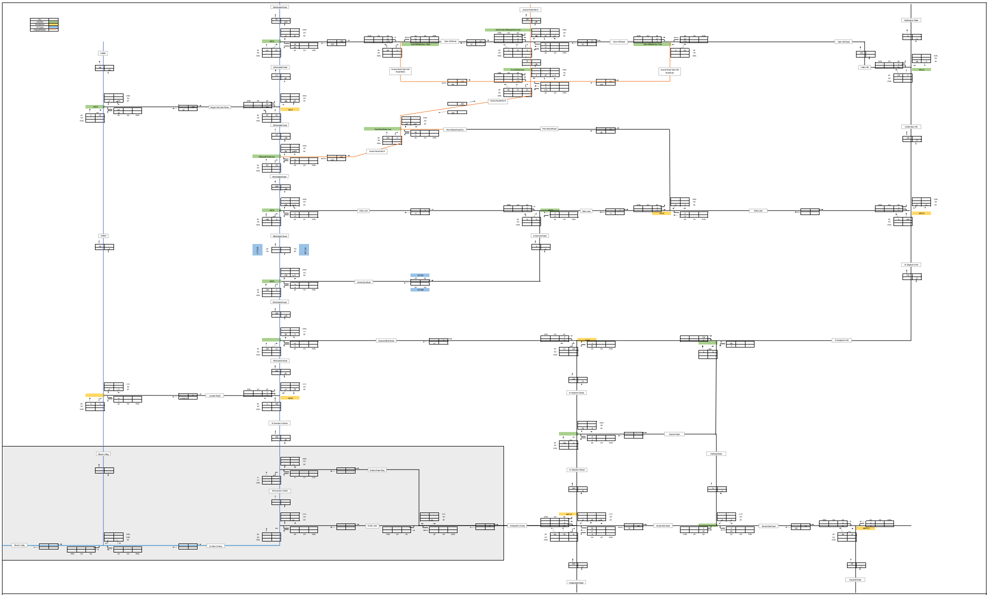
University of Kent, Canterbury
Traffic Flow Diagrams
2043 Base
AM Peak Hour (08:00 - 09:00)



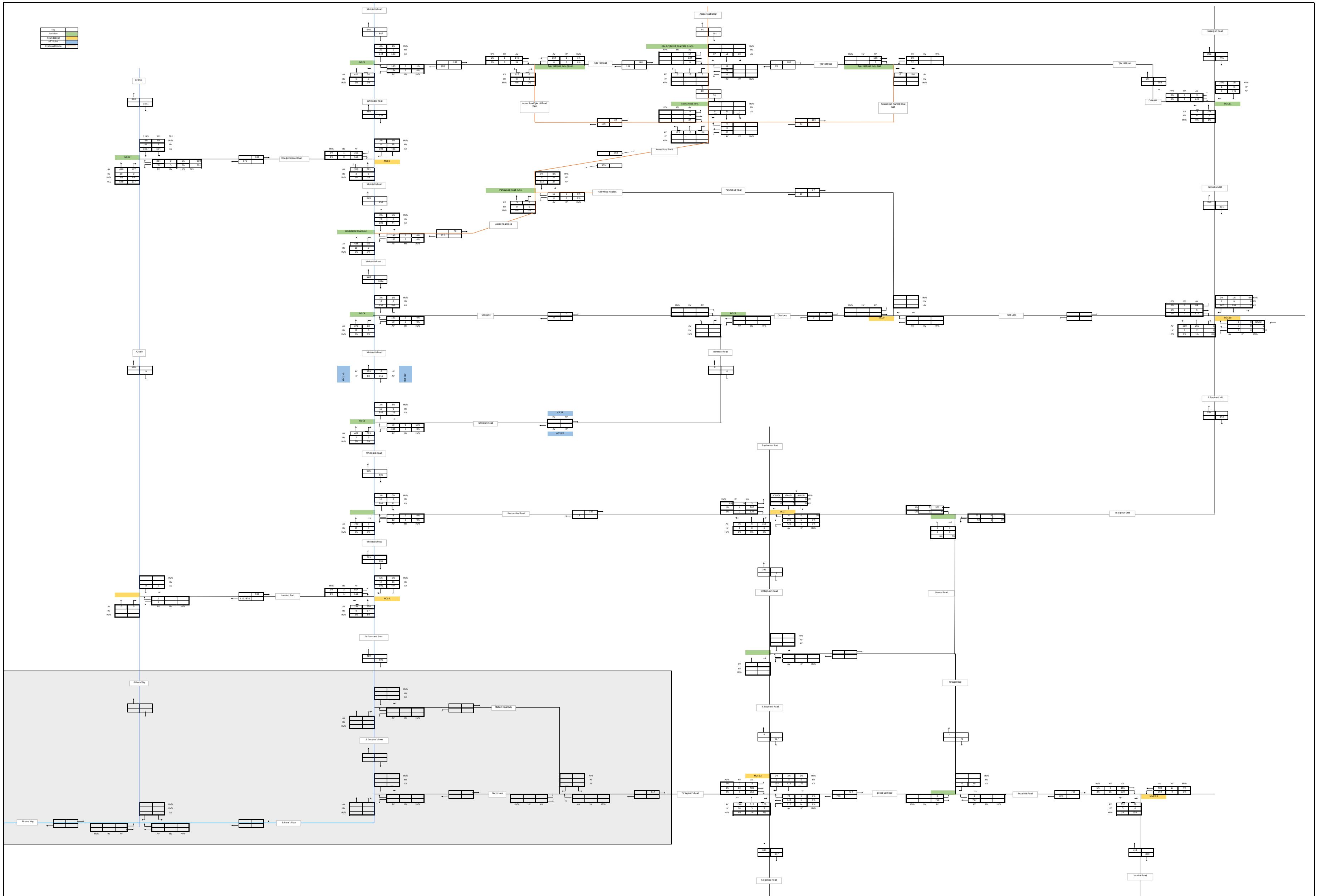
University of Kent, Canterbury
Traffic Flow Diagrams
[illegible] Base
PM Peak Hour (17:00 - 18:00)



University of Kent, Canterbury
Traffic Flow Diagrams
Development Trips (Parcel B and C)
AM Peak Hour (08:00 - 09:00)



University of Kent, Canterbury
Traffic Flow Diagrams
Development Trips (Parcel B and C)
PM Peak Hour (17:00 - 18:00)

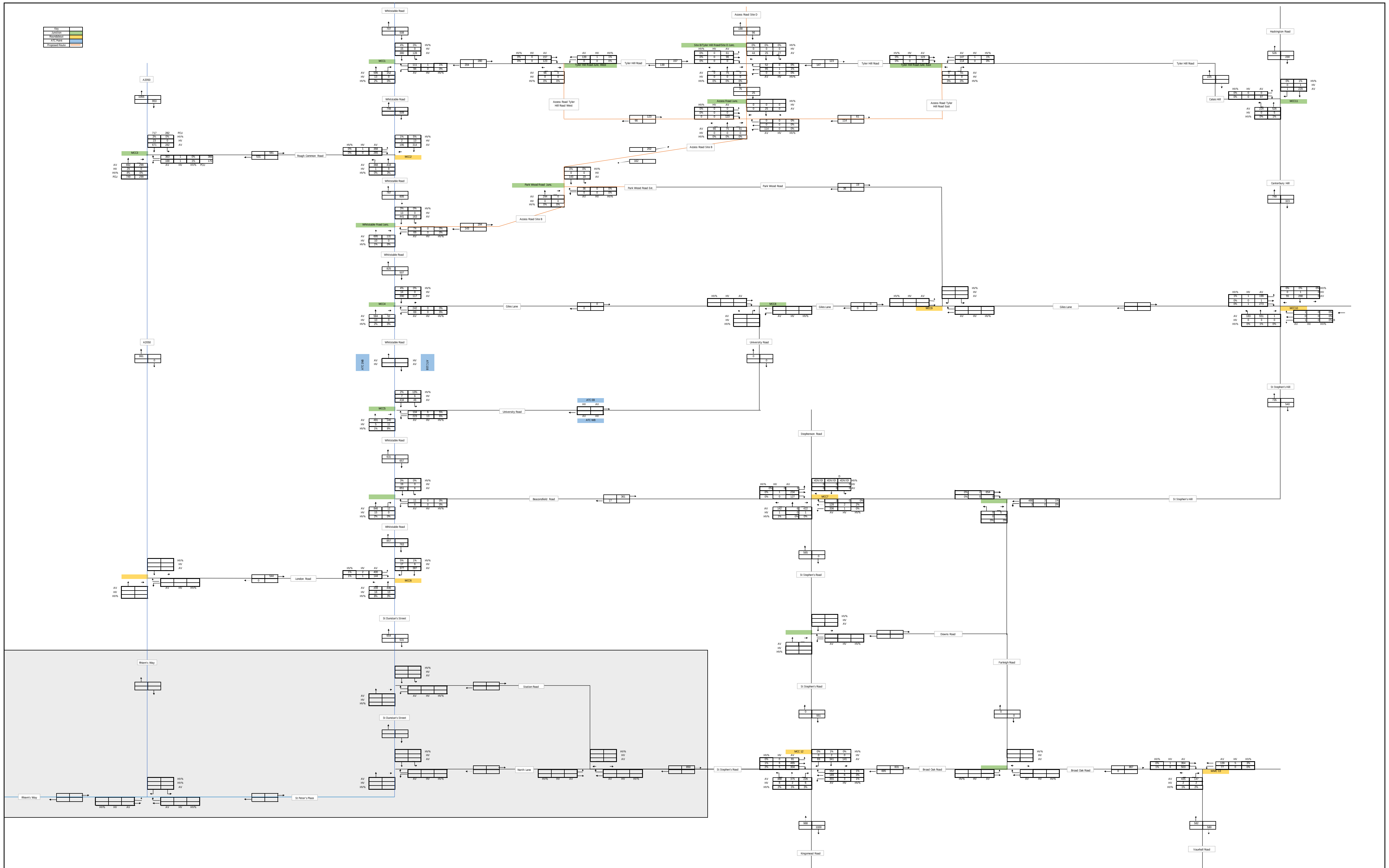


University of Kent, Canterbury

Traffic Flow Diagrams

2040 + Development

AM Peak Hour (08:00 - 09:00)



University of Kent, Canterbury
Traffic Flow Diagrams
2040 + Development
PM Peak Hour (17:00 - 18:00)

Appendix C

Junction Capacity Assessments

Junctions 10

PICADY 10 - Priority Intersection Module

For sales and distribution information, program advice and maintenance, contact TRL Software:
+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

Filename: Junction 1 - A290_Tyler Hill Road.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 04/02/2022 09:30:07

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2021													
Stream B-AC	D1	0.2	11.24	0.19	B	1.00	76 % [Stream B-AC]	D2	0.3	11.63	0.23	B	1.43	73 % [Stream B-AC]
Stream C-AB		0.1	4.91	0.07	A				0.3	4.33	0.13	A		
	2040													
Stream B-AC	D3	0.3	12.81	0.23	B	1.13	55 % [Stream B-AC]	D4	0.4	13.36	0.28	B	1.63	51 % [Stream B-AC]
Stream C-AB		0.2	4.89	0.09	A				0.4	4.27	0.16	A		
	2040+Dev													
Stream B-AC	D5	4.4	53.44	0.84	F	11.07	-7 % [Stream B-AC]	D6	1.7	28.10	0.64	D	5.78	5 % [Stream B-AC]
Stream C-AB		0.4	5.22	0.17	A				1.7	6.94	0.48	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A290/Tyler Hill Road Priority
Location	Blean
Site number	
Date	23/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓
D3	2040	AM	ONE HOUR	07:45	09:15	15	✓	✓
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2021, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D1 - 2021, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.00	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	76	Stream B-AC	1.00	A

Arms

Arms

Arm	Name	Description	Arm type
A	A290 North		Major
B	Tyler Hill Road		Minor
C	A290 South		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	7.03			235.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.95	46	19

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	549	0.096	0.242	0.152	0.346
B-C	696	0.102	0.257	-	-
C-B	710	0.263	0.263	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	558	100.000
B		ONE HOUR	✓	67	100.000
C		ONE HOUR	✓	365	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	88	470
	B	41	0	26
	C	336	29	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	4
	B	2	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.19	11.24	0.2	1.1	B	67	67
C-AB	0.07	4.91	0.1	0.9	A	51	51
C-A						314	314
A-B						88	88
A-C						470	470

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	60	15	431	0.140	60	0.1	0.2	9.698	A
C-AB	43	11	777	0.055	43	0.1	0.1	4.896	A
C-A	285	71			285				
A-B	79	20			79				
A-C	423	106			423				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	74	18	394	0.187	74	0.2	0.2	11.218	B
C-AB	60	15	799	0.075	59	0.1	0.1	4.865	A
C-A	342	86			342				
A-B	97	24			97				
A-C	517	129			517				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	74	18	394	0.187	74	0.2	0.2	11.237	B
C-AB	60	15	799	0.075	60	0.1	0.1	4.872	A
C-A	342	86			342				
A-B	97	24			97				
A-C	517	129			517				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	60	15	431	0.140	60	0.2	0.2	9.722	A
C-AB	43	11	778	0.055	43	0.1	0.1	4.907	A
C-A	285	71			285				
A-B	79	20			79				
A-C	423	106			423				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.16	0.00	0.00	0.16	0.16			N/A	N/A
C-AB	0.09	0.03	0.25	0.45	0.48			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.23	0.03	0.26	0.46	0.49			N/A	N/A
C-AB	0.13	0.03	0.27	0.48	0.89			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.23	0.03	0.28	0.63	1.07			N/A	N/A
C-AB	0.13	0.00	0.00	0.13	0.13			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.16	0.00	0.00	0.16	0.16			N/A	N/A
C-AB	0.09	0.00	0.00	0.09	0.09			N/A	N/A

2021, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D2 - 2021, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.43	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	73	Stream B-AC	1.43	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	344	100.000
B		ONE HOUR	✓	83	100.000
C		ONE HOUR	✓	556	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	36	308
	B	57	0	26
	C	508	48	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	4
	B	2	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.23	11.63	0.3	1.4	B	83	83
C-AB	0.13	4.33	0.3	1.5	A	105	105
C-A						451	451
A-B						36	36
A-C						308	308

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	75	19	435	0.172	74	0.2	0.2	9.979	A
C-AB	86	21	921	0.093	86	0.1	0.2	4.312	A
C-A	414	103			414				
A-B	32	8			32				
A-C	277	69			277				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	91	23	401	0.228	91	0.2	0.3	11.601	B
C-AB	125	31	974	0.128	124	0.2	0.3	4.238	A
C-A	487	122			487				
A-B	40	10			40				
A-C	339	85			339				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	91	23	401	0.228	91	0.3	0.3	11.630	B
C-AB	125	31	974	0.128	125	0.3	0.3	4.244	A
C-A	487	122			487				
A-B	40	10			40				
A-C	339	85			339				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	75	19	435	0.172	75	0.3	0.2	10.011	B
C-AB	86	22	921	0.094	87	0.3	0.2	4.326	A
C-A	414	103			414				
A-B	32	8			32				
A-C	277	69			277				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.20	0.00	0.00	0.20	0.20			N/A	N/A
C-AB	0.19	0.00	0.00	0.19	0.19			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.29	0.03	0.26	0.46	0.49			N/A	N/A
C-AB	0.31	0.03	0.27	0.49	1.48			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.29	0.03	0.31	1.04	1.35			N/A	N/A
C-AB	0.31	0.00	0.00	0.31	0.31			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.21	0.00	0.00	0.21	0.21			N/A	N/A
C-AB	0.19	0.00	0.00	0.19	0.19			N/A	N/A

2040, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D3 - 2040, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.13	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	55	Stream B-AC	1.13	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D3	2040	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	636	100.000
B		ONE HOUR	✓	77	100.000
C		ONE HOUR	✓	416	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	100	536
	B	47	0	30
	C	383	33	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	4
	B	2	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.23	12.81	0.3	1.4	B	77	77
C-AB	0.09	4.89	0.2	1.2	A	64	64
C-A						352	352
A-B						100	100
A-C						536	536

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	69	17	408	0.169	69	0.2	0.2	10.599	B
C-AB	53	13	791	0.067	53	0.1	0.1	4.877	A
C-A	321	80			321				
A-B	90	22			90				
A-C	482	120			482				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	85	21	366	0.232	84	0.2	0.3	12.773	B
C-AB	75	19	817	0.092	75	0.1	0.2	4.849	A
C-A	383	96			383				
A-B	110	28			110				
A-C	590	148			590				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	85	21	366	0.232	85	0.3	0.3	12.811	B
C-AB	75	19	817	0.092	75	0.2	0.2	4.858	A
C-A	383	96			383				
A-B	110	28			110				
A-C	590	148			590				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	69	17	408	0.170	70	0.3	0.2	10.639	B
C-AB	53	13	791	0.067	53	0.2	0.1	4.890	A
C-A	321	80			321				
A-B	90	22			90				
A-C	482	120			482				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.20	0.00	0.00	0.20	0.20			N/A	N/A
C-AB	0.11	0.03	0.25	0.46	0.48			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.30	0.03	0.26	0.46	0.49			N/A	N/A
C-AB	0.18	0.03	0.27	0.49	1.16			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.30	0.03	0.31	1.06	1.37			N/A	N/A
C-AB	0.18	0.00	0.00	0.18	0.18			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.21	0.00	0.00	0.21	0.21			N/A	N/A
C-AB	0.12	0.00	0.00	0.12	0.12			N/A	N/A

2040, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D4 - 2040, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.63	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	51	Stream B-AC	1.63	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	394	100.000
B		ONE HOUR	✓	95	100.000
C		ONE HOUR	✓	637	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	41	353
	B	65	0	30
	C	582	55	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	4
	B	2	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.28	13.36	0.4	1.5	B	95	95
C-AB	0.16	4.27	0.4	1.1	A	137	137
C-A						500	500
A-B						41	41
A-C						353	353

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	85	21	414	0.207	85	0.2	0.3	10.954	B
C-AB	110	27	955	0.115	109	0.2	0.3	4.257	A
C-A	463	116			463				
A-B	37	9			37				
A-C	317	79			317				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	105	26	374	0.280	104	0.3	0.4	13.312	B
C-AB	164	41	1018	0.161	164	0.3	0.4	4.217	A
C-A	537	134			537				
A-B	45	11			45				
A-C	389	97			389				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	105	26	374	0.280	105	0.4	0.4	13.364	B
C-AB	165	41	1018	0.162	165	0.4	0.4	4.224	A
C-A	537	134			537				
A-B	45	11			45				
A-C	389	97			389				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	85	21	413	0.207	86	0.4	0.3	11.012	B
C-AB	110	28	956	0.115	111	0.4	0.3	4.274	A
C-A	462	116			462				
A-B	37	9			37				
A-C	317	79			317				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.26	0.00	0.00	0.26	0.26			N/A	N/A
C-AB	0.26	0.00	0.00	0.26	0.26			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.38	0.03	0.26	0.46	0.49			N/A	N/A
C-AB	0.42	0.03	0.27	0.49	1.11			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.38	0.03	0.31	1.27	1.48			N/A	N/A
C-AB	0.43	0.00	0.00	0.43	0.43			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.26	0.00	0.00	0.26	0.26			N/A	N/A
C-AB	0.27	0.00	0.00	0.27	0.27			N/A	N/A

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D5 - 2040+Dev, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		11.07	B

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-7	Stream B-AC	11.07	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	667	100.000
B		ONE HOUR	✓	289	100.000
C		ONE HOUR	✓	469	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	123	544
	B	135	0	154
	C	411	58	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	4
	B	1	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.84	53.44	4.4	23.7	F	289	289
C-AB	0.17	5.22	0.4	1.3	A	119	119
C-A						350	350
A-B						123	123
A-C						544	544

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	260	65	426	0.610	257	0.9	1.5	21.072	C
C-AB	97	24	802	0.121	97	0.2	0.3	5.104	A
C-A	325	81			325				
A-B	111	28			111				
A-C	489	122			489				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	318	80	380	0.837	308	1.5	4.0	44.959	E
C-AB	141	35	832	0.169	140	0.3	0.4	5.205	A
C-A	376	94			376				
A-B	135	34			135				
A-C	599	150			599				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	318	80	380	0.837	316	4.0	4.4	53.437	F
C-AB	141	35	833	0.169	141	0.4	0.4	5.215	A
C-A	375	94			375				
A-B	135	34			135				
A-C	599	150			599				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	260	65	426	0.610	271	4.4	1.7	24.672	C
C-AB	97	24	803	0.121	98	0.4	0.3	5.125	A
C-A	324	81			324				
A-B	111	28			111				
A-C	489	122			489				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.48	0.09	1.12	2.92	3.93			N/A	N/A
C-AB	0.25	0.00	0.00	0.25	0.25			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	3.95	0.05	0.50	11.23	18.90			N/A	N/A
C-AB	0.40	0.03	0.27	0.48	1.31			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	4.40	0.04	0.38	11.14	23.74			N/A	N/A
C-AB	0.40	0.03	0.30	0.90	1.20			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.66	0.04	0.40	4.42	7.83			N/A	N/A
C-AB	0.26	0.00	0.00	0.26	0.26			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D6 - 2040+Dev, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		5.78	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	5	Stream B-AC	5.78	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	508	100.000
B		ONE HOUR	✓	205	100.000
C		ONE HOUR	✓	748	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	128	380
	B	111	0	94
	C	596	152	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	4
	B	1	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.64	28.10	1.7	8.0	D	205	205
C-AB	0.48	6.94	1.7	8.7	A	402	402
C-A						346	346
A-B						128	128
A-C						380	380

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	184	46	404	0.456	183	0.5	0.8	16.200	C
C-AB	318	79	945	0.336	316	0.6	0.9	5.739	A
C-A	355	89			355				
A-B	115	29			115				
A-C	342	85			342				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	226	56	353	0.639	222	0.8	1.6	26.799	D
C-AB	484	121	1008	0.480	481	0.9	1.7	6.848	A
C-A	340	85			340				
A-B	141	35			141				
A-C	418	105			418				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	226	56	353	0.640	225	1.6	1.7	28.101	D
C-AB	486	121	1010	0.481	486	1.7	1.7	6.942	A
C-A	338	84			338				
A-B	141	35			141				
A-C	418	105			418				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	184	46	403	0.457	188	1.7	0.9	16.929	C
C-AB	320	80	947	0.338	323	1.7	0.9	5.834	A
C-A	353	88			353				
A-B	115	29			115				
A-C	342	85			342				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.81	0.14	0.91	1.42	1.49			N/A	N/A
C-AB	0.87	0.55	1.00	1.40	1.45			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.64	0.03	0.30	2.23	7.98			N/A	N/A
C-AB	1.66	0.03	0.27	1.66	3.22			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.70	0.03	0.30	1.79	7.81			N/A	N/A
C-AB	1.70	0.04	0.35	4.19	8.73			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.87	0.05	0.50	1.78	2.58			N/A	N/A
C-AB	0.92	0.55	1.00	1.40	1.45			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.0.1.1519

Filename: Junction 2 - A290_Rough Common Road.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 04/02/2022 09:36:18

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2021													
Arm B	D1	1.6	12.26	0.62	B	38.51	-10 % [Arm C]	D2	3.1	18.35	0.76	C	14.74	14 % [Arm B]
Arm C		14.0	79.80	0.97	F				2.2	18.10	0.69	C		
Arm A		2.2	14.10	0.70	B				0.6	5.71	0.39	A		
	2040													
Arm B	D3	2.5	17.10	0.72	C	109.02	-21 % [Arm C]	D4	6.6	35.84	0.88	E	26.44	0 % [Arm B]
Arm C		54.9	255.72	1.14	F				4.2	31.84	0.82	D		
Arm A		3.8	21.29	0.80	C				0.8	6.44	0.45	A		
	2040+Dev													
Arm B	D5	17.1	87.92	0.99	F	223.36	-27 % [Arm C]	D6	49.9	193.51	1.10	F	189.10	-23 % [Arm C]
Arm C		93.4	513.49	1.25	F				56.4	335.88	1.16	F		
Arm A		13.1	61.39	0.96	F				1.4	8.78	0.58	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A290/Rough Common Road
Location	Rough Common
Site number	
Date	23/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓
D3	2040	AM	ONE HOUR	07:45	09:15	15		✓
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2021, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D1 - 2021, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	38.51	E

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-10	Arm C	38.51	E

Arms

Arms

Arm	Name	Description
B	A290 Whitstable Road South	
C	Rough Common Road	
A	A290 Whitstable Road North	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
B	3.70	3.35	4.10	3.1	12.00	9.50	0.0	✓
C	3.45	3.20	4.00	1.0	14.00	10.40	0.0	✓
A	3.30	3.25	4.00	9.8	16.35	17.70	0.0	✓

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
B	0.522	912
C	0.510	809
A	0.620	1159

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	430	100.000
C		ONE HOUR	✓	599	100.000
A		ONE HOUR	✓	532	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	215	215
	C	426	0	173
	A	310	222	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	1	3
	C	1	0	1
	A	5	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.62	12.26	1.6	3.5	B	430	430
C	0.97	79.80	14.0	57.0	F	599	599
A	0.70	14.10	2.2	8.2	B	532	532

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	387	97	199	790	0.489	385	657	0.7	0.9	8.868	A
C	538	135	193	700	0.769	533	392	1.6	3.0	20.782	C
A	478	120	379	888	0.538	477	347	0.8	1.1	8.708	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	473	118	243	787	0.617	471	786	0.9	1.6	12.043	B
C	660	165	235	678	0.972	629	478	3.0	10.7	53.613	F
A	586	146	447	847	0.691	582	417	1.1	2.1	13.357	B

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	473	118	244	767	0.618	473	801	1.6	1.6	12.263	B
C	660	165	237	678	0.973	646	481	10.7	14.0	79.800	F
A	586	146	460	840	0.697	585	423	2.1	2.2	14.101	B

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	387	97	201	789	0.490	389	693	1.6	1.0	9.052	A
C	538	135	194	699	0.770	580	396	14.0	3.7	36.718	E
A	478	120	412	868	0.551	482	362	2.2	1.3	9.413	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	0.94	0.11	0.94	1.35	1.73			N/A	N/A
C	3.04	0.08	1.48	7.61	10.86			N/A	N/A
A	1.14	0.08	0.95	2.00	2.79			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.56	0.03	0.28	1.56	3.52			N/A	N/A
C	10.67	0.19	5.12	27.22	37.84			N/A	N/A
A	2.14	0.03	0.29	2.14	8.17			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.59	0.03	0.27	1.59	3.14			N/A	N/A
C	14.00	0.12	4.71	38.80	57.03			N/A	N/A
A	2.24	0.03	0.28	2.24	5.43			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	0.98	0.08	0.87	1.70	2.12			N/A	N/A
C	3.73	0.04	0.43	10.33	19.11			N/A	N/A
A	1.25	0.07	0.89	2.62	3.62			N/A	N/A

2021, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D2 - 2021, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	14.74	B

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		14	Arm B	14.74	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	563	100.000
C		ONE HOUR	✓	401	100.000
A		ONE HOUR	✓	365	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	270	293
	C	135	0	266
	A	219	146	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	0	3
	C	0	0	0
	A	5	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.76	18.35	3.1	15.1	C	563	563
C	0.69	18.10	2.2	9.5	C	401	401
A	0.39	5.71	0.6	2.7	A	365	365

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	506	127	131	830	0.610	504	317	1.0	1.5	10.974	B
C	360	90	262	671	0.537	359	373	0.8	1.1	11.484	B
A	328	82	121	1048	0.313	328	500	0.3	0.5	4.991	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	620	155	160	815	0.761	614	388	1.5	3.0	17.457	C
C	442	110	320	641	0.689	438	455	1.1	2.1	17.391	C
A	402	100	147	1033	0.389	401	610	0.5	0.6	5.696	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	620	155	161	815	0.761	619	390	3.0	3.1	18.348	C
C	442	110	322	639	0.691	441	458	2.1	2.2	18.105	C
A	402	100	149	1032	0.389	402	615	0.6	0.6	5.714	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	506	127	132	830	0.610	512	320	3.1	1.6	11.526	B
C	360	90	266	669	0.539	364	377	2.2	1.2	11.969	B
A	328	82	123	1047	0.313	329	508	0.6	0.5	5.014	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.52	0.08	1.04	3.23	4.49			N/A	N/A
C	1.13	0.10	1.01	1.87	2.48			N/A	N/A
A	0.45	0.00	0.00	0.45	0.45			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	2.95	0.03	0.32	4.73	15.11			N/A	N/A
C	2.09	0.03	0.30	2.09	9.47			N/A	N/A
A	0.63	0.03	0.25	0.63	0.63			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.06	0.03	0.29	3.06	10.35			N/A	N/A
C	2.16	0.03	0.28	2.16	6.88			N/A	N/A
A	0.63	0.03	0.29	1.03	2.68			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.61	0.05	0.51	4.10	6.38			N/A	N/A
C	1.20	0.06	0.69	2.69	3.86			N/A	N/A
A	0.46	0.00	0.00	0.46	0.46			N/A	N/A

2040, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	109.02	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-21	Arm C	109.02	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2040	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	490	100.000
C		ONE HOUR	✓	683	100.000
A		ONE HOUR	✓	607	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	245	245
	C	486	0	197
	A	354	253	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	1	3
	C	1	0	1
	A	5	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.72	17.10	2.5	11.2	C	450	674
C	1.14	255.72	54.9	100.1	F	627	940
A	0.80	21.29	3.8	19.3	C	557	835

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	369	92	189	796	0.464	365	623	0.0	0.8	8.307	A
C	514	129	183	706	0.729	504	372	0.0	2.5	17.122	C
A	457	114	359	901	0.507	453	328	0.0	1.0	7.971	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	440	110	226	776	0.568	439	743	0.8	1.3	10.620	B
C	614	154	219	687	0.894	599	446	2.5	6.2	36.130	E
A	546	136	426	860	0.635	543	392	1.0	1.7	11.265	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	540	135	275	750	0.719	535	848	1.3	2.4	16.372	C
C	752	188	267	662	1.137	651	543	6.2	31.5	120.946	F
A	668	167	463	838	0.798	661	455	1.7	3.6	19.537	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	540	135	278	749	0.720	539	858	2.4	2.5	17.098	C
C	752	188	270	660	1.139	658	548	31.5	54.9	247.492	F
A	668	167	468	835	0.801	667	459	3.6	3.8	21.293	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	440	110	230	774	0.569	445	801	2.5	1.4	11.094	B
C	614	154	223	685	0.896	673	453	54.9	40.2	255.717	F
A	546	136	479	828	0.659	553	417	3.8	2.0	13.386	B

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	369	92	192	794	0.465	371	739	1.4	0.9	8.545	A
C	514	129	185	704	0.730	662	377	40.2	3.4	110.270	F
A	457	114	471	833	0.549	460	376	2.0	1.2	9.730	A

Queue Variation Results for each time segment

07:45 - 08:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	0.85	0.55	1.00	1.40	1.45			N/A	N/A
C	2.50	0.27	1.55	4.70	5.91			N/A	N/A
A	1.01	0.55	1.00	1.40	1.45			N/A	N/A

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.28	0.08	1.02	2.46	3.25			N/A	N/A
C	6.19	0.20	3.31	14.74	19.93			N/A	N/A
A	1.68	0.07	1.01	3.85	5.48			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	2.41	0.03	0.30	2.70	11.24			N/A	N/A
C	31.47	9.64	28.18	52.92	61.83			N/A	N/A
A	3.58	0.03	0.34	7.54	19.30			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	2.49	0.03	0.28	2.49	7.48			N/A	N/A
C	54.91	21.14	50.80	87.31	100.07			N/A	N/A
A	3.79	0.03	0.30	3.79	15.83			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.36	0.05	0.67	3.19	4.72			N/A	N/A
C	40.24	14.34	36.80	65.20	75.23			N/A	N/A
A	2.01	0.05	0.56	5.32	8.35			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	0.88	0.04	0.39	2.07	3.50			N/A	N/A
C	3.38	0.03	0.33	6.19	17.83			N/A	N/A
A	1.24	0.04	0.38	3.17	5.74			N/A	N/A

2040, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D4 - 2040, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	26.44	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		0	Arm B	26.44	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	645	100.000
C		ONE HOUR	✓	460	100.000
A		ONE HOUR	✓	418	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	309	336
	C	155	0	305
	A	251	167	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	0	3
	C	0	0	0
	A	5	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.88	35.84	6.6	36.3	E	645	645
C	0.82	31.84	4.2	22.0	D	460	460
A	0.45	6.44	0.8	2.4	A	418	418

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	580	145	150	820	0.707	576	364	1.4	2.3	14.525	B
C	414	103	300	651	0.635	411	426	1.0	1.7	14.827	B
A	376	94	138	1038	0.362	375	573	0.4	0.6	5.428	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	710	178	183	803	0.885	695	443	2.3	6.0	30.052	D
C	506	127	362	618	0.819	498	517	1.7	3.9	27.918	D
A	460	115	168	1020	0.451	459	692	0.6	0.8	6.403	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	710	178	184	802	0.885	708	447	6.0	6.6	35.840	E
C	506	127	369	615	0.823	505	523	3.9	4.2	31.837	D
A	460	115	170	1019	0.452	460	703	0.8	0.8	6.443	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	580	145	151	820	0.707	596	369	6.6	2.5	17.130	C
C	414	103	311	646	0.641	423	436	4.2	1.9	16.800	C
A	376	94	143	1035	0.363	377	591	0.8	0.6	5.475	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	2.29	0.07	1.15	5.69	8.22			N/A	N/A
C	1.67	0.08	1.11	3.67	5.02			N/A	N/A
A	0.56	0.55	1.00	1.40	1.45			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	5.98	0.05	0.53	17.18	29.86			N/A	N/A
C	3.88	0.04	0.39	10.27	20.67			N/A	N/A
A	0.81	0.03	0.26	0.81	0.81			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	6.62	0.04	0.37	15.66	36.34			N/A	N/A
C	4.23	0.03	0.33	7.13	22.01			N/A	N/A
A	0.82	0.03	0.28	0.82	2.45			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	2.55	0.04	0.42	6.99	12.59			N/A	N/A
C	1.86	0.04	0.44	5.00	8.42			N/A	N/A
A	0.57	0.55	1.00	1.40	1.45			N/A	N/A

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D5 - 2040+Dev, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	223.35	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-27	Arm C	223.35	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	649	100.000
C		ONE HOUR	✓	727	100.000
A		ONE HOUR	✓	739	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	358	291
	C	516	0	211
	A	431	308	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	1	3
	C	1	0	1
	A	4	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.99	87.92	17.1	62.8	F	649	649
C	1.25	513.49	93.4	151.7	F	727	727
A	0.96	61.39	13.1	59.9	F	739	739

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	583	146	274	752	0.776	577	825	1.6	3.2	19.951	C
C	654	163	259	666	0.981	622	593	3.4	11.4	57.834	F
A	664	166	441	856	0.776	658	439	1.6	3.2	17.645	C

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	715	179	327	724	0.987	678	911	3.2	12.2	55.263	F
C	800	200	304	642	1.246	639	701	11.4	51.8	193.308	F
A	814	203	453	848	0.959	784	490	3.2	10.5	43.433	E

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	715	179	335	720	0.992	695	921	12.2	17.1	87.920	F
C	800	200	312	639	1.253	638	718	51.8	92.4	414.861	F
A	814	203	453	849	0.959	803	497	10.5	13.1	61.386	F

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	583	146	292	742	0.786	635	869	17.1	4.2	42.587	E
C	654	163	285	653	1.002	649	642	92.4	93.4	513.492	F
A	664	166	461	844	0.787	700	473	13.1	4.1	29.520	D

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.17	0.08	1.45	8.06	11.66			N/A	N/A
C	11.38	0.30	6.37	27.67	37.42			N/A	N/A
A	3.20	0.08	1.42	8.24	11.96			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	12.19	0.28	6.65	30.05	40.89			N/A	N/A
C	51.76	22.50	48.53	78.93	89.35			N/A	N/A
A	10.51	0.13	3.95	28.36	40.93			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	17.09	0.22	7.96	44.74	62.77			N/A	N/A
C	92.36	51.22	89.07	128.96	142.07			N/A	N/A
A	13.11	0.08	2.40	38.12	59.93			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	4.17	0.05	0.46	11.77	20.97			N/A	N/A
C	93.43	46.84	89.24	136.03	151.73			N/A	N/A
A	4.09	0.04	0.44	11.44	20.91			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D6 - 2040+Dev, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	189.10	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-23	Arm C	189.10	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	786	100.000
C		ONE HOUR	✓	623	100.000
A		ONE HOUR	✓	509	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	368	418
	C	265	0	358
	A	314	195	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	0	3
	C	0	0	0
	A	5	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	1.10	193.51	49.9	99.2	F	786	786
C	1.16	335.88	56.4	100.1	F	623	623
A	0.58	8.78	1.4	1.7	A	509	509

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	707	177	175	807	0.876	694	513	2.4	5.6	28.881	D
C	560	140	369	615	0.911	543	500	2.5	6.7	42.332	E
A	458	114	231	982	0.466	457	681	0.6	0.9	6.842	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	865	216	214	787	1.100	771	593	5.6	29.2	96.788	F
C	686	171	410	593	1.156	585	575	6.7	32.0	137.108	F
A	560	140	249	971	0.577	559	746	0.9	1.3	8.683	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	865	216	215	786	1.101	783	596	29.2	49.9	193.511	F
C	686	171	416	590	1.162	588	581	32.0	56.4	284.451	F
A	560	140	250	970	0.578	560	754	1.3	1.4	8.779	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	707	177	176	806	0.876	790	529	49.9	28.9	182.490	F
C	560	140	420	588	0.953	578	546	56.4	52.0	335.881	F
A	458	114	246	973	0.470	459	752	1.4	0.9	7.033	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	5.65	0.15	2.65	13.94	19.29			N/A	N/A
C	6.71	0.19	3.47	16.31	22.24			N/A	N/A
A	0.86	0.12	0.91	1.46	1.46			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	29.21	7.06	25.37	51.99	61.87			N/A	N/A
C	32.03	10.29	28.86	53.23	61.95			N/A	N/A
A	1.33	0.03	0.27	1.33	1.33			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	49.92	15.26	44.88	84.77	99.18			N/A	N/A
C	56.42	23.16	52.60	87.87	100.09			N/A	N/A
A	1.35	0.03	0.27	1.35	1.68			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	28.95	6.67	24.98	52.04	62.12			N/A	N/A
C	52.02	18.25	47.58	85.05	98.35			N/A	N/A
A	0.90	0.12	0.93	1.15	1.61			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 2 - A290_Rough Common Road MITGATION V3.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 04/02/2022 13:49:34

»2040+Dev, AM
»2040+Dev, PM

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2040+Dev													
Arm B	D5	3.4	17.69	0.78	C	37.35	-5 % [Arm A]	D6	6.3	27.88	0.88	D	22.33	3 % [Arm B]
Arm C		7.8	37.49	0.90	E				4.9	27.35	0.84	D		
Arm A		11.5	54.27	0.95	F				1.2	7.97	0.55	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A290/Rough Common Road
Location	Rough Common
Site number	
Date	23/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D5 - 2040+Dev, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	37.35	E

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-5	Arm A	37.35	E

Arms

Arms

Arm	Name	Description
B	A290 Whitstable Road South	
C	Rough Common Road	
A	A290 Whitstable Road North	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
B	3.62	3.49	6.25	8.7	13.77	9.75	0.0	✓
C	3.73	3.18	6.34	15.3	14.00	10.61	0.0	✓
A	3.00	2.92	6.00	21.4	17.55	13.15	0.0	✓

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
B	0.563	1126
C	0.573	1083
A	0.578	1215

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	649	100.000
C		ONE HOUR	✓	727	100.000
A		ONE HOUR	✓	739	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	358	291
	C	516	0	211
	A	431	308	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	1	3
	C	1	0	1
	A	4	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.78	17.69	3.4	16.6	C	649	649
C	0.90	37.49	7.8	42.6	E	727	727
A	0.95	54.27	11.5	56.0	F	739	739

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	583	146	275	950	0.614	581	846	1.0	1.6	9.706	A
C	654	163	261	920	0.710	650	596	1.3	2.3	13.099	B
A	664	166	461	917	0.724	660	449	1.3	2.5	13.747	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	715	179	328	920	0.777	708	1014	1.6	3.2	16.473	C
C	800	200	317	887	0.902	782	718	2.3	6.9	30.140	D
A	814	203	555	864	0.942	787	544	2.5	9.2	37.948	E

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	715	179	335	916	0.780	714	1034	3.2	3.4	17.694	C
C	800	200	320	886	0.904	797	729	6.9	7.8	37.495	E
A	814	203	565	858	0.948	804	551	9.2	11.5	54.268	F

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	583	146	291	941	0.620	590	886	3.4	1.7	10.470	B
C	654	163	265	918	0.712	674	617	7.8	2.6	15.893	C
A	664	166	479	907	0.732	699	460	11.5	2.9	19.762	C

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.55	0.07	0.94	3.54	4.97			N/A	N/A
C	2.34	0.06	1.01	5.99	8.92			N/A	N/A
A	2.50	0.06	0.96	6.57	9.90			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.23	0.03	0.32	5.25	16.59			N/A	N/A
C	6.86	0.06	0.94	19.91	33.42			N/A	N/A
A	9.17	0.09	2.48	25.70	38.59			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.39	0.03	0.29	3.39	11.79			N/A	N/A
C	7.79	0.04	0.40	20.11	42.56			N/A	N/A
A	11.55	0.06	1.13	33.91	56.02			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.68	0.05	0.57	4.30	6.63			N/A	N/A
C	2.60	0.04	0.42	7.12	12.93			N/A	N/A
A	2.91	0.04	0.41	7.96	14.73			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D6 - 2040+Dev, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	22.33	C

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		3	Arm B	22.33	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	786	100.000
C		ONE HOUR	✓	623	100.000
A		ONE HOUR	✓	509	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	368	418
	C	265	0	358
	A	314	195	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	0	3
	C	0	0	0
	A	5	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.88	27.88	6.3	33.9	D	786	786
C	0.84	27.35	4.9	25.3	D	623	623
A	0.55	7.97	1.2	1.8	A	509	509

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	707	177	175	1010	0.700	703	519	1.3	2.2	11.582	B
C	560	140	374	863	0.649	557	504	1.1	1.8	11.671	B
A	458	114	237	1042	0.439	457	694	0.6	0.8	6.141	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	865	216	214	988	0.876	851	632	2.2	5.8	24.042	C
C	686	171	453	816	0.840	675	613	1.8	4.5	23.810	C
A	560	140	287	1014	0.553	559	840	0.8	1.2	7.875	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	865	216	215	988	0.876	863	637	5.8	6.3	27.877	D
C	686	171	459	812	0.844	684	619	4.5	4.9	27.355	D
A	560	140	291	1012	0.554	560	852	1.2	1.2	7.971	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	707	177	176	1010	0.700	722	527	6.3	2.4	13.147	B
C	560	140	384	857	0.654	572	514	4.9	2.0	13.132	B
A	458	114	243	1039	0.441	459	713	1.2	0.8	6.235	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	2.24	0.06	0.96	5.75	8.58			N/A	N/A
C	1.79	0.06	0.94	4.32	6.27			N/A	N/A
A	0.77	0.12	0.88	1.41	1.48			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	5.82	0.04	0.44	16.15	30.54			N/A	N/A
C	4.53	0.04	0.39	11.86	24.34			N/A	N/A
A	1.21	0.03	0.26	1.21	1.21			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	6.32	0.03	0.34	12.05	33.92			N/A	N/A
C	4.93	0.03	0.32	7.82	25.29			N/A	N/A
A	1.23	0.03	0.27	1.23	1.79			N/A	N/A

17:15 - 17:30

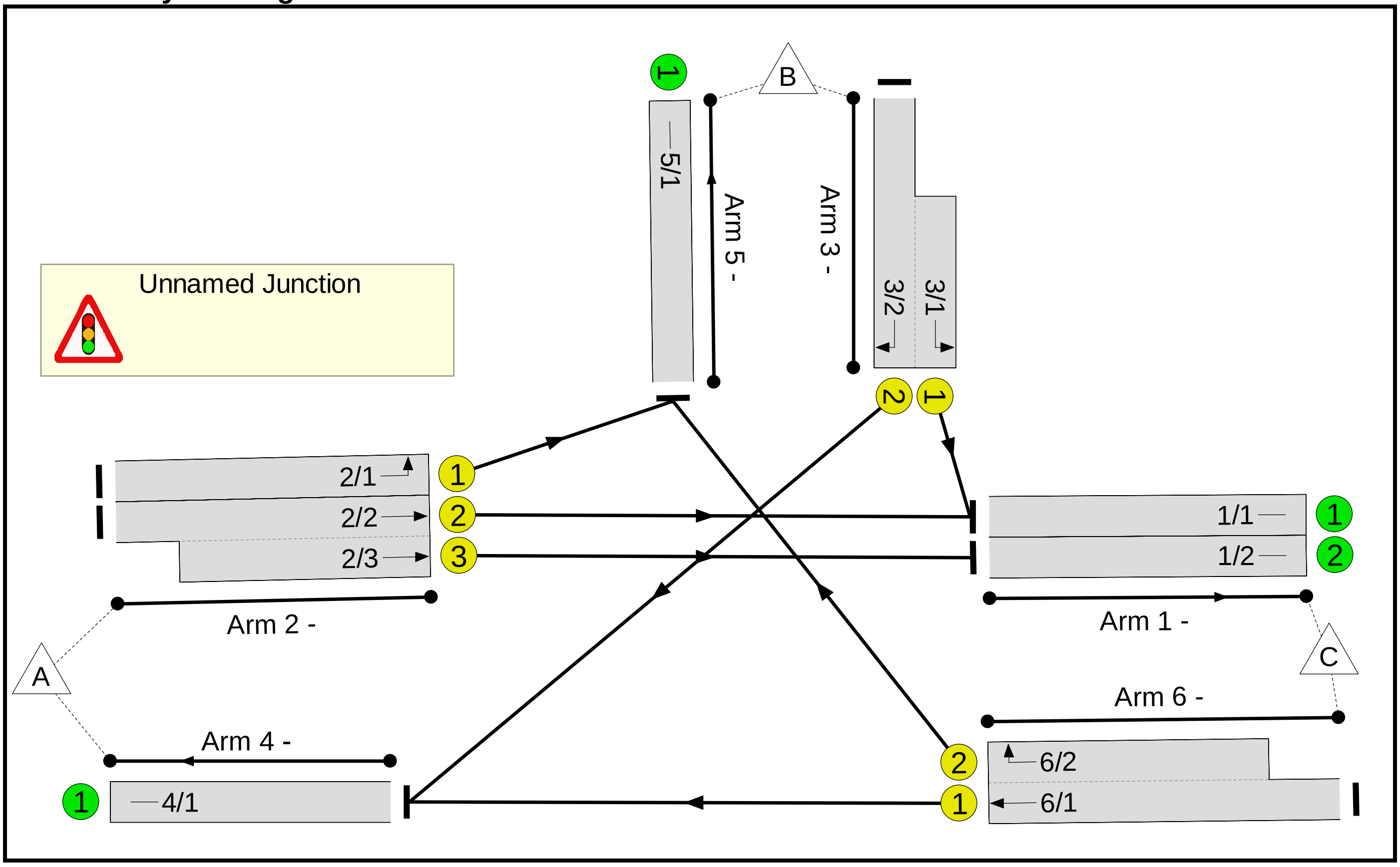
Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	2.43	0.04	0.43	6.69	11.75			N/A	N/A
C	1.96	0.04	0.44	5.31	8.95			N/A	N/A
A	0.80	0.13	0.90	1.42	1.48			N/A	N/A

Full Input Data And Results
Full Input Data And Results

User and Project Details

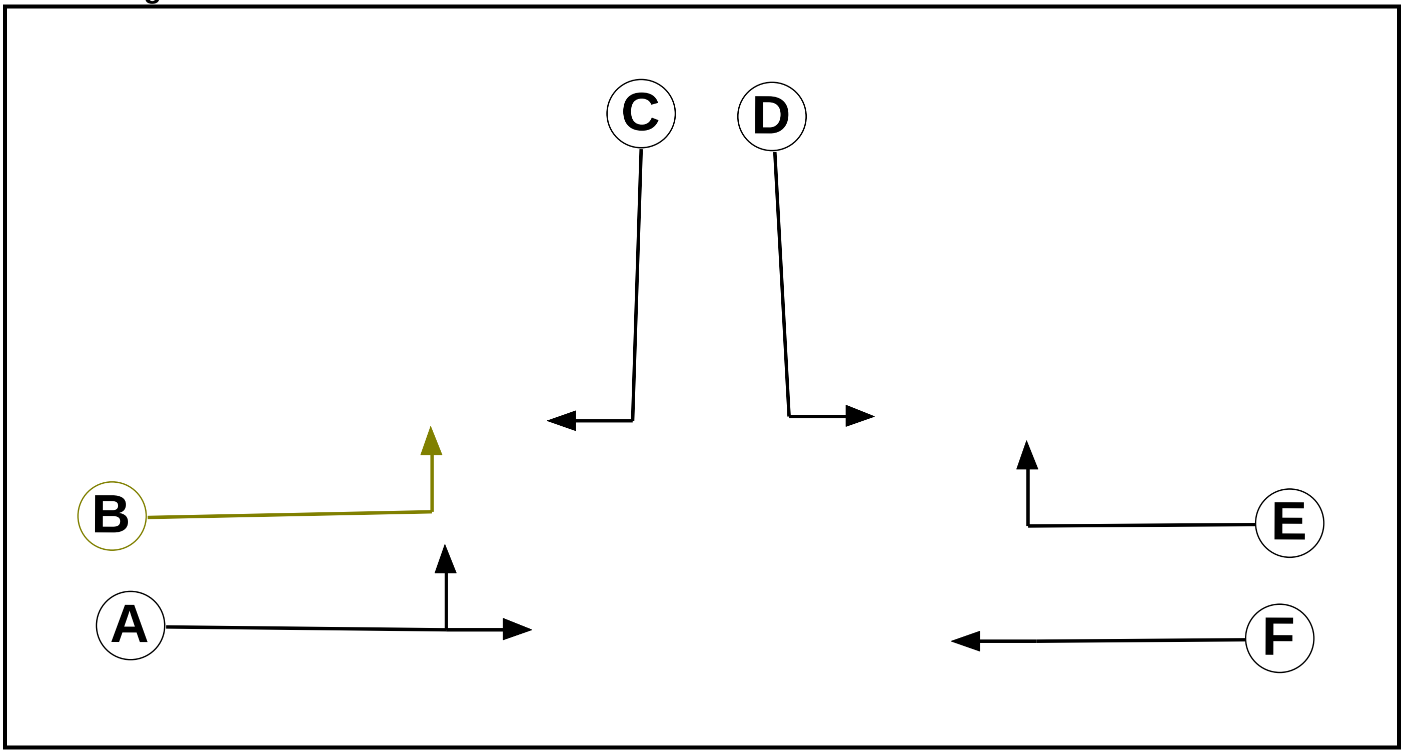
Project:	
Title:	
Location:	
Additional detail:	
File name:	A2050_Rough Common Road_Rev0.2.lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Filter	A	4	0
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Traffic		7	7

Full Input Data And Results

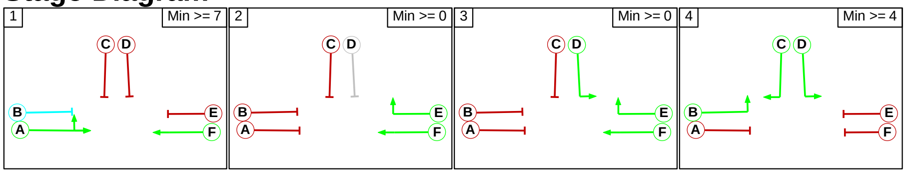
Phase Intergreens Matrix

		Starting Phase					
		A	B	C	D	E	F
Terminating Phase	A		-	6	6	5	-
	B	-		-	-	5	-
	C	5	-		-	5	5
	D	5	-	-		-	-
	E	6	8	5	-		-
	F	-	-	5	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	A F
2	E F
3	D E F
4	B C D

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

		To Stage			
		1	2	3	4
From Stage	1		5	6	6
	2	6		2	8
	3	6	0		8
	4	5	X	X	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: Unnamed Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1	U		2	3	60.0	Inf	-	-	-	-	-	-
1/2	U		2	3	60.0	Inf	-	-	-	-	-	-
2/1	U	A B	2	3	14.8	Geom	-	5.00	0.00	Y	Arm 5 Left	18.90
2/2	U	A	2	3	60.0	Geom	-	4.20	0.00	N	Arm 1 Ahead	Inf
2/3	U	A	2	3	11.3	Geom	-	3.40	0.00	N	Arm 1 Ahead	Inf
3/1	U	D	2	3	6.3	Geom	-	5.00	0.00	Y	Arm 1 Left	26.60
3/2	U	C	2	3	60.0	Geom	-	3.50	0.00	N	Arm 4 Right	17.90
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U	F	2	3	60.0	Geom	-	3.40	0.00	Y	Arm 4 Ahead	Inf
6/2	U	E	2	3	19.1	Geom	-	3.10	0.00	N	Arm 5 Right	13.50

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 Base AM'	08:00	09:00	01:00	
2: '2021 Base PM'	16:30	17:30	01:00	
3: '2040 AM'	08:00	09:00	01:00	
4: '2040 PM'	16:30	17:30	01:00	
5: '2040+Dev AM'	08:00	09:00	01:00	
6: '2040+Dev PM'	16:30	17:30	01:00	

Scenario 1: '2021 Base AM' (FG1: '2021 Base AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	417	1007	1424
	B	233	0	225	458
	C	481	147	0	628
	Tot.	714	564	1232	2510

Traffic Lane Flows

Lane	Scenario 1: 2021 Base AM
Junction: Unnamed Junction	
1/1	738
1/2	494
2/1	417
2/2 (with short)	1007(In) 513(Out)
2/3 (short)	494
3/1 (short)	225
3/2 (with short)	458(In) 233(Out)
4/1	714
5/1	564
6/1 (with short)	628(In) 481(Out)
6/2 (short)	147

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	Infinite Saturation Flow						Inf	Inf
1/2	Infinite Saturation Flow						Inf	Inf
2/1	5.00	0.00	Y	Arm 5 Left	18.90	100.0 %	1959	1959
2/2	4.20	0.00	N	Arm 1 Ahead	Inf	100.0 %	2175	2175
2/3	3.40	0.00	N	Arm 1 Ahead	Inf	100.0 %	2095	2095
3/1	5.00	0.00	Y	Arm 1 Left	26.60	100.0 %	2002	2002
3/2	3.50	0.00	N	Arm 4 Right	17.90	100.0 %	1942	1942
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.40	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1955	1955
6/2	3.10	0.00	N	Arm 5 Right	13.50	100.0 %	1859	1859

Full Input Data And Results

Scenario 2: '2021 Base PM' (FG2: '2021 Base PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	132	626	758
	B	259	0	133	392
	C	654	232	0	886
	Tot.	913	364	759	2036

Traffic Lane Flows

Lane	Scenario 2: 2021 Base PM
Junction: Unnamed Junction	
1/1	452
1/2	307
2/1	132
2/2 (with short)	626(In) 319(Out)
2/3 (short)	307
3/1 (short)	133
3/2 (with short)	392(In) 259(Out)
4/1	913
5/1	364
6/1 (with short)	886(In) 654(Out)
6/2 (short)	232

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	Infinite Saturation Flow						Inf	Inf
1/2	Infinite Saturation Flow						Inf	Inf
2/1	5.00	0.00	Y	Arm 5 Left	18.90	100.0 %	1959	1959
2/2	4.20	0.00	N	Arm 1 Ahead	Inf	100.0 %	2175	2175
2/3	3.40	0.00	N	Arm 1 Ahead	Inf	100.0 %	2095	2095
3/1	5.00	0.00	Y	Arm 1 Left	26.60	100.0 %	2002	2002
3/2	3.50	0.00	N	Arm 4 Right	17.90	100.0 %	1942	1942
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.40	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1955	1955
6/2	3.10	0.00	N	Arm 5 Right	13.50	100.0 %	1859	1859

Scenario 3: '2040 AM' (FG3: '2040 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	476	1149	1625
	B	266	0	257	523
	C	549	168	0	717
	Tot.	815	644	1406	2865

Traffic Lane Flows

Lane	Scenario 3: 2040 AM
Junction: Unnamed Junction	
1/1	842
1/2	564
2/1	476
2/2 (with short)	1149(In) 585(Out)
2/3 (short)	564
3/1 (short)	257
3/2 (with short)	523(In) 266(Out)
4/1	815
5/1	644
6/1 (with short)	717(In) 549(Out)
6/2 (short)	168

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1	Infinite Saturation Flow						Inf	Inf
1/2	Infinite Saturation Flow						Inf	Inf
2/1	5.00	0.00	Y	Arm 5 Left	18.90	100.0 %	1959	1959
2/2	4.20	0.00	N	Arm 1 Ahead	Inf	100.0 %	2175	2175
2/3	3.40	0.00	N	Arm 1 Ahead	Inf	100.0 %	2095	2095
3/1	5.00	0.00	Y	Arm 1 Left	26.60	100.0 %	2002	2002
3/2	3.50	0.00	N	Arm 4 Right	17.90	100.0 %	1942	1942
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.40	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1955	1955
6/2	3.10	0.00	N	Arm 5 Right	13.50	100.0 %	1859	1859

Scenario 4: '2040 PM' (FG4: '2040 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	151	717	868
	B	297	0	152	449
	C	749	266	0	1015
	Tot.	1046	417	869	2332

Traffic Lane Flows

Lane	Scenario 4: 2040 PM
Junction: Unnamed Junction	
1/1	517
1/2	352
2/1	151
2/2 (with short)	717(In) 365(Out)
2/3 (short)	352
3/1 (short)	152
3/2 (with short)	449(In) 297(Out)
4/1	1046
5/1	417
6/1 (with short)	1015(In) 749(Out)
6/2 (short)	266

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	Infinite Saturation Flow						Inf	Inf
1/2	Infinite Saturation Flow						Inf	Inf
2/1	5.00	0.00	Y	Arm 5 Left	18.90	100.0 %	1959	1959
2/2	4.20	0.00	N	Arm 1 Ahead	Inf	100.0 %	2175	2175
2/3	3.40	0.00	N	Arm 1 Ahead	Inf	100.0 %	2095	2095
3/1	5.00	0.00	Y	Arm 1 Left	26.60	100.0 %	2002	2002
3/2	3.50	0.00	N	Arm 4 Right	17.90	100.0 %	1942	1942
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.40	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1955	1955
6/2	3.10	0.00	N	Arm 5 Right	13.50	100.0 %	1859	1859

Full Input Data And Results

Scenario 5: '2040+Dev AM' (FG5: '2040+Dev AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	511	1149	1660
	B	399	0	291	690
	C	549	177	0	726
	Tot.	948	688	1440	3076

Traffic Lane Flows

Lane	Scenario 5: 2040+Dev AM
Junction: Unnamed Junction	
1/1	876
1/2	564
2/1	511
2/2 (with short)	1149(In) 585(Out)
2/3 (short)	564
3/1 (short)	291
3/2 (with short)	690(In) 399(Out)
4/1	948
5/1	688
6/1 (with short)	726(In) 549(Out)
6/2 (short)	177

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	Infinite Saturation Flow						Inf	Inf
1/2	Infinite Saturation Flow						Inf	Inf
2/1	5.00	0.00	Y	Arm 5 Left	18.90	100.0 %	1959	1959
2/2	4.20	0.00	N	Arm 1 Ahead	Inf	100.0 %	2175	2175
2/3	3.40	0.00	N	Arm 1 Ahead	Inf	100.0 %	2095	2095
3/1	5.00	0.00	Y	Arm 1 Left	26.60	100.0 %	2002	2002
3/2	3.50	0.00	N	Arm 4 Right	17.90	100.0 %	1942	1942
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.40	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1955	1955
6/2	3.10	0.00	N	Arm 5 Right	13.50	100.0 %	1859	1859

Scenario 6: '2040+Dev PM' (FG6: '2040+Dev PM', Plan 1: 'Network Control Plan 1')
Traffic Flows, Desired
Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	282	717	999
	B	366	0	170	536
	C	749	299	0	1048
	Tot.	1115	581	887	2583

Traffic Lane Flows

Lane	Scenario 6: 2040+Dev PM
Junction: Unnamed Junction	
1/1	535
1/2	352
2/1	282
2/2 (with short)	717(In) 365(Out)
2/3 (short)	352
3/1 (short)	170
3/2 (with short)	536(In) 366(Out)
4/1	1115
5/1	581
6/1 (with short)	1048(In) 749(Out)
6/2 (short)	299

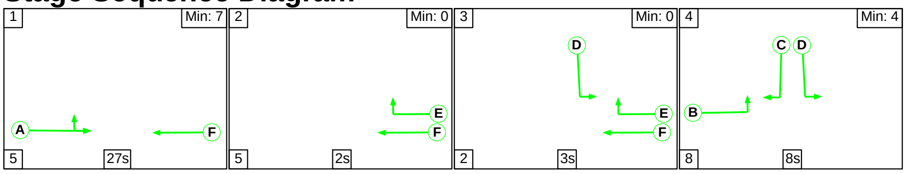
Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	Infinite Saturation Flow						Inf	Inf
1/2	Infinite Saturation Flow						Inf	Inf
2/1	5.00	0.00	Y	Arm 5 Left	18.90	100.0 %	1959	1959
2/2	4.20	0.00	N	Arm 1 Ahead	Inf	100.0 %	2175	2175
2/3	3.40	0.00	N	Arm 1 Ahead	Inf	100.0 %	2095	2095
3/1	5.00	0.00	Y	Arm 1 Left	26.60	100.0 %	2002	2002
3/2	3.50	0.00	N	Arm 4 Right	17.90	100.0 %	1942	1942
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.40	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1955	1955
6/2	3.10	0.00	N	Arm 5 Right	13.50	100.0 %	1859	1859

Scenario 1: '2021 Base AM' (FG1: '2021 Base AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

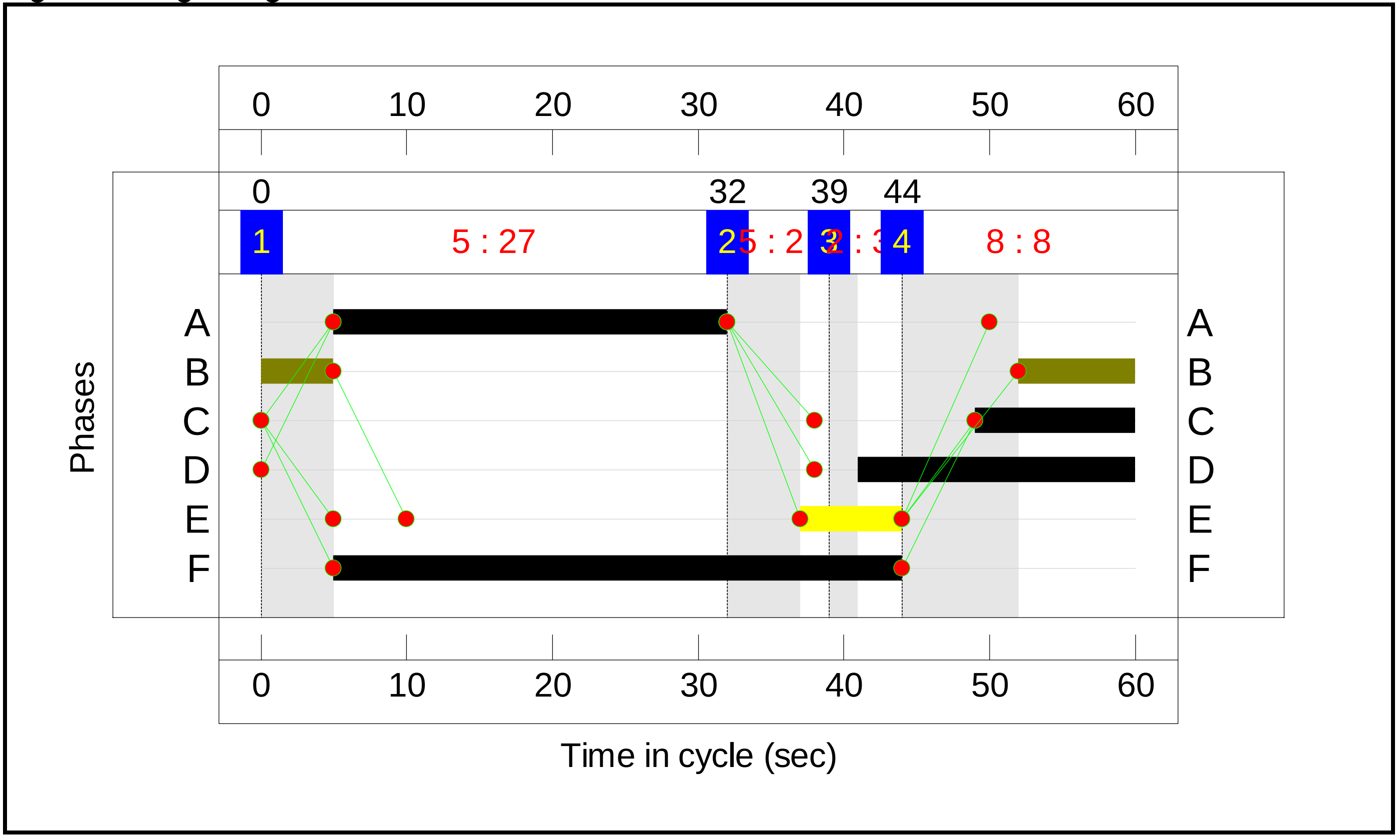


Stage Timings

Stage	1	2	3	4
Duration	27	2	3	8
Change Point	0	32	39	44

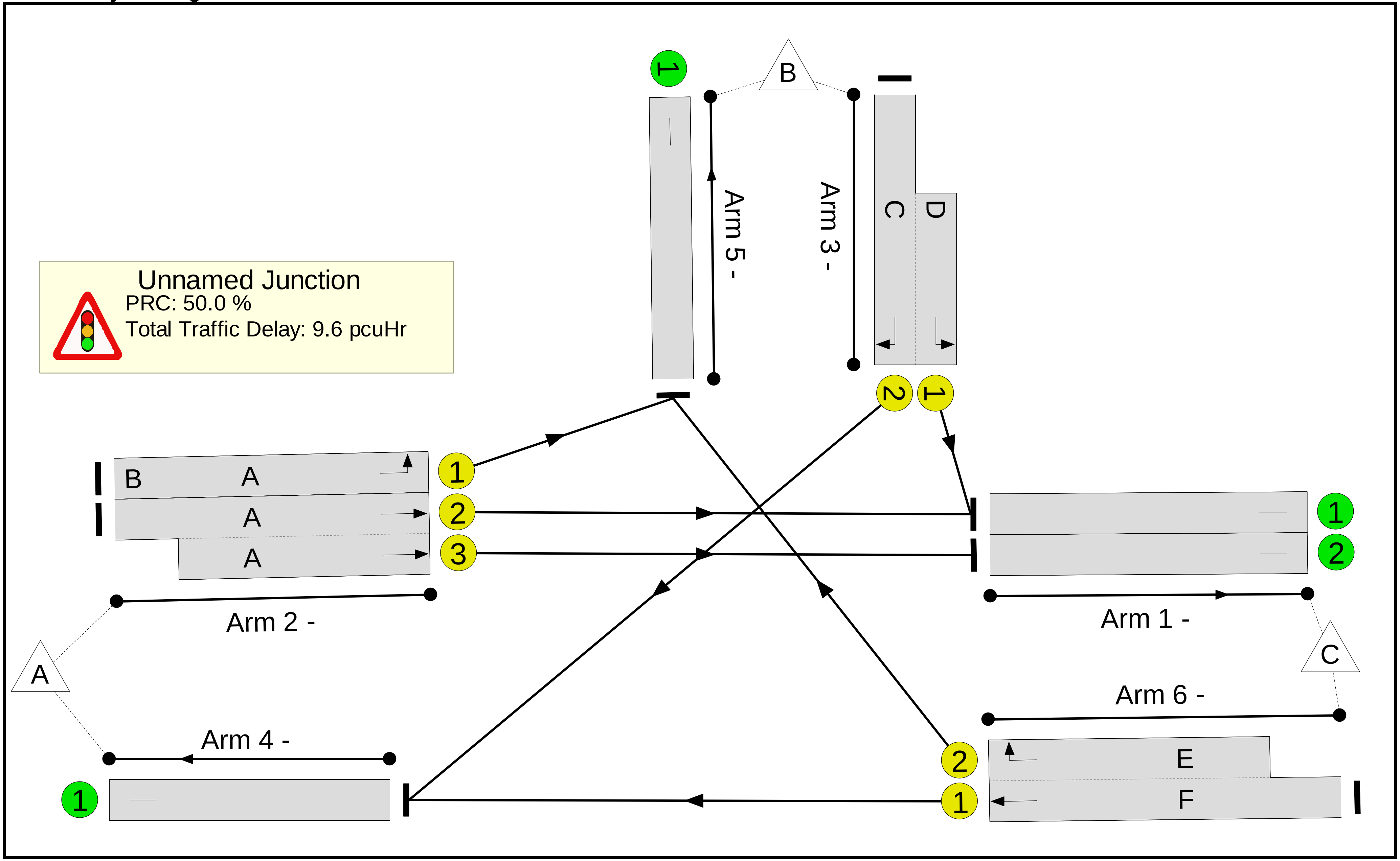
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**60.0%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**60.0%**
1/1		U	N/A	N/A	-		-	-	-	738	Inf	Inf	0.0%
1/2		U	N/A	N/A	-		-	-	-	494	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	A	B	1	40	13	417	1959	1339	31.2%
2/2+2/3	Ahead	U	N/A	N/A	A		1	27	-	1007	2175:2095	856+824	59.9 : 59.9%
3/2+3/1	Left Right	U	N/A	N/A	C D		1	11:19	-	458	1942:2002	388+375	60.0 : 60.0%
4/1		U	N/A	N/A	-		-	-	-	714	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	564	Inf	Inf	0.0%
6/1+6/2	Ahead Right	U	N/A	N/A	F E		1	39:7	-	628	1955:1859	1267+248	38.0 : 59.3%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**7.5**	**2.1**	**0.0**	**9.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**7.5**	**2.1**	**0.0**	**9.6**	**-**	**-**	**-**	**-**
1/1	738	738	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	494	494	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	417	417	-	-	-	0.4	0.2	-	0.7	5.8	2.8	0.2	3.0
2/2+2/3	1007	1007	-	-	-	3.1	0.7	-	3.9	13.8	5.8	0.7	6.6
3/2+3/1	458	458	-	-	-	2.4	0.7	-	3.1	24.4	3.5	0.7	4.2
4/1	714	714	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1+6/2	628	628	-	-	-	1.6	0.4	-	1.9	11.2	3.5	0.4	3.8

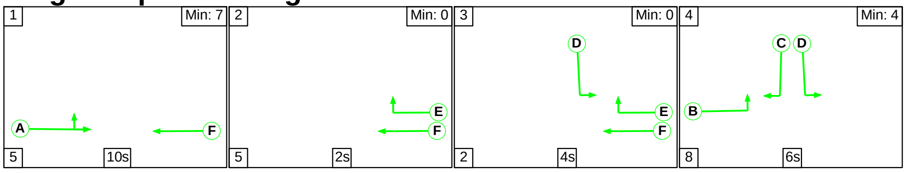
C1 PRC for Signalled Lanes (%): 50.0 Total Delay for Signalled Lanes (pcuHr): 9.58 Cycle Time (s): 60
PRC Over All Lanes (%): 50.0 Total Delay Over All Lanes(pcuHr): 9.58

Full Input Data And Results

Full Input Data And Results

Scenario 2: '2021 Base PM' (FG2: '2021 Base PM', Plan 1: 'Network Control Plan 1')

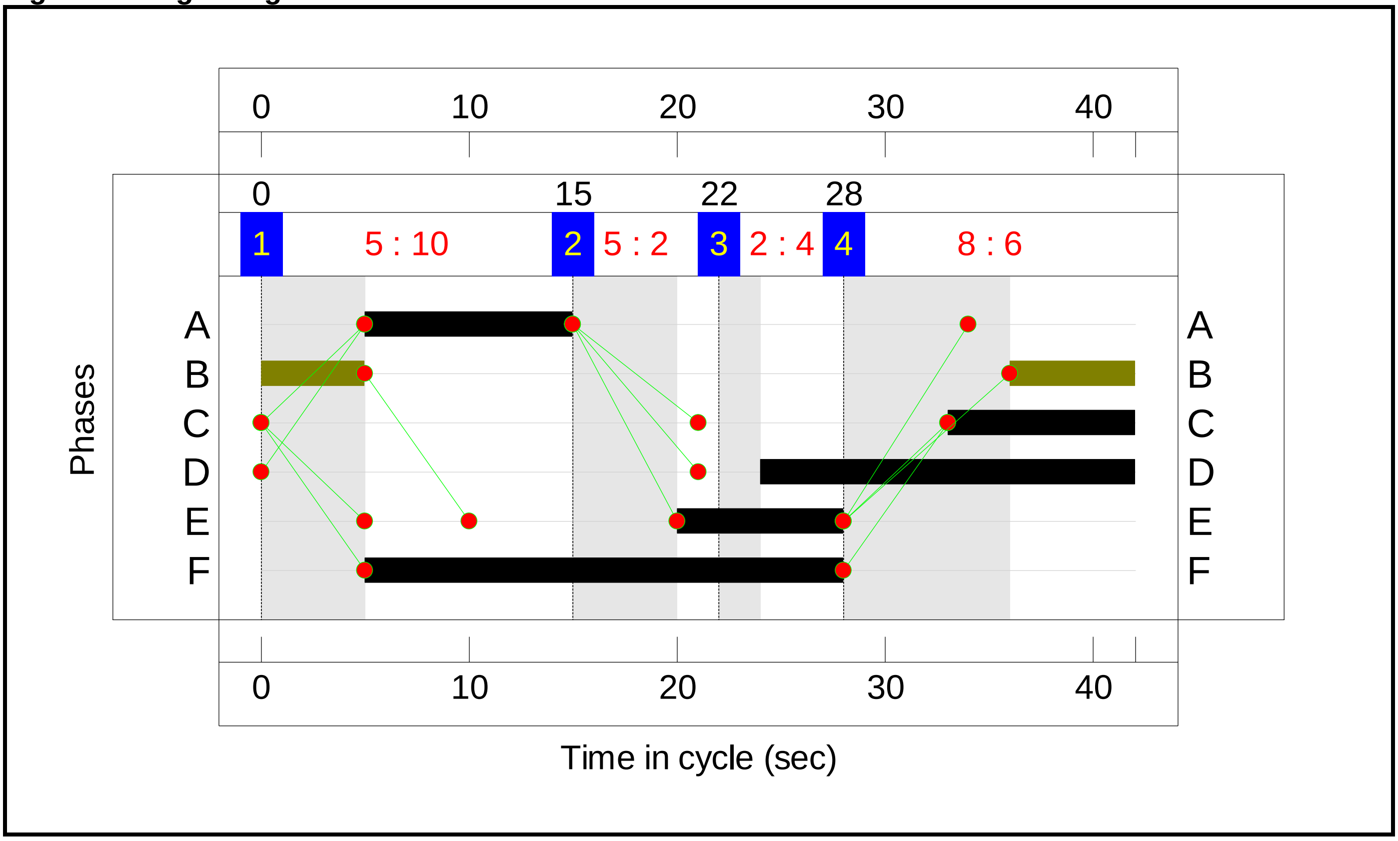
Stage Sequence Diagram



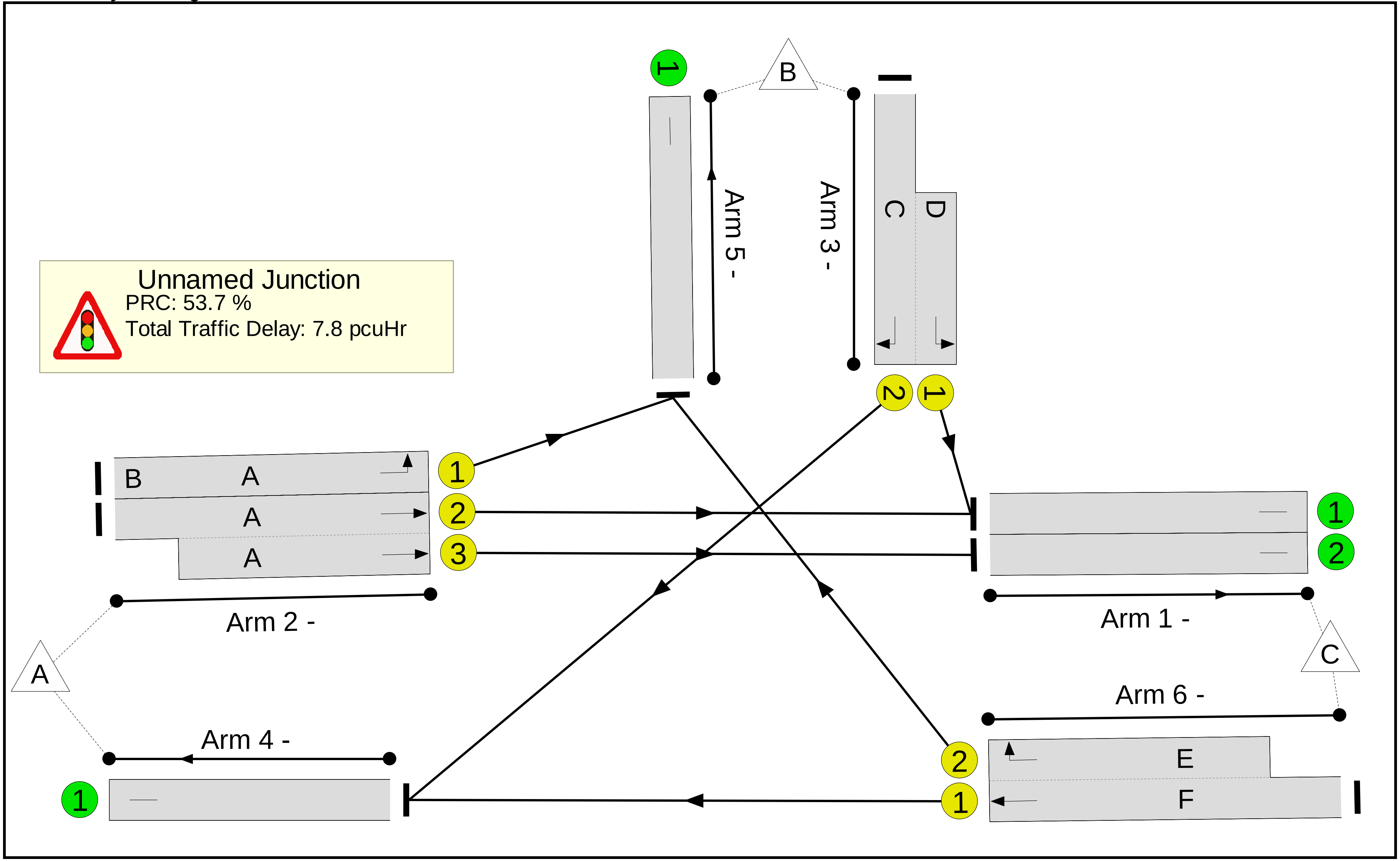
Stage Timings

Stage	1	2	3	4
Duration	10	2	4	6
Change Point	0	15	22	28

Signal Timings Diagram



Full Input Data And Results
Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**58.5%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**58.5%**
1/1		U	N/A	N/A	-		-	-	-	452	Inf	Inf	0.0%
1/2		U	N/A	N/A	-		-	-	-	307	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	A	B	1	21	11	132	1959	1026	12.9%
2/2+2/3	Ahead	U	N/A	N/A	A		1	10	-	626	2175:2095	570+549	56.0 : 56.0%
3/2+3/1	Left Right	U	N/A	N/A	C D		1	9:18	-	392	1942:2002	462+237	56.0 : 56.0%
4/1		U	N/A	N/A	-		-	-	-	913	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	364	Inf	Inf	0.0%
6/1+6/2	Ahead Right	U	N/A	N/A	F E		1	23:8	-	886	1955:1859	1117+398	58.5 : 58.2%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**5.8**	**2.0**	**0.0**	**7.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**5.8**	**2.0**	**0.0**	**7.8**	**-**	**-**	**-**	**-**
1/1	452	452	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	307	307	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	132	132	-	-	-	0.2	0.1	-	0.3	7.2	0.8	0.1	0.8
2/2+2/3	626	626	-	-	-	2.3	0.6	-	3.0	17.1	3.2	0.6	3.8
3/2+3/1	392	392	-	-	-	1.3	0.6	-	1.9	17.4	2.6	0.6	3.2
4/1	913	913	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	364	364	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1+6/2	886	886	-	-	-	2.0	0.7	-	2.7	11.0	4.9	0.7	5.6

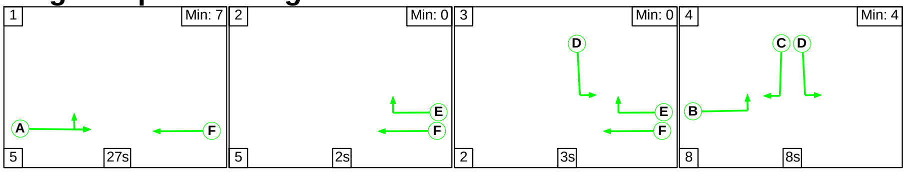
C1 PRC for Signalled Lanes (%): 53.7 Total Delay for Signalled Lanes (pcuHr): 7.84 Cycle Time (s): 42
PRC Over All Lanes (%): 53.7 Total Delay Over All Lanes(pcuHr): 7.84

Full Input Data And Results

Full Input Data And Results

Scenario 3: '2040 AM' (FG3: '2040 AM', Plan 1: 'Network Control Plan 1')

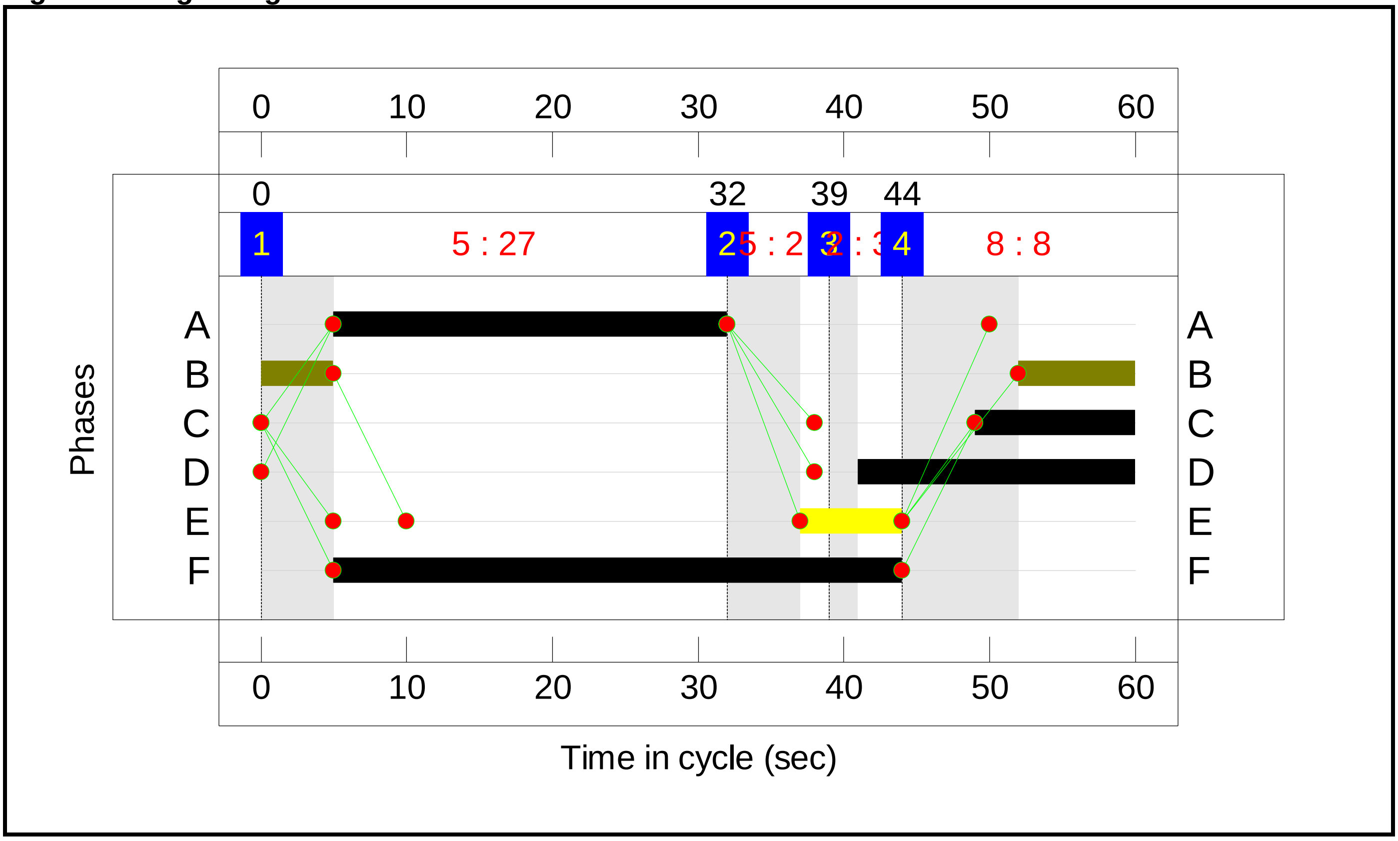
Stage Sequence Diagram



Stage Timings

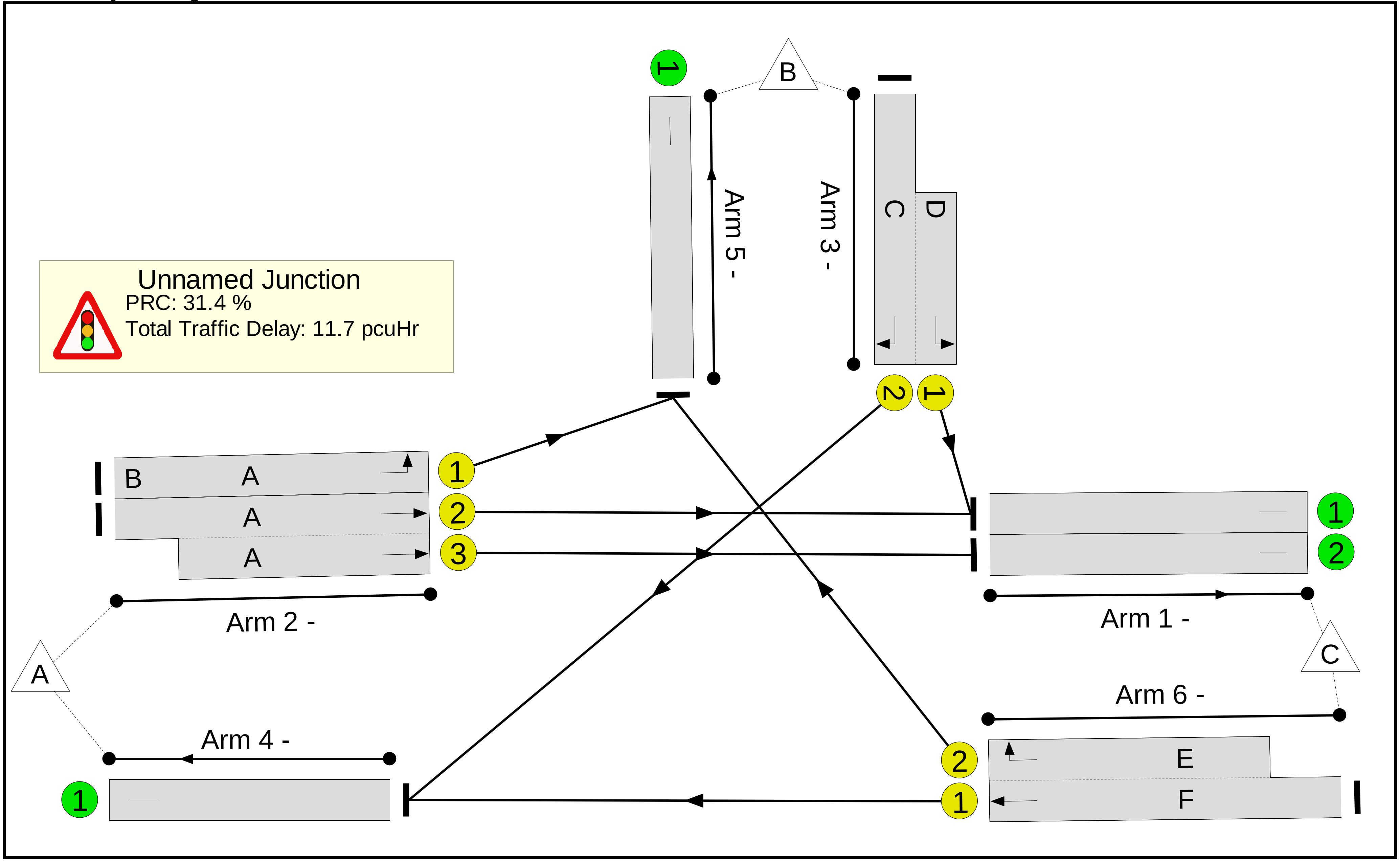
Stage	1	2	3	4
Duration	27	2	3	8
Change Point	0	32	39	44

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**68.5%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**68.5%**
1/1		U	N/A	N/A	-		-	-	-	842	Inf	Inf	0.0%
1/2		U	N/A	N/A	-		-	-	-	564	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	A	B	1	40	13	476	1959	1339	35.6%
2/2+2/3	Ahead	U	N/A	N/A	A		1	27	-	1149	2175:2095	856+825	68.3 : 68.3%
3/2+3/1	Left Right	U	N/A	N/A	C D		1	11:19	-	523	1942:2002	388+375	68.5 : 68.5%
4/1		U	N/A	N/A	-		-	-	-	815	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	644	Inf	Inf	0.0%
6/1+6/2	Ahead Right	U	N/A	N/A	F E		1	39:7	-	717	1955:1859	1267+248	43.3 : 67.8%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**8.9**	**2.9**	**0.0**	**11.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**8.9**	**2.9**	**0.0**	**11.7**	**-**	**-**	**-**	**-**
1/1	842	842	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	476	476	-	-	-	0.5	0.3	-	0.8	6.1	3.3	0.3	3.6
2/2+2/3	1149	1149	-	-	-	3.7	1.1	-	4.8	15.0	7.0	1.1	8.1
3/2+3/1	523	523	-	-	-	2.7	1.1	-	3.8	26.3	4.1	1.1	5.1
4/1	815	815	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	644	644	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1+6/2	717	717	-	-	-	1.9	0.4	-	2.3	11.6	4.1	0.4	4.6

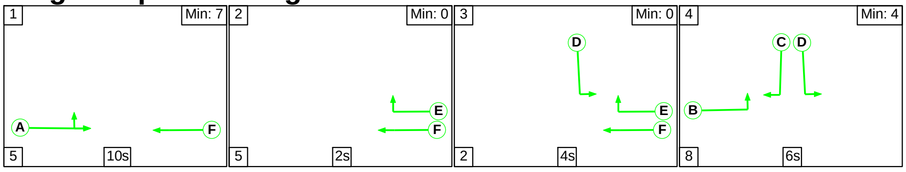
C1 PRC for Signalled Lanes (%): 31.4 Total Delay for Signalled Lanes (pcuHr): 11.73 Cycle Time (s): 60
PRC Over All Lanes (%): 31.4 Total Delay Over All Lanes(pcuHr): 11.73

Full Input Data And Results

Full Input Data And Results

Scenario 4: '2040 PM' (FG4: '2040 PM', Plan 1: 'Network Control Plan 1')

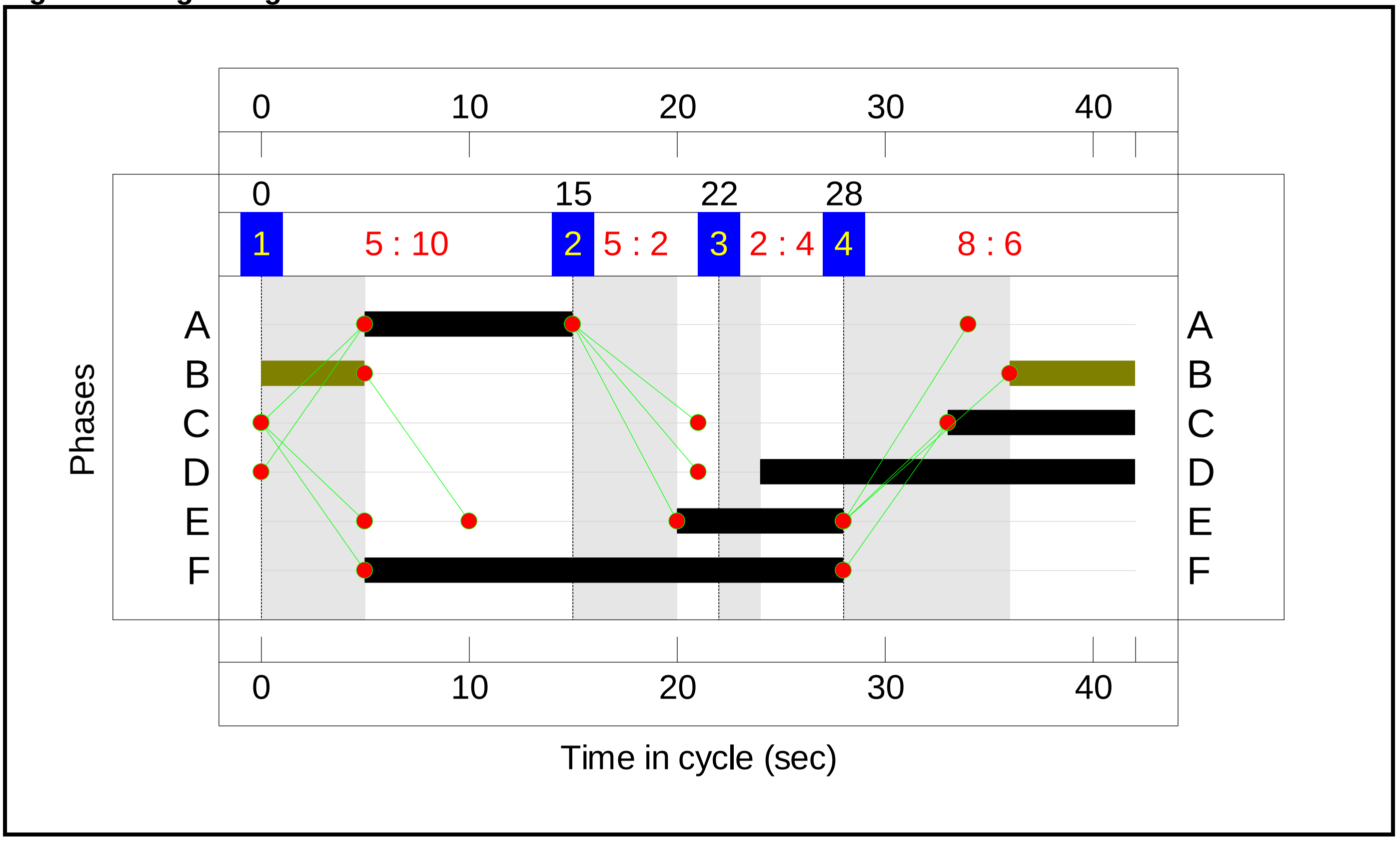
Stage Sequence Diagram



Stage Timings

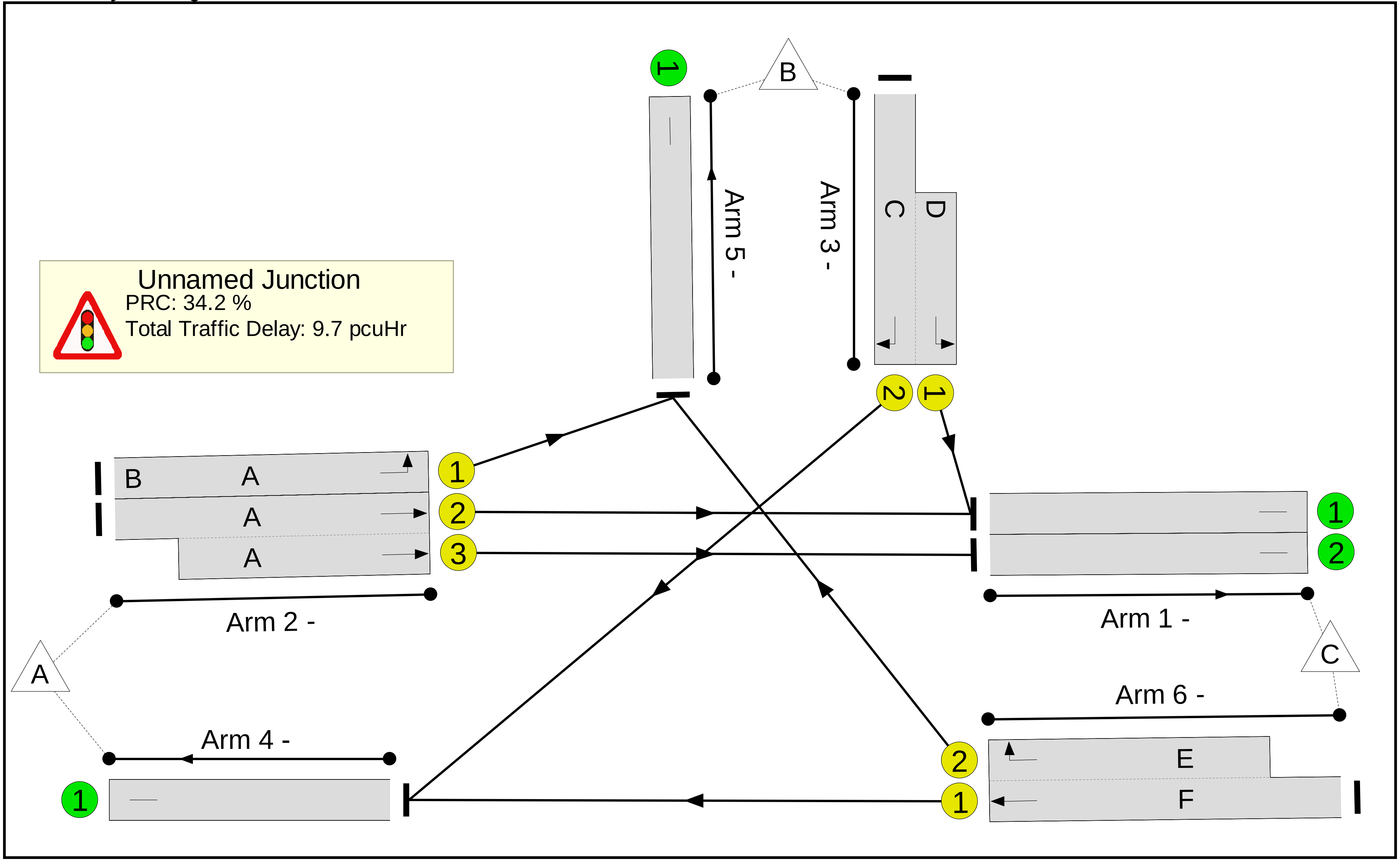
Stage	1	2	3	4
Duration	10	2	4	6
Change Point	0	15	22	28

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**67.0%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**67.0%**
1/1		U	N/A	N/A	-		-	-	-	517	Inf	Inf	0.0%
1/2		U	N/A	N/A	-		-	-	-	352	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	A	B	1	21	11	151	1959	1026	14.7%
2/2+2/3	Ahead	U	N/A	N/A	A		1	10	-	717	2175:2095	570+549	64.1 : 64.2%
3/2+3/1	Left Right	U	N/A	N/A	C D		1	9:18	-	449	1942:2002	462+237	64.2 : 64.2%
4/1		U	N/A	N/A	-		-	-	-	1046	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	417	Inf	Inf	0.0%
6/1+6/2	Ahead Right	U	N/A	N/A	F E		1	23:8	-	1015	1955:1859	1117+398	67.0 : 66.8%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**6.9**	**2.9**	**0.0**	**9.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**6.9**	**2.9**	**0.0**	**9.7**	**-**	**-**	**-**	**-**
1/1	517	517	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	352	352	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	151	151	-	-	-	0.2	0.1	-	0.3	7.2	0.9	0.1	1.0
2/2+2/3	717	717	-	-	-	2.7	0.9	-	3.6	18.2	3.8	0.9	4.6
3/2+3/1	449	449	-	-	-	1.5	0.9	-	2.4	19.0	3.1	0.9	3.9
4/1	1046	1046	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	417	417	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1+6/2	1015	1015	-	-	-	2.4	1.0	-	3.4	12.2	6.0	1.0	7.0

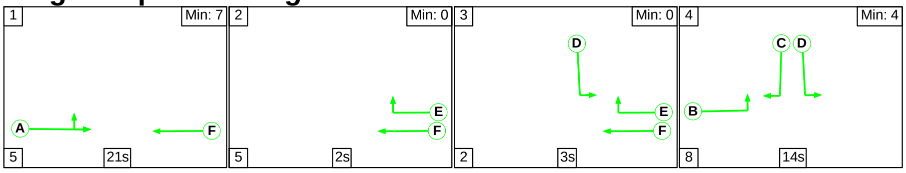
C1 PRC for Signalled Lanes (%): 34.2 Total Delay for Signalled Lanes (pcuHr): 9.73 Cycle Time (s): 42
PRC Over All Lanes (%): 34.2 Total Delay Over All Lanes(pcuHr): 9.73

Full Input Data And Results

Full Input Data And Results

Scenario 5: '2040+Dev AM' (FG5: '2040+Dev AM', Plan 1: 'Network Control Plan 1')

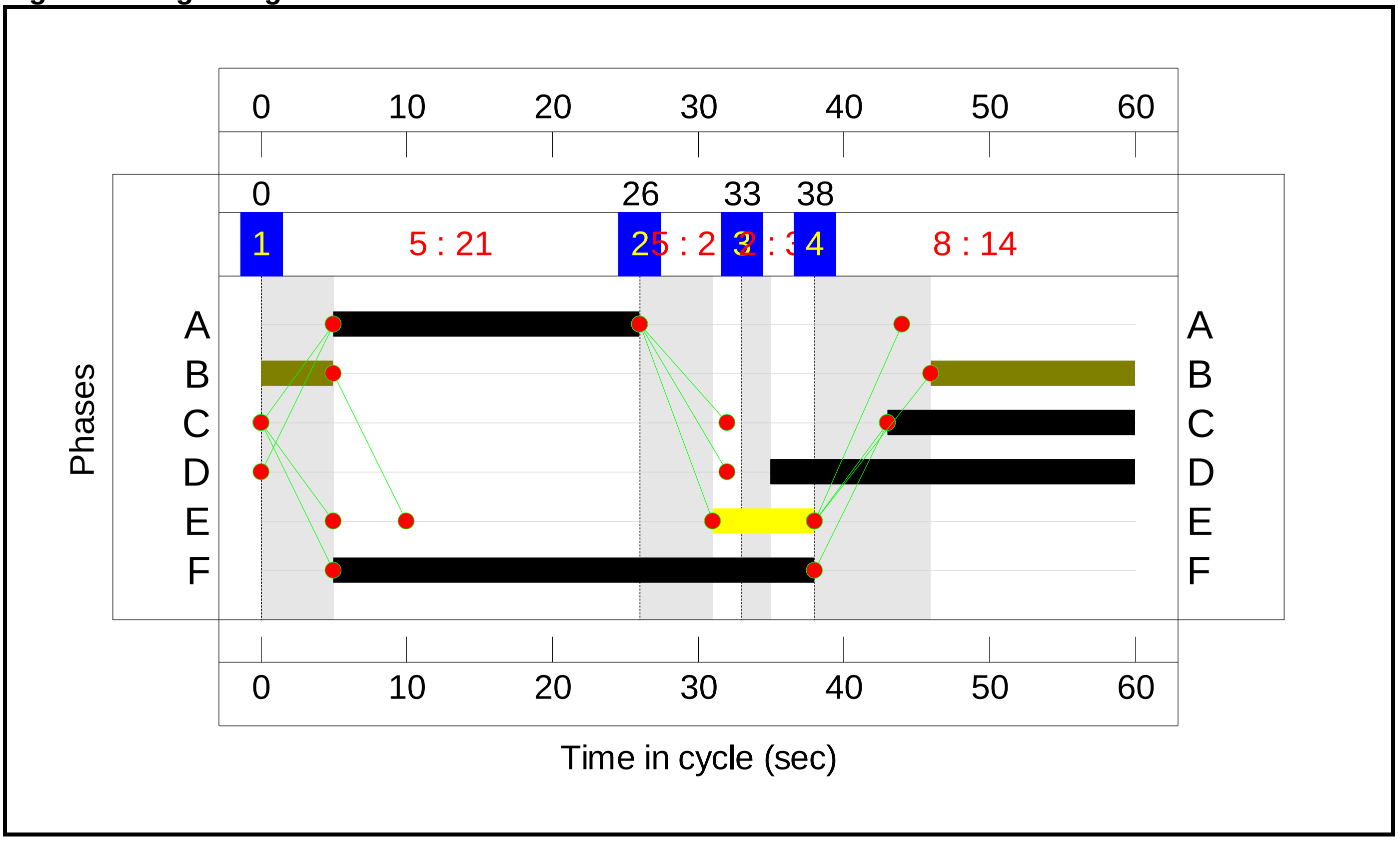
Stage Sequence Diagram



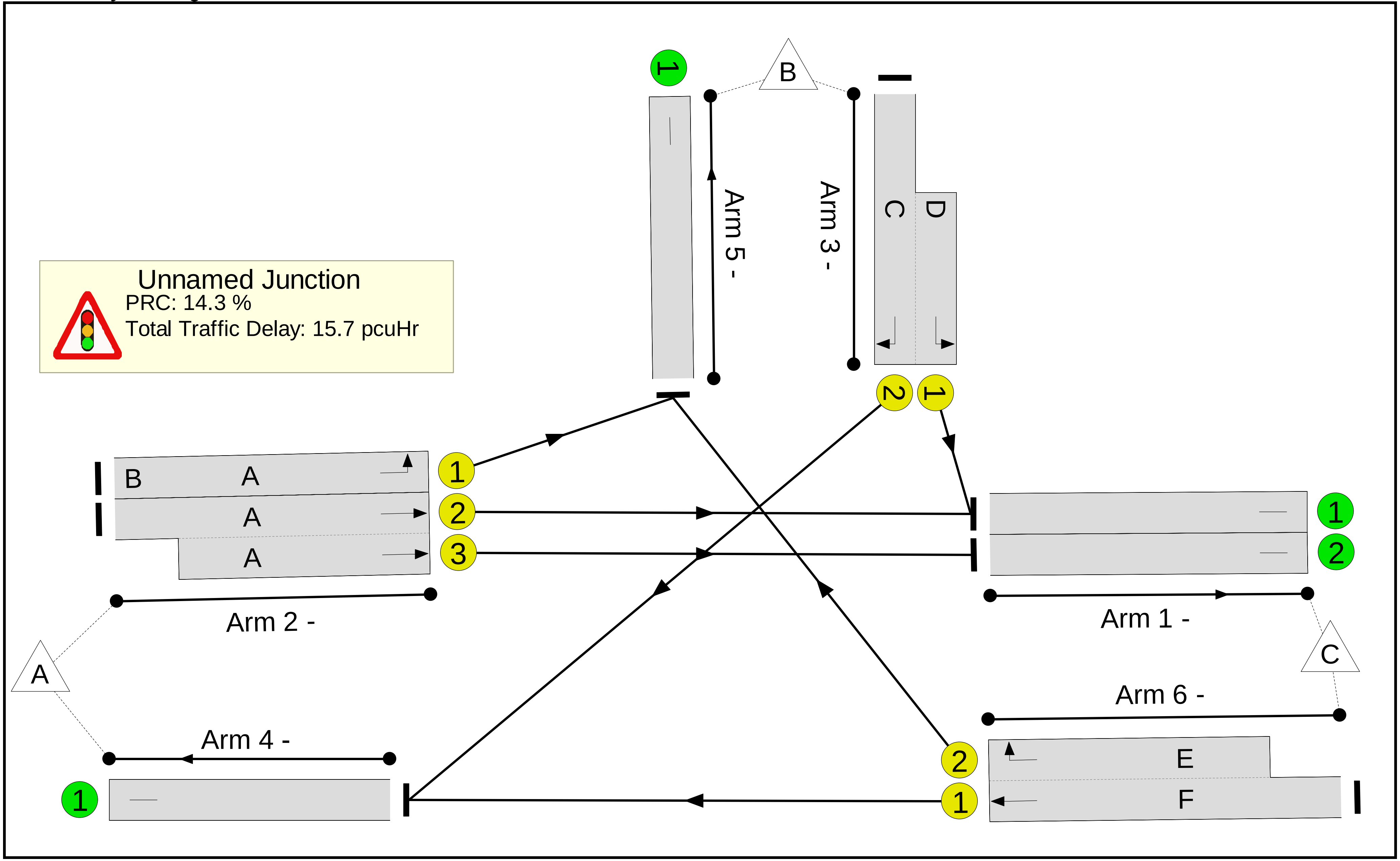
Stage Timings

Stage	1	2	3	4
Duration	21	2	3	14
Change Point	0	26	33	38

Signal Timings Diagram



Full Input Data And Results
Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.7%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.7%**
1/1		U	N/A	N/A	-		-	-	-	876	Inf	Inf	0.0%
1/2		U	N/A	N/A	-		-	-	-	564	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	A	B	1	40	19	511	1959	1339	38.2%
2/2+2/3	Ahead	U	N/A	N/A	A		1	21	-	1149	2175:2095	747+720	78.3 : 78.3%
3/2+3/1	Left Right	U	N/A	N/A	C D		1	17:25	-	690	1942:2002	507+370	78.7 : 78.7%
4/1		U	N/A	N/A	-		-	-	-	948	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	688	Inf	Inf	0.0%
6/1+6/2	Ahead Right	U	N/A	N/A	F E		1	33:7	-	726	1955:1859	1108+248	49.6 : 71.4%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**11.2**	**4.5**	**0.0**	**15.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**11.2**	**4.5**	**0.0**	**15.7**	**-**	**-**	**-**	**-**
1/1	876	876	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	511	511	-	-	-	0.6	0.3	-	0.9	6.2	3.5	0.3	3.9
2/2+2/3	1149	1149	-	-	-	5.3	1.8	-	7.0	22.0	8.3	1.8	10.1
3/2+3/1	690	690	-	-	-	3.0	1.8	-	4.8	24.9	5.8	1.8	7.6
4/1	948	948	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	688	688	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1+6/2	726	726	-	-	-	2.4	0.6	-	3.0	14.9	5.5	0.6	6.1

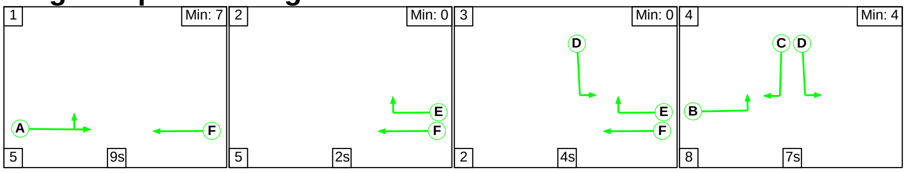
C1 PRC for Signalled Lanes (%): 14.3 Total Delay for Signalled Lanes (pcuHr): 15.70 Cycle Time (s): 60
PRC Over All Lanes (%): 14.3 Total Delay Over All Lanes(pcuHr): 15.70

Full Input Data And Results

Full Input Data And Results

Scenario 6: '2040+Dev PM' (FG6: '2040+Dev PM', Plan 1: 'Network Control Plan 1')

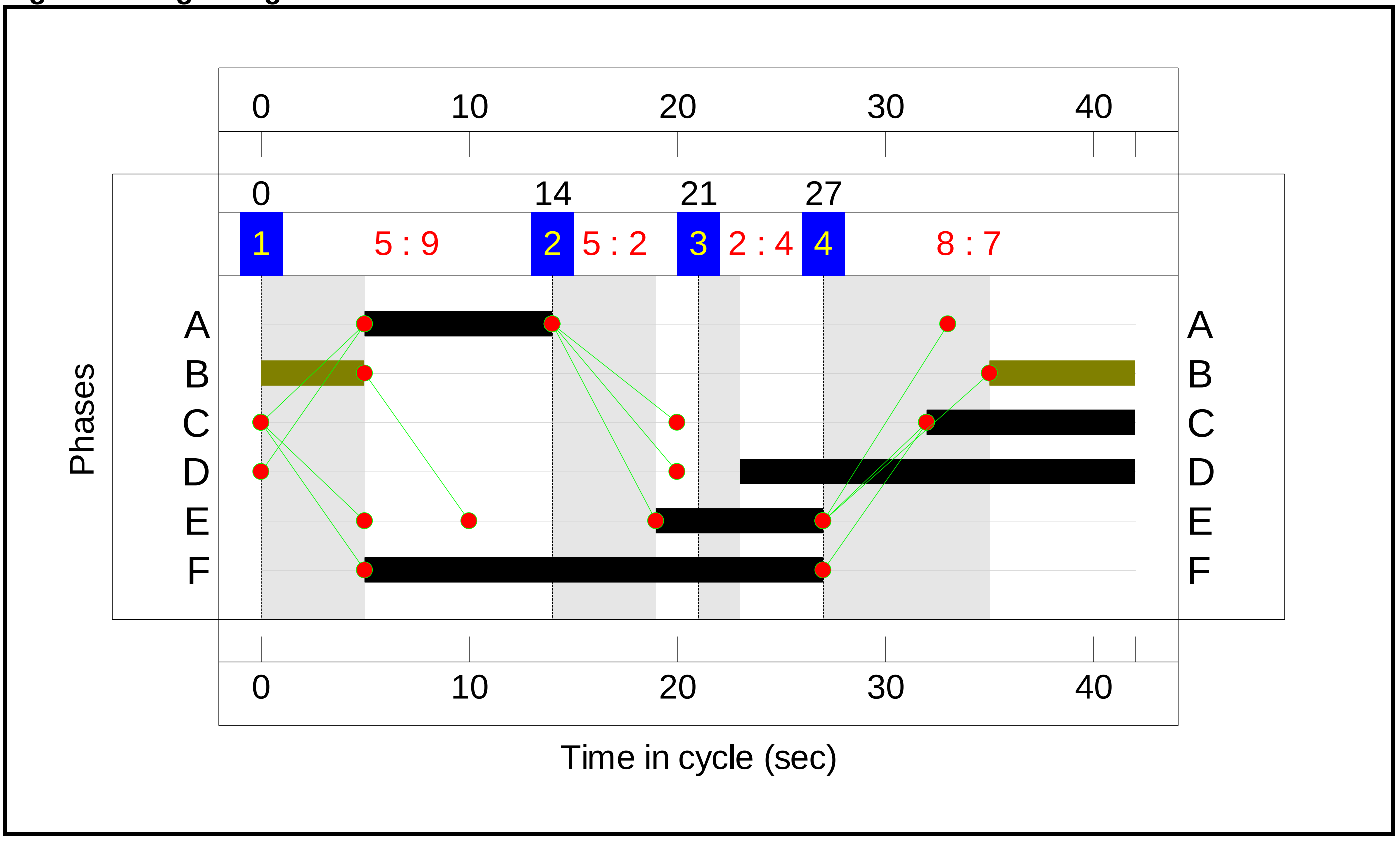
Stage Sequence Diagram



Stage Timings

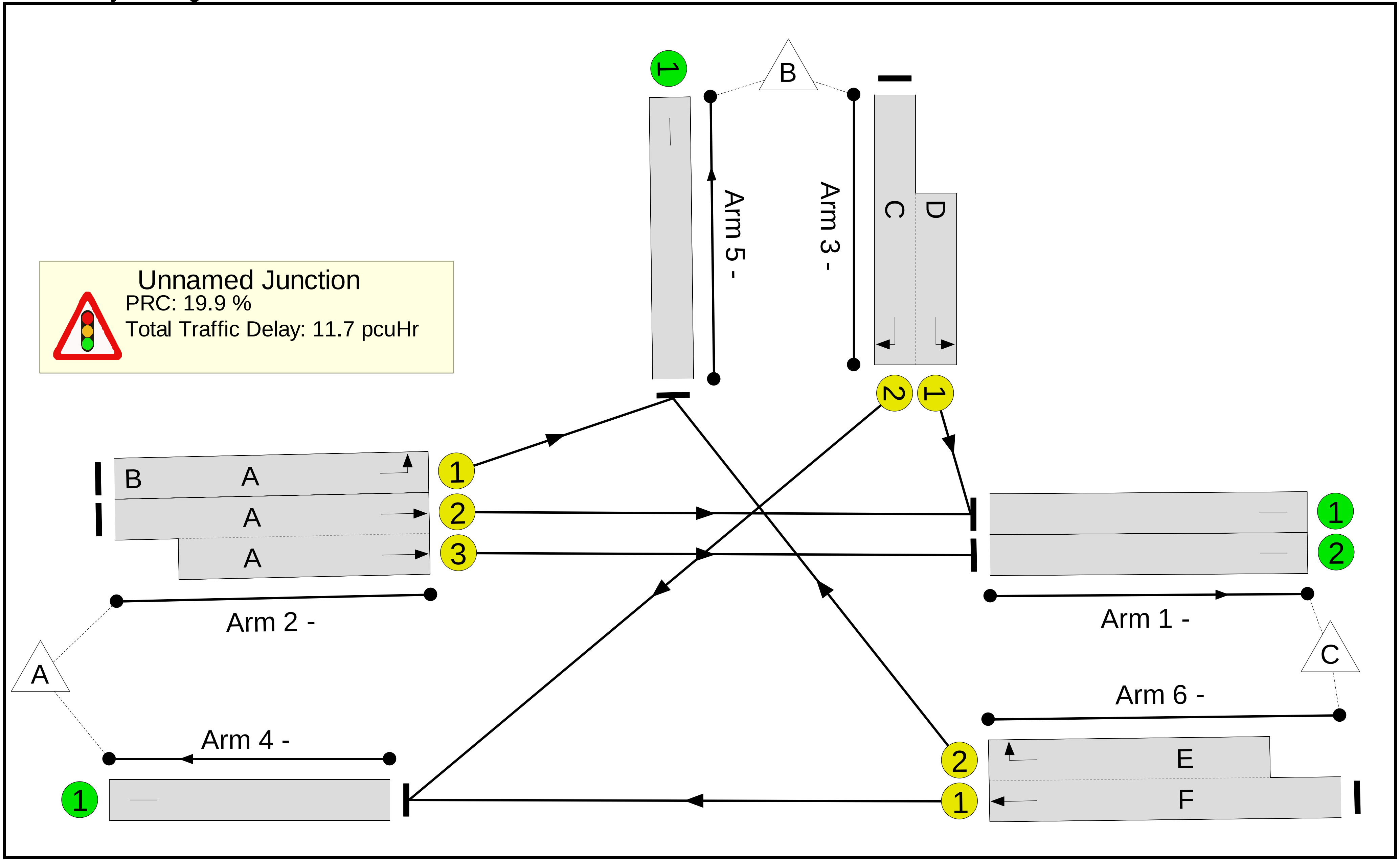
Stage	1	2	3	4
Duration	9	2	4	7
Change Point	0	14	21	27

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.1%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.1%**
1/1		U	N/A	N/A	-		-	-	-	535	Inf	Inf	0.0%
1/2		U	N/A	N/A	-		-	-	-	352	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	A	B	1	21	12	282	1959	1026	27.5%
2/2+2/3	Ahead	U	N/A	N/A	A		1	9	-	717	2175:2095	518+499	70.5 : 70.6%
3/2+3/1	Left Right	U	N/A	N/A	C D		1	10:19	-	536	1942:2002	509+236	72.0 : 72.0%
4/1		U	N/A	N/A	-		-	-	-	1115	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	581	Inf	Inf	0.0%
6/1+6/2	Ahead Right	U	N/A	N/A	F E		1	22:8	-	1048	1955:1859	1071+398	70.0 : 75.1%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**7.8**	**3.9**	**0.0**	**11.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**7.8**	**3.9**	**0.0**	**11.7**	**-**	**-**	**-**	**-**
1/1	535	535	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	352	352	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	282	282	-	-	-	0.4	0.2	-	0.6	8.0	1.8	0.2	2.0
2/2+2/3	717	717	-	-	-	2.9	1.2	-	4.1	20.6	3.9	1.2	5.0
3/2+3/1	536	536	-	-	-	1.7	1.3	-	3.0	20.1	3.9	1.3	5.1
4/1	1115	1115	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	581	581	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1+6/2	1048	1048	-	-	-	2.7	1.2	-	4.0	13.6	6.2	1.2	7.5

C1 PRC for Signalled Lanes (%): 19.9 Total Delay for Signalled Lanes (pcuHr): 11.71 Cycle Time (s): 42
PRC Over All Lanes (%): 19.9 Total Delay Over All Lanes(pcuHr): 11.71

Full Input Data And Results

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: Junction 4 - A290_Giles Lane.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 03/02/2022 12:39:59

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2021													
Stream B-AC	D1	1.7	30.07	0.63	D	5.04	5 % [Stream B-AC]	D2	3.5	45.44	0.80	E	12.40	-6 % [Stream B-AC]
Stream C-AB		0.4	6.68	0.21	A				0.2	5.08	0.11	A		
	2040													
Stream B-AC	D3	3.3	54.64	0.79	F	8.72	-8 % [Stream B-AC]	D4	10.3	114.12	0.97	F	30.62	-18 % [Stream B-AC]
Stream C-AB		0.6	7.07	0.26	A				0.3	5.05	0.14	A		
	2040+Dev													
Stream B-AC	D5	9.3	150.48	0.98	F	19.52	-19 % [Stream B-AC]	D6	27.4	280.95	1.14	F	59.81	-26 % [Stream B-AC]
Stream C-AB		0.9	7.56	0.31	A				0.5	4.55	0.18	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A290/Giles Lane
Location	University of Kent
Site number	
Date	23/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓
D3	2040	AM	ONE HOUR	07:45	09:15	15	✓	✓
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2021, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D1 - 2021, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		5.04	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	5	Stream B-AC	5.04	A

Arms

Arms

Arm	Name	Description	Arm type
A	A290 Whitstable Road West		Major
B	Giles Lane		Minor
C	A290 Whitstable Road East		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.90			139.2	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.78	18	17

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	481	0.085	0.214	0.134	0.305
B-C	621	0.091	0.230	-	-
C-B	655	0.244	0.244	-	-

The slopes and intercepts shown above include custom intercept adjustments only.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	712	100.000
B		ONE HOUR	✓	186	100.000
C		ONE HOUR	✓	350	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	312	400
	B	134	0	52
	C	278	72	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	4
	B	0	0	0
	C	3	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.63	30.07	1.7	7.9	D	186	186
C-AB	0.21	6.68	0.4	1.4	A	124	124
C-A						226	226
A-B						312	312
A-C						400	400

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	167	42	359	0.465	166	0.6	0.8	18.516	C
C-AB	103	26	674	0.153	103	0.2	0.3	6.305	A
C-A	211	53			211				
A-B	280	70			280				
A-C	360	90			360				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	205	51	324	0.633	202	0.8	1.6	28.814	D
C-AB	144	36	684	0.210	143	0.3	0.4	6.653	A
C-A	241	60			241				
A-B	344	86			344				
A-C	440	110			440				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	205	51	324	0.633	205	1.6	1.7	30.075	D
C-AB	144	36	685	0.211	144	0.4	0.4	6.676	A
C-A	241	60			241				
A-B	344	86			344				
A-C	440	110			440				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	167	42	359	0.466	170	1.7	0.9	19.341	C
C-AB	104	26	674	0.154	104	0.4	0.3	6.340	A
C-A	211	53			211				
A-B	280	70			280				
A-C	360	90			360				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.84	0.18	0.94	1.43	1.49			N/A	N/A
C-AB	0.28	0.00	0.00	0.28	0.28			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.59	0.03	0.31	2.35	7.90			N/A	N/A
C-AB	0.44	0.03	0.26	0.47	0.52			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.65	0.03	0.30	1.76	7.59			N/A	N/A
C-AB	0.44	0.04	0.38	1.22	1.36			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.90	0.05	0.50	1.87	2.75			N/A	N/A
C-AB	0.29	0.00	0.00	0.29	0.29			N/A	N/A

2021, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D2 - 2021, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		12.40	B

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-8	Stream B-AC	12.40	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	351	100.000
B		ONE HOUR	✓	271	100.000
C		ONE HOUR	✓	381	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	102	249
	B	211	0	60
	C	336	45	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	5
	B	0	0	0
	C	3	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.80	45.44	3.5	19.1	E	271	271
C-AB	0.11	5.08	0.2	1.2	A	79	79
C-A						302	302
A-B						102	102
A-C						249	249

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	244	61	399	0.611	241	0.9	1.5	22.553	C
C-AB	68	17	778	0.085	68	0.1	0.2	5.059	A
C-A	276	69			276				
A-B	92	23			92				
A-C	224	56			224				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	298	75	374	0.798	291	1.5	3.3	40.324	E
C-AB	92	23	809	0.113	91	0.2	0.2	5.013	A
C-A	328	82			328				
A-B	112	28			112				
A-C	274	69			274				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	298	75	374	0.798	297	3.3	3.5	45.443	E
C-AB	92	23	809	0.113	92	0.2	0.2	5.022	A
C-A	328	82			328				
A-B	112	28			112				
A-C	274	69			274				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	244	61	399	0.611	251	3.5	1.7	25.493	D
C-AB	68	17	778	0.085	67	0.2	0.2	5.076	A
C-A	276	69			276				
A-B	92	23			92				
A-C	224	56			224				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.48	0.11	1.20	2.75	3.60			N/A	N/A
C-AB	0.16	0.03	0.25	0.45	0.48			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	3.26	0.04	0.42	9.01	16.52			N/A	N/A
C-AB	0.23	0.03	0.27	0.49	1.24			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	3.54	0.03	0.34	7.45	19.09			N/A	N/A
C-AB	0.24	0.00	0.00	0.24	0.24			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.67	0.04	0.42	4.46	7.63			N/A	N/A
C-AB	0.17	0.00	0.00	0.17	0.17			N/A	N/A

2040, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D3 - 2040, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		8.72	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-8	Stream B-AC	8.72	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D3	2040	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	813	100.000
B		ONE HOUR	✓	212	100.000
C		ONE HOUR	✓	399	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	356	457
	B	153	0	59
	C	317	82	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	4
	B	0	0	0
	C	3	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.79	54.64	3.3	17.8	F	212	212
C-AB	0.26	7.07	0.6	1.5	A	155	155
C-A						244	244
A-B						356	356
A-C						457	457

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	191	48	337	0.566	189	0.7	1.2	23.974	C
C-AB	127	32	680	0.187	127	0.3	0.4	6.509	A
C-A	231	58			231				
A-B	320	80			320				
A-C	411	103			411				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	233	58	296	0.789	226	1.2	3.0	47.552	E
C-AB	183	46	694	0.263	182	0.4	0.6	7.033	A
C-A	257	64			257				
A-B	392	98			392				
A-C	503	126			503				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	233	58	296	0.790	232	3.0	3.3	54.640	F
C-AB	183	46	695	0.264	183	0.6	0.6	7.065	A
C-A	256	64			256				
A-B	392	98			392				
A-C	503	126			503				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	191	48	337	0.566	198	3.3	1.4	27.304	D
C-AB	128	32	681	0.188	129	0.6	0.4	6.563	A
C-A	231	58			231				
A-B	320	80			320				
A-C	411	103			411				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.23	0.11	1.08	2.00	2.72			N/A	N/A
C-AB	0.37	0.00	0.00	0.37	0.37			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	3.02	0.04	0.44	8.41	14.83			N/A	N/A
C-AB	0.62	0.03	0.26	0.62	0.65			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	3.31	0.04	0.36	7.80	17.78			N/A	N/A
C-AB	0.63	0.05	0.47	1.46	1.48			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.38	0.04	0.41	3.63	6.18			N/A	N/A
C-AB	0.39	0.00	0.00	0.39	0.39			N/A	N/A

2040, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D4 - 2040, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		30.62	D

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-18	Stream B-AC	30.62	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	402	100.000
B		ONE HOUR	✓	311	100.000
C		ONE HOUR	✓	437	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	117	285
	B	242	0	69
	C	385	52	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	5
	B	0	0	0
	C	3	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.97	114.12	10.3	40.0	F	311	311
C-AB	0.14	5.05	0.3	1.3	A	100	100
C-A						337	337
A-B						117	117
A-C						285	285

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	280	70	383	0.731	275	1.3	2.4	32.156	D
C-AB	83	21	798	0.104	83	0.2	0.2	5.032	A
C-A	310	78			310				
A-B	105	26			105				
A-C	256	64			256				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	342	86	354	0.967	321	2.4	7.8	78.198	F
C-AB	117	29	835	0.140	116	0.2	0.3	5.006	A
C-A	364	91			364				
A-B	129	32			129				
A-C	314	78			314				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	342	86	354	0.967	333	7.8	10.3	114.117	F
C-AB	117	29	835	0.140	117	0.3	0.3	5.019	A
C-A	364	91			364				
A-B	129	32			129				
A-C	314	78			314				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	280	70	383	0.731	308	10.3	3.1	58.096	F
C-AB	83	21	798	0.104	83	0.3	0.2	5.052	A
C-A	310	77			310				
A-B	105	26			105				
A-C	256	64			256				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	2.42	0.11	1.03	5.40	7.34			N/A	N/A
C-AB	0.21	0.00	0.00	0.21	0.21			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	7.83	0.20	4.04	19.18	26.21			N/A	N/A
C-AB	0.31	0.03	0.27	0.49	1.30			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	10.30	0.13	3.88	27.76	40.04			N/A	N/A
C-AB	0.31	0.00	0.00	0.31	0.31			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	3.13	0.04	0.42	8.62	15.81			N/A	N/A
C-AB	0.21	0.00	0.00	0.21	0.21			N/A	N/A

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D5 - 2040+Dev, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		19.52	C

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-19	Stream B-AC	19.52	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1014	100.000
B		ONE HOUR	✓	212	100.000
C		ONE HOUR	✓	452	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	356	658
	B	153	0	59
	C	370	82	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	2
	B	0	0	0
	C	3	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.98	150.48	9.3	33.1	F	212	212
C-AB	0.31	7.56	0.9	2.6	A	182	182
C-A						270	270
A-B						356	356
A-C						658	658

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	191	48	291	0.655	187	0.9	1.7	33.654	D
C-AB	145	36	680	0.213	144	0.3	0.5	6.725	A
C-A	261	65			261				
A-B	320	80			320				
A-C	592	148			592				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	233	58	239	0.978	213	1.7	6.8	99.349	F
C-AB	219	55	698	0.313	217	0.5	0.9	7.499	A
C-A	279	70			279				
A-B	392	98			392				
A-C	724	181			724				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	233	58	238	0.979	223	6.8	9.3	150.482	F
C-AB	219	55	699	0.314	219	0.9	0.9	7.561	A
C-A	278	70			278				
A-B	392	98			392				
A-C	724	181			724				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	191	48	291	0.656	219	9.3	2.2	62.463	F
C-AB	146	36	681	0.214	147	0.9	0.5	6.801	A
C-A	260	65			260				
A-B	320	80			320				
A-C	592	148			592				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.72	0.08	1.17	3.72	5.06			N/A	N/A
C-AB	0.48	0.00	0.00	0.48	0.48			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	6.82	0.25	3.87	15.95	21.36			N/A	N/A
C-AB	0.88	0.03	0.27	0.88	1.47			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	9.34	0.18	4.41	23.81	33.15			N/A	N/A
C-AB	0.89	0.05	0.57	1.79	2.56			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	2.16	0.04	0.38	5.65	10.99			N/A	N/A
C-AB	0.50	0.50	1.00	1.40	1.45			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D6 - 2040+Dev, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		59.81	F

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-28	Stream B-AC	59.81	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	507	100.000
B		ONE HOUR	✓	311	100.000
C		ONE HOUR	✓	636	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	117	390
	B	242	0	69
	C	584	52	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	3
	B	0	0	0
	C	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	1.14	280.95	27.4	56.8	F	311	311
C-AB	0.18	4.55	0.5	1.5	A	141	141
C-A						495	495
A-B						117	117
A-C						390	390

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	280	70	340	0.821	272	1.6	3.6	47.458	E
C-AB	112	28	907	0.123	111	0.2	0.3	4.526	A
C-A	460	115			460				
A-B	105	26			105				
A-C	351	88			351				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	342	86	302	1.135	291	3.6	16.4	151.023	F
C-AB	170	43	973	0.175	169	0.3	0.5	4.486	A
C-A	530	133			530				
A-B	129	32			129				
A-C	429	107			429				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	342	86	302	1.135	299	16.4	27.4	280.946	F
C-AB	170	43	973	0.175	170	0.5	0.5	4.495	A
C-A	530	132			530				
A-B	129	32			129				
A-C	429	107			429				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	280	70	340	0.822	328	27.4	15.2	238.683	F
C-AB	112	28	907	0.123	113	0.5	0.3	4.546	A
C-A	460	115			460				
A-B	105	26			105				
A-C	351	88			351				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	3.60	0.13	1.73	8.39	11.42			N/A	N/A
C-AB	0.29	0.00	0.00	0.29	0.29			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	16.45	3.34	13.87	29.73	35.68			N/A	N/A
C-AB	0.50	0.03	0.27	0.50	1.49			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	27.41	7.08	23.99	47.98	56.77			N/A	N/A
C-AB	0.50	0.05	0.48	1.29	1.40			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	15.23	1.41	11.67	30.89	38.59			N/A	N/A
C-AB	0.30	0.00	0.00	0.30	0.30			N/A	N/A

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: Junction 5 - A290_University Road.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 03/02/2022 12:42:41

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
2021														
Stream B-C	D1	0.3	8.64	0.23	A	5.04	29 % [Stream B-A]	D2	0.7	11.88	0.41	B	5.15	28 % [Stream B-A]
Stream B-A		0.3	19.40	0.24	C				0.5	17.29	0.32	C		
Stream C-AB		1.2	13.25	0.53	B				0.3	9.06	0.25	A		
2040														
Stream B-C	D3	0.4	9.83	0.28	A	6.29	13 % [Stream B-A]	D4	1.0	15.46	0.51	C	6.49	12 % [Stream B-A]
Stream B-A		0.4	24.81	0.31	C				0.7	23.05	0.42	C		
Stream C-AB		1.9	15.88	0.63	C				0.4	9.78	0.30	A		
2040+Dev														
Stream B-C	D5	0.5	12.78	0.34	B	7.39	-3 % [Stream B-A]	D6	1.4	21.07	0.59	C	7.18	-1 % [Stream B-A]
Stream B-A		0.7	40.12	0.42	E				1.1	37.10	0.54	E		
Stream C-AB		2.9	19.77	0.70	C				0.5	10.32	0.32	B		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	23/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓
D3	2040	AM	ONE HOUR	07:45	09:15	15	✓	✓
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2021, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D1 - 2021, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		5.04	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	29	Stream B-A	5.04	A

Arms

Arms

Arm	Name	Description	Arm type
A	A290 St Thomas Hill North		Major
B	University Road		Minor
C	A290 St Thomas Hill South		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.55		✓	2.33	137.0	✓	3.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	4.80	3.50	3.50	3.50	✓	1.00	54	24

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	522	0.093	0.236	0.148	0.336
B-C	710	0.108	0.267	-	-
C-B	662	0.250	0.250	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	407	100.000
B		ONE HOUR	✓	167	100.000
C		ONE HOUR	✓	563	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	103	304
	B	52	0	115
	C	306	257	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	3	4
	B	13	0	3
	C	2	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.23	8.64	0.3	1.4	A	115	115
B-A	0.24	19.40	0.3	1.4	C	52	52
C-AB	0.53	13.25	1.2	4.5	B	276	276
C-A						287	287
A-B						103	103
A-C						304	304

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	103	26	577	0.179	103	0.2	0.2	7.591	A
B-A	47	12	285	0.164	47	0.1	0.2	15.109	C
C-AB	240	60	573	0.420	239	0.5	0.7	10.784	B
C-A	266	66			266				
A-B	93	23			93				
A-C	273	68			273				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	127	32	544	0.233	126	0.2	0.3	8.616	A
B-A	57	14	243	0.235	57	0.2	0.3	19.260	C
C-AB	312	78	584	0.534	310	0.7	1.2	13.079	B
C-A	308	77			308				
A-B	113	28			113				
A-C	335	84			335				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	127	32	543	0.233	127	0.3	0.3	8.643	A
B-A	57	14	243	0.236	57	0.3	0.3	19.396	C
C-AB	312	78	584	0.534	312	1.2	1.2	13.253	B
C-A	308	77			308				
A-B	113	28			113				
A-C	335	84			335				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	103	26	576	0.179	104	0.3	0.2	7.623	A
B-A	47	12	284	0.165	47	0.3	0.2	15.238	C
C-AB	240	60	572	0.420	242	1.2	0.8	10.965	B
C-A	266	66			266				
A-B	93	23			93				
A-C	273	68			273				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.22	0.00	0.00	0.22	0.22			N/A	N/A
B-A	0.19	0.00	0.00	0.19	0.19			N/A	N/A
C-AB	0.73	0.26	0.95	1.39	1.45			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.30	0.03	0.26	0.46	0.49			N/A	N/A
B-A	0.30	0.03	0.26	0.47	0.49			N/A	N/A
C-AB	1.21	0.03	0.27	1.21	2.11			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.30	0.03	0.31	1.06	1.36			N/A	N/A
B-A	0.30	0.03	0.31	1.08	1.39			N/A	N/A
C-AB	1.24	0.03	0.28	1.24	4.54			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.22	0.00	0.00	0.22	0.22			N/A	N/A
B-A	0.20	0.00	0.00	0.20	0.20			N/A	N/A
C-AB	0.77	0.08	0.81	1.24	1.24			N/A	N/A

2021, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D2 - 2021, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		5.15	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	28	Stream B-A	5.15	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	327	100.000
B		ONE HOUR	✓	286	100.000
C		ONE HOUR	✓	377	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	40	287
	B	91	0	195
	C	255	122	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	13	2
	B	5	0	6
	C	2	8	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.41	11.88	0.7	3.1	B	195	195
B-A	0.32	17.29	0.5	2.0	C	91	91
C-AB	0.25	9.06	0.3	1.1	A	123	123
C-A						254	254
A-B						40	40
A-C						287	287

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	175	44	557	0.315	175	0.3	0.5	9.415	A
B-A	82	20	350	0.234	81	0.2	0.3	13.392	B
C-AB	110	28	545	0.202	110	0.2	0.3	8.264	A
C-A	229	57			229				
A-B	36	9			36				
A-C	258	65			258				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	215	54	518	0.414	214	0.5	0.7	11.780	B
B-A	100	25	309	0.324	100	0.3	0.5	17.147	C
C-AB	136	34	533	0.255	136	0.3	0.3	9.046	A
C-A	279	70			279				
A-B	44	11			44				
A-C	316	79			316				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	215	54	518	0.415	215	0.7	0.7	11.880	B
B-A	100	25	308	0.325	100	0.5	0.5	17.287	C
C-AB	136	34	533	0.255	136	0.3	0.3	9.062	A
C-A	279	70			279				
A-B	44	11			44				
A-C	316	79			316				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	175	44	556	0.315	176	0.7	0.5	9.510	A
B-A	82	20	350	0.234	82	0.5	0.3	13.512	B
C-AB	110	28	545	0.202	111	0.3	0.3	8.287	A
C-A	229	57			229				
A-B	36	9			36				
A-C	258	65			258				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.45	0.00	0.00	0.45	0.45			N/A	N/A
B-A	0.30	0.00	0.00	0.30	0.30			N/A	N/A
C-AB	0.25	0.00	0.00	0.25	0.25			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.69	0.03	0.26	0.69	0.69			N/A	N/A
B-A	0.47	0.03	0.26	0.47	0.49			N/A	N/A
C-AB	0.34	0.03	0.26	0.46	0.49			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.70	0.03	0.29	1.23	3.09			N/A	N/A
B-A	0.47	0.03	0.31	1.40	2.01			N/A	N/A
C-AB	0.34	0.03	0.31	1.09	1.09			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.47	0.04	0.39	1.22	1.36			N/A	N/A
B-A	0.31	0.00	0.00	0.31	0.31			N/A	N/A
C-AB	0.26	0.00	0.00	0.26	0.26			N/A	N/A

2040, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D3 - 2040, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		6.29	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	13	Stream B-A	6.29	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D3	2040	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	465	100.000
B		ONE HOUR	✓	190	100.000
C		ONE HOUR	✓	642	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	118	347
	B	59	0	131
	C	349	293	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	3	4
	B	13	0	3
	C	2	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.28	9.83	0.4	1.5	A	131	131
B-A	0.31	24.81	0.4	1.7	C	59	59
C-AB	0.63	15.88	1.9	8.3	C	334	334
C-A						308	308
A-B						118	118
A-C						347	347

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	118	29	557	0.211	118	0.2	0.3	8.179	A
B-A	53	13	259	0.205	53	0.2	0.3	17.446	C
C-AB	283	71	577	0.490	281	0.7	1.0	12.149	B
C-A	294	74			294				
A-B	106	27			106				
A-C	312	78			312				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	144	36	512	0.282	144	0.3	0.4	9.768	A
B-A	65	16	211	0.308	64	0.3	0.4	24.437	C
C-AB	385	96	613	0.628	381	1.0	1.9	15.446	C
C-A	322	81			322				
A-B	130	32			130				
A-C	382	96			382				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	144	36	510	0.283	144	0.4	0.4	9.832	A
B-A	65	16	210	0.309	65	0.4	0.4	24.812	C
C-AB	385	96	613	0.628	385	1.9	1.9	15.881	C
C-A	322	81			322				
A-B	130	32			130				
A-C	382	96			382				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	118	29	556	0.212	118	0.4	0.3	8.235	A
B-A	53	13	257	0.206	54	0.4	0.3	17.726	C
C-AB	283	71	578	0.490	286	1.9	1.1	12.558	B
C-A	294	74			294				
A-B	106	27			106				
A-C	312	78			312				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.26	0.00	0.00	0.26	0.26			N/A	N/A
B-A	0.25	0.00	0.00	0.25	0.25			N/A	N/A
C-AB	1.00	0.17	1.00	1.37	1.72			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.39	0.03	0.26	0.46	0.49			N/A	N/A
B-A	0.43	0.03	0.26	0.47	0.50			N/A	N/A
C-AB	1.87	0.03	0.30	1.87	8.32			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.39	0.03	0.31	1.28	1.50			N/A	N/A
B-A	0.44	0.03	0.32	1.37	1.75			N/A	N/A
C-AB	1.94	0.03	0.29	1.94	7.80			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.27	0.00	0.00	0.27	0.27			N/A	N/A
B-A	0.27	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	1.07	0.07	0.86	1.93	2.70			N/A	N/A

2040, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D4 - 2040, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		6.49	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	12	Stream B-A	6.49	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	375	100.000
B		ONE HOUR	✓	327	100.000
C		ONE HOUR	✓	432	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	46	329
	B	104	0	223
	C	292	140	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	13	2
	B	5	0	6
	C	2	8	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.51	15.46	1.0	4.1	C	223	223
B-A	0.42	23.05	0.7	3.5	C	104	104
C-AB	0.30	9.78	0.4	1.8	A	142	142
C-A						290	290
A-B						46	46
A-C						329	329

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	200	50	533	0.376	200	0.4	0.6	10.780	B
B-A	93	23	324	0.289	93	0.3	0.4	15.561	C
C-AB	127	32	537	0.236	127	0.2	0.3	8.766	A
C-A	261	65			261				
A-B	41	10			41				
A-C	296	74			296				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	246	61	480	0.512	244	0.6	1.0	15.141	C
B-A	115	29	271	0.422	113	0.4	0.7	22.589	C
C-AB	158	39	526	0.300	157	0.3	0.4	9.759	A
C-A	318	80			318				
A-B	51	13			51				
A-C	362	91			362				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	246	61	478	0.514	245	1.0	1.0	15.459	C
B-A	115	29	270	0.423	114	0.7	0.7	23.053	C
C-AB	158	39	526	0.300	158	0.4	0.4	9.783	A
C-A	318	80			318				
A-B	51	13			51				
A-C	362	91			362				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	200	50	531	0.377	202	1.0	0.6	10.994	B
B-A	93	23	323	0.290	95	0.7	0.4	15.854	C
C-AB	127	32	537	0.237	127	0.4	0.3	8.799	A
C-A	261	65			261				
A-B	41	10			41				
A-C	296	74			296				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.59	0.12	0.87	1.37	1.44			N/A	N/A
B-A	0.40	0.00	0.00	0.40	0.40			N/A	N/A
C-AB	0.31	0.00	0.00	0.31	0.31			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.01	0.03	0.27	1.01	1.45			N/A	N/A
B-A	0.70	0.03	0.26	0.70	0.90			N/A	N/A
C-AB	0.43	0.03	0.26	0.46	0.49			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.04	0.03	0.29	1.13	4.12			N/A	N/A
B-A	0.72	0.03	0.30	1.21	3.49			N/A	N/A
C-AB	0.43	0.03	0.31	1.33	1.82			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.62	0.06	0.66	1.35	1.44			N/A	N/A
B-A	0.42	0.03	0.34	1.13	1.31			N/A	N/A
C-AB	0.32	0.00	0.00	0.32	0.32			N/A	N/A

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D5 - 2040+Dev, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		7.39	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-3	Stream B-A	7.39	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	667	100.000
B		ONE HOUR	✓	190	100.000
C		ONE HOUR	✓	695	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	118	549
	B	59	0	131
	C	402	293	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	3	2
	B	13	0	3
	C	2	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.34	12.78	0.5	2.2	B	131	131
B-A	0.42	40.12	0.7	3.2	E	59	59
C-AB	0.70	19.77	2.9	14.7	C	363	363
C-A						332	332
A-B						118	118
A-C						549	549

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	118	29	504	0.233	117	0.2	0.3	9.294	A
B-A	53	13	215	0.247	53	0.2	0.3	22.162	C
C-AB	294	74	552	0.533	292	0.8	1.2	13.823	B
C-A	331	83			331				
A-B	106	27			106				
A-C	494	123			494				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	144	36	430	0.335	143	0.3	0.5	12.522	B
B-A	65	16	156	0.417	64	0.3	0.7	38.439	E
C-AB	433	108	618	0.700	427	1.2	2.7	18.679	C
C-A	333	83			333				
A-B	130	32			130				
A-C	604	151			604				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	144	36	426	0.339	144	0.5	0.5	12.783	B
B-A	65	16	154	0.421	65	0.7	0.7	40.116	E
C-AB	433	108	617	0.701	432	2.7	2.9	19.770	C
C-A	333	83			333				
A-B	130	32			130				
A-C	604	151			604				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	118	29	501	0.235	119	0.5	0.3	9.427	A
B-A	53	13	213	0.250	54	0.7	0.3	22.968	C
C-AB	294	74	551	0.534	301	2.9	1.3	14.732	B
C-A	331	83			331				
A-B	106	27			106				
A-C	494	123			494				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.30	0.00	0.00	0.30	0.30			N/A	N/A
B-A	0.32	0.00	0.00	0.32	0.32			N/A	N/A
C-AB	1.22	0.13	1.10	1.91	2.51			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.49	0.03	0.26	0.49	0.49			N/A	N/A
B-A	0.67	0.03	0.27	0.67	1.58			N/A	N/A
C-AB	2.74	0.03	0.34	6.01	14.69			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.51	0.03	0.31	1.45	2.21			N/A	N/A
B-A	0.70	0.03	0.33	1.55	3.22			N/A	N/A
C-AB	2.91	0.03	0.31	4.19	14.51			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.31	0.00	0.00	0.31	0.31			N/A	N/A
B-A	0.34	0.03	0.30	0.88	1.19			N/A	N/A
C-AB	1.34	0.06	0.79	2.97	4.33			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D6 - 2040+Dev, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		7.18	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-1	Stream B-A	7.18	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	480	100.000
B		ONE HOUR	✓	327	100.000
C		ONE HOUR	✓	631	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	46	434
	B	104	0	223
	C	491	140	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	13	1
	B	5	0	6
	C	1	8	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.59	21.07	1.4	6.1	C	223	223
B-A	0.54	37.10	1.1	5.8	E	104	104
C-AB	0.32	10.32	0.5	2.1	B	145	145
C-A						486	486
A-B						46	46
A-C						434	434

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	200	50	499	0.402	200	0.4	0.7	11.998	B
B-A	93	23	277	0.337	93	0.3	0.5	19.431	C
C-AB	128	32	520	0.246	128	0.2	0.3	9.180	A
C-A	439	110			439				
A-B	41	10			41				
A-C	390	98			390				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	246	61	420	0.584	243	0.7	1.3	19.973	C
B-A	115	29	213	0.539	112	0.5	1.1	35.046	E
C-AB	161	40	510	0.316	161	0.3	0.5	10.288	B
C-A	534	133			534				
A-B	51	13			51				
A-C	478	119			478				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	246	61	416	0.591	245	1.3	1.4	21.072	C
B-A	115	29	211	0.543	114	1.1	1.1	37.102	E
C-AB	161	40	510	0.316	161	0.5	0.5	10.321	B
C-A	534	133			534				
A-B	51	13			51				
A-C	478	119			478				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	200	50	495	0.405	203	1.4	0.7	12.467	B
B-A	93	23	276	0.339	96	1.1	0.5	20.258	C
C-AB	128	32	519	0.247	129	0.5	0.3	9.214	A
C-A	439	110			439				
A-B	41	10			41				
A-C	390	98			390				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.66	0.11	0.85	1.37	1.44			N/A	N/A
B-A	0.49	0.00	0.00	0.49	0.49			N/A	N/A
C-AB	0.33	0.00	0.00	0.33	0.33			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.34	0.03	0.28	1.34	4.56			N/A	N/A
B-A	1.08	0.03	0.29	1.27	4.50			N/A	N/A
C-AB	0.47	0.03	0.26	0.47	0.49			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.40	0.03	0.29	1.40	6.14			N/A	N/A
B-A	1.13	0.03	0.31	2.15	5.78			N/A	N/A
C-AB	0.48	0.03	0.31	1.40	2.06			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.70	0.05	0.60	1.48	1.52			N/A	N/A
B-A	0.53	0.04	0.43	1.34	1.47			N/A	N/A
C-AB	0.34	0.00	0.00	0.34	0.34			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.0.1.1519

For sales and distribution information, program advice and maintenance, contact TRL Software:
+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

Filename: Junction 6 - Whitsable Road_London Road Mini Roundabout.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 03/02/2022 13:31:57

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2021													
Arm A	D1	3.0	16.87	0.75	C	21.51	0 % [Arm C]	D2	2.9	16.71	0.75	C	17.09	11 % [Arm C]
Arm B		1.0	9.77	0.49	A				1.6	12.74	0.61	B		
Arm C		5.3	34.16	0.86	D				3.0	21.49	0.76	C		
	2040													
Arm A	D3	5.9	30.13	0.87	D	50.94	-12 % [Arm C]	D4	5.9	31.04	0.87	D	32.67	-4 % [Arm C]
Arm B		1.5	13.47	0.60	B				3.0	21.94	0.76	C		
Arm C		18.3	98.10	1.00	F				6.9	44.39	0.89	E		
	2040+Dev													
Arm A	D5	53.2	187.75	1.10	F	131.21	-18 % [Arm A]	D6	18.0	78.81	0.99	F	102.92	-15 % [Arm C]
Arm B		1.8	14.13	0.65	B				22.8	111.15	1.03	F		
Arm C		26.1	133.73	1.04	F				21.4	127.25	1.03	F		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	10/01/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓
D3	2040	AM	ONE HOUR	07:45	09:15	15	✓	✓
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2021, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D1 - 2021, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	21.51	C

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		0	Arm C	21.51	C

Arms

Arms

Arm	Name	Description
A	Whitstable Road	
B	St. Dunstans Street	
C	London Road	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.20	2.90	4.45	10.5	15.70	15.90	0.0	
B	4.00	3.10	5.15	15.3	15.80	13.60	0.0	
C	3.05	2.98	4.90	2.0	10.80	7.20	0.0	✓

Zebra Crossings

Arm	Space between crossing and junction entry (Zebra) (PCU)	Vehicles queueing on exit (Zebra) (PCU)	Central Refuge	Crossing data type	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
C	1.00	1.00	✓	Distance	4.00	2.86	4.00	2.86

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.665	977
B	0.661	1108
C	0.497	827

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	591	100.000
B		ONE HOUR	✓	324	100.000
C		ONE HOUR	✓	544	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
A		
B		
C	[ONEHOUR]	90.00

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	248	343
	B	198	0	126
	C	442	102	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	4	5
	B	8	0	6
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.75	16.87	3.0	14.0	C	591	591
B	0.49	9.77	1.0	3.3	A	324	324
C	0.86	34.16	5.3	29.0	D	544	544

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	531	133	91		876	0.607	529	572	1.0	1.5	10.319	B
B	291	73	307		793	0.367	291	313	0.4	0.6	7.161	A
C	489	122	178	80.91	721	0.678	486	420	1.2	2.0	15.101	C

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	651	163	110		864	0.753	645	694	1.5	2.9	16.078	C
B	357	89	375		728	0.490	355	381	0.6	0.9	9.626	A
C	599	150	217	99.09	699	0.857	587	513	2.0	4.9	29.549	D

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	651	163	112		863	0.754	650	703	2.9	3.0	16.873	C
B	357	89	377		725	0.492	357	385	0.9	1.0	9.769	A
C	599	150	218	99.09	699	0.857	597	516	4.9	5.3	34.159	D

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	531	133	94		874	0.608	537	586	3.0	1.6	10.837	B
B	291	73	312		789	0.369	293	319	1.0	0.6	7.278	A
C	489	122	179	80.91	720	0.679	502	425	5.3	2.2	17.294	C

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.50	0.07	1.03	3.20	4.45			N/A	N/A
B	0.57	0.10	0.82	1.36	1.43			N/A	N/A
C	2.01	0.07	1.16	4.74	6.71			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.86	0.03	0.31	3.89	14.02			N/A	N/A
B	0.94	0.03	0.26	0.94	0.94			N/A	N/A
C	4.90	0.04	0.45	13.74	25.23			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.96	0.03	0.28	2.96	8.95			N/A	N/A
B	0.96	0.03	0.28	0.96	3.27			N/A	N/A
C	5.35	0.03	0.35	11.01	29.00			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.59	0.05	0.60	3.98	6.08			N/A	N/A
B	0.59	0.08	0.76	1.35	1.43			N/A	N/A
C	2.22	0.04	0.42	6.05	10.66			N/A	N/A

2021, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D2 - 2021, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	17.09	C

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		11	Arm C	17.09	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	580	100.000
B		ONE HOUR	✓	407	100.000
C		ONE HOUR	✓	475	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
A		
B		
C	[ONEHOUR]	60.00

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	251	329
	B	225	0	182
	C	349	126	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	2	5
	B	5	0	8
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.75	16.71	2.9	13.5	C	580	580
B	0.61	12.74	1.6	4.0	B	407	407
C	0.76	21.49	3.0	15.2	C	475	475

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	521	130	113		869	0.600	519	514	1.0	1.5	10.227	B
B	366	91	295		800	0.457	365	338	0.6	0.8	8.252	A
C	427	107	202	53.94	713	0.599	425	458	0.9	1.4	12.414	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	639	160	137		854	0.748	633	626	1.5	2.8	15.961	C
B	448	112	359		733	0.611	445	411	0.8	1.5	12.398	B
C	523	131	246	66.06	689	0.759	517	558	1.4	2.9	20.241	C

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	639	160	139		853	0.749	638	632	2.8	2.9	16.711	C
B	448	112	362		730	0.614	448	415	1.5	1.6	12.744	B
C	523	131	248	66.06	689	0.759	522	562	2.9	3.0	21.495	C

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	521	130	115		868	0.601	527	522	2.9	1.5	10.707	B
B	366	91	299		796	0.460	369	343	1.6	0.9	8.479	A
C	427	107	204	53.94	712	0.600	433	464	3.0	1.5	13.165	B

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.46	0.08	1.02	3.03	4.24			N/A	N/A
B	0.83	0.10	0.88	1.41	1.41			N/A	N/A
C	1.45	0.08	1.07	2.91	3.94			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.78	0.03	0.31	3.65	13.50			N/A	N/A
B	1.52	0.03	0.27	1.52	3.34			N/A	N/A
C	2.89	0.03	0.33	5.39	15.25			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.88	0.03	0.28	2.88	8.57			N/A	N/A
B	1.56	0.03	0.28	1.56	4.02			N/A	N/A
C	3.01	0.03	0.29	3.01	11.84			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.55	0.05	0.61	3.84	5.82			N/A	N/A
B	0.86	0.07	0.81	1.39	1.80			N/A	N/A
C	1.55	0.05	0.49	3.95	6.20			N/A	N/A

2040, AM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Arm B - Capacity	Pedestrian Crossing causes blocking on previous arm due to traffic queing to leave the junction in 2 timesegment(s).
Warning	Demand Sets	D3 - 2040, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	50.94	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-12	Arm C	50.94	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D3	2040	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	674	100.000
B		ONE HOUR	✓	370	100.000
C		ONE HOUR	✓	620	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
A		
B		
C	[ONEHOUR]	90.00

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	283	391
	B	226	0	144
	C	504	116	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	4	5
	B	8	0	6
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.87	30.13	5.9	31.5	D	674	674
B	0.60	13.47	1.5	4.5	B	370	370
C	1.00	98.10	18.3	63.2	F	620	620

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	606	151	103		868	0.698	602	650	1.3	2.2	13.358	B
B	333	83	349		753	0.442	332	356	0.5	0.8	8.514	A
C	557	139	203	80.91	708	0.787	551	479	1.7	3.3	22.034	C

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	742	186	120		857	0.866	730	771	2.2	5.3	25.939	D
B	407	102	423		680	0.599	405	427	0.8	1.4	12.968	B
C	683	171	247	99.09	683	0.999	644	581	3.3	13.0	61.211	F

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	742	186	124		855	0.868	740	786	5.3	5.9	30.134	D
B	407	102	429		674	0.604	407	434	1.4	1.5	13.472	B
C	683	171	249	99.09	682	1.000	661	588	13.0	18.3	98.102	F

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	606	151	115		861	0.704	619	704	5.9	2.5	15.653	C
B	333	83	359		745	0.447	335	375	1.5	0.8	8.851	A
C	557	139	205	80.91	707	0.789	614	490	18.3	4.3	49.634	E

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.21	0.07	1.11	5.46	7.89			N/A	N/A
B	0.78	0.10	0.86	1.42	1.49			N/A	N/A
C	3.34	0.09	1.12	8.43	12.01			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.34	0.04	0.44	14.80	27.91			N/A	N/A
B	1.45	0.03	0.27	1.45	3.05			N/A	N/A
C	13.04	0.43	7.87	30.87	41.15			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.85	0.03	0.34	11.35	31.47			N/A	N/A
B	1.49	0.03	0.28	1.49	4.47			N/A	N/A
C	18.34	0.33	9.85	46.13	63.17			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.50	0.04	0.44	6.88	11.87			N/A	N/A
B	0.82	0.07	0.79	1.19	1.68			N/A	N/A
C	4.31	0.04	0.44	12.08	21.97			N/A	N/A

2040, PM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Arm B - Capacity	Pedestrian Crossing causes blocking on previous arm due to traffic queing to leave the junction in 2 timesegment(s).
Warning	Demand Sets	D4 - 2040, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	32.67	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-4	Arm C	32.67	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	664	100.000
B		ONE HOUR	✓	466	100.000
C		ONE HOUR	✓	544	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
A		
B		
C	[ONEHOUR]	60.00

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	287	377
	B	258	0	208
	C	400	144	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	2	5
	B	5	0	8
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.87	31.04	5.9	32.1	D	664	664
B	0.76	21.94	3.0	14.7	C	466	466
C	0.89	44.39	6.9	37.4	E	544	544

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	597	149	128		859	0.695	593	588	1.3	2.2	13.367	B
B	419	105	337		758	0.553	417	385	0.7	1.2	10.515	B
C	489	122	231	53.94	698	0.701	485	523	1.3	2.2	16.645	C

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	731	183	155		842	0.868	718	710	2.2	5.4	26.560	D
B	513	128	408		681	0.753	507	465	1.2	2.8	19.940	C
C	599	150	281	66.06	672	0.892	584	634	2.2	6.0	35.789	E

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	731	183	158		840	0.870	729	722	5.4	5.9	31.042	D
B	513	128	414		675	0.760	512	473	2.8	3.0	21.936	C
C	599	150	284	66.06	670	0.894	596	643	6.0	6.9	44.386	E

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	597	149	134		856	0.698	611	608	5.9	2.4	15.477	C
B	419	105	347		748	0.560	426	398	3.0	1.3	11.396	B
C	489	122	236	53.94	695	0.703	507	537	6.9	2.5	20.567	C

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.18	0.07	1.09	5.38	7.79			N/A	N/A
B	1.21	0.07	0.91	2.42	3.28			N/A	N/A
C	2.21	0.08	1.20	5.34	7.62			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.40	0.04	0.44	15.06	28.00			N/A	N/A
B	2.81	0.03	0.32	5.04	14.73			N/A	N/A
C	6.03	0.06	1.00	17.42	28.69			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.93	0.03	0.35	11.95	32.12			N/A	N/A
B	3.00	0.03	0.30	3.00	12.82			N/A	N/A
C	6.88	0.04	0.41	18.28	37.37			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.42	0.04	0.43	6.66	11.62			N/A	N/A
B	1.31	0.05	0.50	3.17	4.84			N/A	N/A
C	2.52	0.04	0.42	6.89	12.49			N/A	N/A

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D5 - 2040+Dev, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	131.21	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-18	Arm A	131.21	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	865	100.000
B		ONE HOUR	✓	420	100.000
C		ONE HOUR	✓	620	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
A		
B		
C	[ONEHOUR]	90.00

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	474	391
	B	276	0	144
	C	504	116	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	2	5
	B	6	0	6
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.10	187.75	53.2	105.2	F	865	865
B	0.65	14.13	1.8	5.4	B	420	420
C	1.04	133.73	26.1	70.6	F	620	620

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	778	194	103		879	0.885	764	694	2.6	6.1	28.214	D
B	378	94	345		766	0.493	376	521	0.6	1.0	9.209	A
C	557	139	247	80.91	687	0.812	550	474	1.8	3.8	24.880	C

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	952	238	118		869	1.096	853	814	6.1	30.9	92.740	F
B	462	116	388		721	0.641	459	585	1.0	1.7	13.603	B
C	683	171	302	99.09	658	1.038	630	543	3.8	16.9	75.822	F

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	952	238	121		867	1.098	863	829	30.9	53.2	186.889	F
B	462	116	390		716	0.645	462	594	1.7	1.8	14.130	B
C	683	171	304	99.09	657	1.040	646	549	16.9	26.1	133.727	F

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	778	194	120		868	0.896	852	770	53.2	34.7	187.754	F
B	378	94	385		731	0.517	380	586	1.8	1.1	10.344	B
C	557	139	250	80.91	685	0.813	639	515	26.1	5.6	85.766	F

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.09	0.16	2.94	14.99	20.67			N/A	N/A
B	0.95	0.10	0.93	1.47	1.82			N/A	N/A
C	3.78	0.10	1.42	9.51	13.49			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	30.94	7.53	26.90	55.03	65.45			N/A	N/A
B	1.72	0.03	0.28	1.72	5.40			N/A	N/A
C	16.89	1.14	12.45	35.63	45.11			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	53.21	16.53	47.95	90.04	105.21			N/A	N/A
B	1.78	0.03	0.28	1.78	4.52			N/A	N/A
C	26.09	1.95	19.40	55.65	70.58			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	34.66	10.16	30.91	59.15	69.40			N/A	N/A
B	1.09	0.08	0.92	1.92	2.63			N/A	N/A
C	5.59	0.05	0.68	16.08	27.28			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Arm B - Capacity	Pedestrian Crossing causes blocking on previous arm due to traffic queing to leave the junction in 2 timesegment(s).
Warning	Demand Sets	D6 - 2040+Dev, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	102.92	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-15	Arm C	102.92	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	764	100.000
B		ONE HOUR	✓	654	100.000
C		ONE HOUR	✓	544	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
A		
B		
C	[ONEHOUR]	60.00

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	387	377
	B	446	0	208
	C	400	144	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	5
	B	2	0	8
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.99	78.81	18.0	68.1	F	764	764
B	1.03	111.15	22.8	68.5	F	654	654
C	1.03	127.25	21.4	62.9	F	544	544

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	687	172	128		866	0.793	680	751	1.8	3.5	18.709	C
B	588	147	338		777	0.757	582	472	1.4	2.9	17.938	C
C	489	122	397	53.94	618	0.791	482	521	1.6	3.4	25.185	D

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	841	210	147		853	0.986	803	869	3.5	13.1	50.438	F
B	720	180	398		712	1.012	674	554	2.9	14.4	61.839	F
C	599	150	460	66.06	587	1.021	556	610	3.4	14.0	73.655	F

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	841	210	151		851	0.989	822	887	13.1	18.0	78.808	F
B	720	180	406		702	1.026	687	567	14.4	22.8	111.153	F
C	599	150	468	66.06	582	1.029	569	624	14.0	21.4	127.247	F

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	687	172	145		854	0.804	740	855	18.0	4.7	39.618	E
B	588	147	365		743	0.791	661	520	22.8	4.5	58.630	F
C	489	122	451	53.94	591	0.827	550	575	21.4	6.3	89.263	F

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.50	0.08	1.03	9.04	13.13			N/A	N/A
B	2.88	0.07	1.15	7.60	11.34			N/A	N/A
C	3.36	0.09	1.24	8.34	11.79			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	13.11	0.27	6.96	32.75	44.83			N/A	N/A
B	14.44	0.70	9.41	33.01	43.25			N/A	N/A
C	14.01	0.90	9.58	31.00	40.07			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	17.96	0.19	7.76	47.92	68.11			N/A	N/A
B	22.79	1.10	15.14	52.38	68.54			N/A	N/A
C	21.41	1.21	14.59	48.38	62.86			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	4.67	0.05	0.48	13.30	23.28			N/A	N/A
B	4.45	0.05	0.64	12.73	21.28			N/A	N/A
C	6.26	0.08	1.33	17.58	26.87			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 7- St Stephens Hill_Beaconsfield Road.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 03/02/2022 13:33:28

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
2021														
Arm A	D1	1.5	8.83	0.60	A	8.80	46 % [Arm A]	D2	0.6	5.55	0.37	A	7.54	48 % [Arm C]
Arm B		0.8	7.98	0.43	A				0.8	7.09	0.45	A		
Arm C		0.8	9.66	0.46	A				1.0	10.34	0.50	B		
2040														
Arm A	D3	2.2	11.65	0.70	B	11.14	27 % [Arm A]	D4	0.7	6.18	0.43	A	9.01	30 % [Arm C]
Arm B		1.0	9.56	0.51	A				1.1	8.25	0.52	A		
Arm C		1.2	11.88	0.54	B				1.4	13.12	0.59	B		
2040+Dev														
Arm A	D5	3.9	17.99	0.80	C	14.99	12 % [Arm A]	D6	1.0	7.15	0.50	A	12.88	11 % [Arm C]
Arm B		1.3	10.82	0.57	B				2.2	12.76	0.69	B		
Arm C		1.4	13.40	0.58	B				2.2	20.38	0.70	C		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	10/01/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	Trips to Zone D diverted to other zones	ONE HOUR	07:45	09:15	15	✓	✓
D2	2021	PM	Trips to Zone D diverted to other zones	ONE HOUR	16:15	17:45	15	✓	✓
D3	2040	AM	Trips to Zone D diverted to other zones	ONE HOUR	07:45	09:15	15	✓	✓
D4	2040	PM	Trips to Zone D diverted to other zones	ONE HOUR	16:15	17:45	15	✓	✓
D5	2040+Dev	AM	Trips to Zone D diverted to other zones	ONE HOUR	07:45	09:15	15	✓	✓
D6	2040+Dev	PM	Trips to Zone D diverted to other zones	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2021, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D1 - 2021, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	St Stephens Hill, Beaconsfield Road, Stephenson Road Mini Roundabout	Mini-roundabout		A, B, C	8.80	A

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		46	Arm A	8.80	A

Arms

Arms

Arm	Name	Description
A	St Stpehens Hill (North)	
B	St Stephens Hill (South)	
C	Beaconsfield Road	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.65	3.65	5.70	8.6	16.70	14.90	0.0	
B	4.40	2.93	5.25	6.1	14.55	11.20	0.0	
C	3.45	3.45	4.00	8.6	8.95	6.80	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.683	1117
B	0.631	1004
C	0.625	867

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	Trips to Zone D diverted to other zones	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	560	100.000
B		ONE HOUR	✓	315	100.000
C		ONE HOUR	✓	288	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	294	266
	B	246	0	69
	C	184	104	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	2
	B	2	0	2
	C	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.60	8.83	1.5	1.8	A	560	560
B	0.43	7.96	0.8	2.9	A	315	315
C	0.46	9.66	0.8	3.0	A	288	288

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	503	126	93	1038	0.485	502	386	0.7	0.9	6.702	A
B	283	71	239	833	0.340	283	357	0.4	0.5	6.532	A
C	259	65	221	721	0.359	258	301	0.4	0.6	7.766	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	617	154	114	1024	0.602	614	472	0.9	1.5	8.733	A
B	347	87	292	800	0.434	346	437	0.5	0.8	7.913	A
C	317	79	270	690	0.460	316	368	0.6	0.8	9.595	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	617	154	114	1024	0.602	617	473	1.5	1.5	8.828	A
B	347	87	293	799	0.434	347	438	0.8	0.8	7.957	A
C	317	79	271	690	0.460	317	369	0.8	0.8	9.664	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	503	126	94	1038	0.485	506	388	1.5	1.0	6.788	A
B	283	71	240	832	0.340	284	359	0.8	0.5	6.577	A
C	259	65	222	720	0.359	260	302	0.8	0.6	7.837	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.93	0.10	0.92	1.38	1.76			N/A	N/A
B	0.51	0.51	1.00	1.40	1.45			N/A	N/A
C	0.55	0.55	1.00	1.40	1.45			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.48	0.03	0.27	1.48	1.48			N/A	N/A
B	0.75	0.03	0.26	0.75	0.75			N/A	N/A
C	0.83	0.03	0.26	0.83	0.83			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.49	0.03	0.27	1.49	1.61			N/A	N/A
B	0.76	0.03	0.28	0.82	2.87			N/A	N/A
C	0.84	0.03	0.28	0.84	2.97			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.96	0.10	0.94	1.45	1.81			N/A	N/A
B	0.52	0.52	1.00	1.40	1.45			N/A	N/A
C	0.57	0.07	0.73	1.35	1.42			N/A	N/A

2021, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D2 - 2021, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	St Stephens Hill, Beaconsfield Road, Stephenson Road Mini Roundabout	Mini-roundabout		A, B, C	7.54	A

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		48	Arm C	7.54	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D2	2021	PM	Trips to Zone D diverted to other zones	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	347	100.000
B		ONE HOUR	✓	376	100.000
C		ONE HOUR	✓	311	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	236	111
	B	256	0	120
	C	205	106	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	2
	B	0	0	1
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.37	5.55	0.6	2.6	A	347	347
B	0.45	7.09	0.8	2.5	A	378	378
C	0.50	10.34	1.0	3.0	B	311	311

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	312	78	95	1046	0.298	312	414	0.3	0.4	4.901	A
B	338	85	100	936	0.361	337	307	0.4	0.6	6.006	A
C	280	70	230	723	0.387	279	207	0.5	0.6	8.082	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	382	96	116	1031	0.370	381	506	0.4	0.6	5.532	A
B	414	103	122	922	0.449	413	376	0.6	0.8	7.061	A
C	342	86	281	691	0.496	341	254	0.6	1.0	10.251	B

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	382	96	117	1031	0.371	382	508	0.6	0.6	5.546	A
B	414	103	122	922	0.449	414	377	0.8	0.8	7.086	A
C	342	86	282	690	0.496	342	254	1.0	1.0	10.340	B

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	312	78	96	1045	0.298	313	416	0.6	0.4	4.917	A
B	338	85	100	936	0.361	339	308	0.8	0.6	6.036	A
C	280	70	231	722	0.387	281	208	1.0	0.6	8.180	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.42	0.00	0.00	0.42	0.42			N/A	N/A
B	0.56	0.55	1.00	1.40	1.45			N/A	N/A
C	0.62	0.15	0.90	1.38	1.44			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.58	0.03	0.25	0.58	0.58			N/A	N/A
B	0.80	0.03	0.26	0.80	0.80			N/A	N/A
C	0.96	0.03	0.26	0.96	0.96			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.59	0.03	0.29	1.18	2.64			N/A	N/A
B	0.81	0.03	0.28	0.81	2.53			N/A	N/A
C	0.97	0.03	0.28	0.97	2.96			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.43	0.00	0.00	0.43	0.43			N/A	N/A
B	0.57	0.10	0.83	1.37	1.43			N/A	N/A
C	0.64	0.08	0.79	1.36	1.43			N/A	N/A

2040, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D3 - 2040, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	St Stephens Hill, Beaconsfield Road, Stephenson Road Mini Roundabout	Mini-roundabout		A, B, C	11.14	B

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		27	Arm A	11.14	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D3	2040	AM	Trips to Zone D diverted to other zones	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	640	100.000
B		ONE HOUR	✓	360	100.000
C		ONE HOUR	✓	329	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	336	304
	B	281	0	79
	C	210	119	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	2
	B	2	0	2
	C	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.70	11.65	2.2	7.3	B	640	640
B	0.51	9.56	1.0	2.8	A	360	360
C	0.54	11.88	1.2	3.2	B	329	329

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	575	144	107	1029	0.559	574	440	0.8	1.2	7.877	A
B	324	81	273	812	0.399	323	408	0.5	0.7	7.351	A
C	296	74	252	701	0.422	295	343	0.5	0.7	8.838	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	705	176	130	1013	0.695	701	538	1.2	2.2	11.377	B
B	396	99	333	774	0.512	395	498	0.7	1.0	9.462	A
C	362	91	308	666	0.544	360	420	0.7	1.2	11.714	B

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	705	176	131	1013	0.696	704	541	2.2	2.2	11.650	B
B	396	99	335	773	0.513	396	501	1.0	1.0	9.560	A
C	362	91	309	665	0.545	362	422	1.2	1.2	11.876	B

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	575	144	108	1029	0.559	579	444	2.2	1.3	8.073	A
B	324	81	275	810	0.399	325	412	1.0	0.7	7.440	A
C	296	74	254	700	0.422	298	346	1.2	0.7	8.975	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.24	0.08	0.96	2.46	3.31			N/A	N/A
B	0.65	0.14	0.89	1.38	1.44			N/A	N/A
C	0.72	0.15	0.90	1.38	1.44			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.19	0.03	0.28	2.19	7.26			N/A	N/A
B	1.03	0.03	0.26	1.03	1.03			N/A	N/A
C	1.16	0.03	0.27	1.16	1.42			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.24	0.03	0.27	2.24	3.41			N/A	N/A
B	1.04	0.03	0.28	1.04	2.78			N/A	N/A
C	1.18	0.03	0.28	1.18	3.22			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.29	0.07	0.89	2.74	3.81			N/A	N/A
B	0.67	0.10	0.83	1.37	1.44			N/A	N/A
C	0.74	0.08	0.80	1.42	1.50			N/A	N/A

2040, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D4 - 2040, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	St Stephens Hill, Beaconsfield Road, Stephenson Road Mini Roundabout	Mini-roundabout		A, B, C	9.01	A

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		30	Arm C	9.01	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D4	2040	PM	Trips to Zone D diverted to other zones	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	397	100.000
B		ONE HOUR	✓	431	100.000
C		ONE HOUR	✓	355	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	270	127
	B	293	0	138
	C	234	121	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	2
	B	0	0	1
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.43	6.18	0.7	2.6	A	397	397
B	0.52	8.25	1.1	2.0	A	431	431
C	0.59	13.12	1.4	3.6	B	355	355

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	357	89	108	1037	0.344	356	473	0.4	0.5	5.289	A
B	387	97	114	927	0.418	387	351	0.5	0.7	6.650	A
C	319	80	263	702	0.454	318	238	0.6	0.8	9.348	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	437	109	132	1020	0.428	436	578	0.5	0.7	6.154	A
B	475	119	140	911	0.521	473	429	0.7	1.1	8.195	A
C	391	98	322	666	0.587	389	291	0.8	1.4	12.894	B

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	437	109	133	1020	0.429	437	580	0.7	0.7	6.176	A
B	475	119	140	911	0.521	475	430	1.1	1.1	8.253	A
C	391	98	323	665	0.588	391	292	1.4	1.4	13.117	B

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	357	89	110	1036	0.345	358	476	0.7	0.5	5.316	A
B	387	97	114	927	0.418	389	353	1.1	0.7	6.707	A
C	319	80	264	701	0.455	321	239	1.4	0.9	9.529	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.52	0.52	1.00	1.40	1.45			N/A	N/A
B	0.71	0.14	0.90	1.38	1.44			N/A	N/A
C	0.82	0.13	0.91	1.43	1.50			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.74	0.03	0.26	0.74	0.74			N/A	N/A
B	1.07	0.03	0.26	1.07	1.07			N/A	N/A
C	1.38	0.03	0.27	1.38	2.69			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.75	0.03	0.28	0.75	2.60			N/A	N/A
B	1.08	0.03	0.27	1.08	2.03			N/A	N/A
C	1.40	0.03	0.28	1.40	3.62			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.53	0.53	1.00	1.40	1.45			N/A	N/A
B	0.73	0.13	0.88	1.39	1.45			N/A	N/A
C	0.85	0.07	0.81	1.31	1.75			N/A	N/A

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D5 - 2040+Dev, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	St Stephens Hill, Beaconsfield Road, Stephenson Road Mini Roundabout	Mini-roundabout		A, B, C	14.99	B

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		12	Arm A	14.99	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D5	2040+Dev	AM	Trips to Zone D diverted to other zones	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	738	100.000
B		ONE HOUR	✓	397	100.000
C		ONE HOUR	✓	339	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	426	312
	B	315	0	82
	C	210	129	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	1
	B	2	0	2
	C	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.80	17.99	3.9	20.0	C	738	738
B	0.57	10.82	1.3	2.9	B	397	397
C	0.58	13.40	1.4	3.7	B	339	339

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	663	166	116	1028	0.645	661	471	1.1	1.8	9.732	A
B	357	89	279	809	0.441	356	497	0.5	0.8	7.924	A
C	305	76	282	682	0.447	304	353	0.6	0.8	9.487	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	813	203	141	1011	0.804	805	575	1.8	3.8	16.827	C
B	437	109	340	771	0.567	435	606	0.8	1.3	10.643	B
C	373	93	345	643	0.581	371	430	0.8	1.3	13.152	B

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	813	203	142	1010	0.804	812	578	3.8	3.9	17.989	C
B	437	109	343	769	0.568	437	611	1.3	1.3	10.823	B
C	373	93	347	642	0.582	373	434	1.3	1.4	13.398	B

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	663	166	117	1027	0.646	672	475	3.9	1.9	10.339	B
B	357	89	284	806	0.443	359	504	1.3	0.8	8.076	A
C	305	76	285	681	0.448	307	358	1.4	0.8	9.684	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.77	0.06	0.93	4.27	6.19			N/A	N/A
B	0.78	0.13	0.89	1.41	1.47			N/A	N/A
C	0.79	0.14	0.90	1.41	1.48			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.75	0.03	0.33	7.11	19.97			N/A	N/A
B	1.27	0.03	0.27	1.27	1.27			N/A	N/A
C	1.34	0.03	0.27	1.34	2.56			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.92	0.03	0.29	3.92	14.48			N/A	N/A
B	1.30	0.03	0.27	1.30	2.87			N/A	N/A
C	1.37	0.03	0.28	1.37	3.75			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.88	0.05	0.48	4.97	7.96			N/A	N/A
B	0.81	0.09	0.85	1.40	1.40			N/A	N/A
C	0.83	0.07	0.80	1.20	1.68			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D6 - 2040+Dev, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	St Stephens Hill, Beaconsfield Road, Stephenson Road Mini Roundabout	Mini-roundabout		A, B, C	12.86	B

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		11	Arm C	12.86	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D6	2040+Dev	PM	Trips to Zone D diverted to other zones	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	466	100.000
B		ONE HOUR	✓	570	100.000
C		ONE HOUR	✓	364	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	336	130
	B	422	0	148
	C	237	127	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	2
	B	0	0	1
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.50	7.15	1.0	1.9	A	466	466
B	0.69	12.76	2.2	7.6	B	570	570
C	0.70	20.38	2.2	10.1	C	364	364

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	419	105	114	1034	0.405	418	590	0.5	0.7	5.841	A
B	512	128	117	926	0.553	511	415	0.8	1.2	8.638	A
C	327	82	378	630	0.519	326	249	0.7	1.1	11.766	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	513	128	138	1017	0.504	512	720	0.7	1.0	7.103	A
B	628	157	143	909	0.690	624	507	1.2	2.1	12.451	B
C	401	100	462	578	0.693	397	305	1.1	2.1	19.394	C

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	513	128	140	1016	0.505	513	725	1.0	1.0	7.153	A
B	628	157	143	909	0.690	627	510	2.1	2.2	12.758	B
C	401	100	464	576	0.695	400	308	2.1	2.2	20.379	C

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	419	105	116	1033	0.406	420	598	1.0	0.7	5.892	A
B	512	128	117	926	0.554	516	419	2.2	1.3	8.867	A
C	327	82	382	628	0.521	332	251	2.2	1.1	12.324	B

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.67	0.13	0.89	1.38	1.44			N/A	N/A
B	1.21	0.08	0.98	2.27	2.97			N/A	N/A
C	1.05	0.09	0.96	1.74	2.14			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.00	0.03	0.26	1.00	1.00			N/A	N/A
B	2.14	0.03	0.29	2.14	7.63			N/A	N/A
C	2.12	0.03	0.30	2.62	10.09			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.01	0.03	0.27	1.01	1.92			N/A	N/A
B	2.18	0.03	0.27	2.18	3.97			N/A	N/A
C	2.20	0.03	0.29	2.20	8.27			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.69	0.16	0.91	1.38	1.44			N/A	N/A
B	1.27	0.06	0.85	2.71	3.78			N/A	N/A
C	1.12	0.05	0.61	2.51	3.65			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 10 - St Stephen's Hill_Giles Lane Mini Roundabout.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 03/02/2022 14:41:45

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
2021														
Arm A	D1	9.0	42.19	0.92	E	27.73	-3 % [Arm A]	D2	0.4	5.89	0.28	A	10.52	31 % [Arm C]
Arm B		0.0	14.64	0.03	B				0.0	0.00	0.00	A		
Arm C		1.9	14.78	0.67	B				2.0	12.79	0.67	B		
Arm D		0.4	5.59	0.28	A				1.3	10.10	0.56	B		
2040														
Arm A	D3	41.0	146.57	1.06	F	84.84	-15 % [Arm A]	D4	0.5	6.47	0.33	A	14.52	14 % [Arm C]
Arm B		0.0	18.50	0.04	C				0.0	0.00	0.00	A		
Arm C		3.1	21.26	0.77	C				3.3	18.46	0.77	C		
Arm D		0.5	6.07	0.33	A				2.0	13.80	0.67	B		
2040+Dev														
Arm A	D5	118.3	471.45	1.23	F	288.44	-25 % [Arm A]	D6	0.7	7.53	0.43	A	33.95	-6 % [Arm C]
Arm B		0.0	18.89	0.04	C				0.0	0.00	0.00	A		
Arm C		3.7	23.62	0.80	C				11.6	55.10	0.95	F		
Arm D		0.5	6.29	0.33	A				2.7	19.07	0.74	C		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	St Stephens Hill/Giles Lane Mini Roundabout
Location	
Site number	
Date	17/01/2022
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓
D3	2040	AM	ONE HOUR	07:45	09:15	15	✓	✓
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2021, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 83% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D1 - 2021, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	27.73	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-3	Arm A	27.73	D

Arms

Arms

Arm	Name	Description
A	St Stephen's Hill (north)	
B	Giles Lane (Private Road)	
C	St Stephen's Hill (south)	
D	Giles Lane	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.55	3.03	4.50	3.2	9.60	5.20	0.0	✓
B	3.30	3.30	10.00	1.1	12.90	8.99	0.0	
C	3.65	3.50	4.70	1.5	14.80	12.99	0.0	✓
D	3.45	3.45	5.05	1.8	15.15	10.10	0.0	✓

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.503	892
B	0.615	885
C	0.520	892
D	0.514	1023

The slope and intercept shown above include any corrections and adjustments.

Arm Capacity Adjustments

Arm	Type	Reason	Direct capacity adjustment (PCU/hr)
A	Direct	To macth observed queue	100

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	751	100.000
B		ONE HOUR	✓	7	100.000
C		ONE HOUR	✓	438	100.000
D		ONE HOUR	✓	229	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	2	467	282
	B	0	0	1	6
	C	201	1	0	236
	D	74	4	151	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	0	0	0	0
	C	1	0	0	0
	D	0	0	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.92	42.19	9.0	48.4	E	751	751
B	0.03	14.64	0.0	0.5	B	7	7
C	0.67	14.78	1.9	6.8	B	438	438
D	0.28	5.59	0.4	1.5	A	229	229

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	675	169	140	915	0.738	671	247	1.5	2.7	14.461	B
B	6	2	804	366	0.017	6	6	0.0	0.0	10.001	B
C	394	98	257	755	0.521	392	553	0.7	1.1	9.885	A
D	206	51	181	917	0.225	206	469	0.2	0.3	5.060	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	827	207	171	899	0.920	806	301	2.7	7.8	33.090	D
B	8	2	970	264	0.029	8	8	0.0	0.0	14.069	B
C	482	121	309	728	0.662	479	668	1.1	1.9	14.260	B
D	252	63	221	896	0.281	252	567	0.3	0.4	5.580	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	827	207	172	899	0.920	822	303	7.8	9.0	42.191	E
B	8	2	986	254	0.030	8	8	0.0	0.0	14.643	B
C	482	121	315	725	0.665	482	679	1.9	1.9	14.779	B
D	252	63	222	896	0.281	252	575	0.4	0.4	5.592	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	675	169	141	915	0.738	699	249	9.0	3.0	18.330	C
B	6	2	833	348	0.018	6	6	0.0	0.0	10.531	B
C	394	98	268	750	0.525	397	572	1.9	1.1	10.301	B
D	206	51	183	916	0.225	206	482	0.4	0.3	5.077	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.66	0.07	1.16	6.85	10.10			N/A	N/A
B	0.02	0.02	0.25	0.45	0.48			N/A	N/A
C	1.07	0.10	0.98	1.75	2.13			N/A	N/A
D	0.29	0.00	0.00	0.29	0.29			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	7.85	0.07	1.02	22.70	36.27			N/A	N/A
B	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C	1.88	0.03	0.29	1.88	6.84			N/A	N/A
D	0.39	0.03	0.25	0.46	0.48			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	9.05	0.05	0.46	25.23	48.38			N/A	N/A
B	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C	1.93	0.03	0.28	1.93	4.81			N/A	N/A
D	0.39	0.03	0.31	1.28	1.49			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.00	0.04	0.42	8.23	15.14			N/A	N/A
B	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C	1.13	0.06	0.83	2.27	3.10			N/A	N/A
D	0.29	0.00	0.00	0.29	0.29			N/A	N/A

2021, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms C and D have 80% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D2 - 2021, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	10.52	B

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		31	Arm C	10.52	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	220	100.000
B		ONE HOUR	✓	2	100.000
C		ONE HOUR	✓	525	100.000
D		ONE HOUR	✓	413	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	0	172	48
	B	1	0	1	0
	C	364	1	0	160
	D	174	1	238	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	0	0	0	0
	C	1	0	0	0
	D	1	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.28	5.89	0.4	1.5	A	220	220
B	0.00	0.00	0.0	~1	A	0	0
C	0.67	12.79	2.0	6.6	B	525	525
D	0.56	10.10	1.3	2.6	B	413	413

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	198	49	215	877	0.225	198	482	0.2	0.3	5.295	A
B	0	0	411	611	0.000	0	2	0.0	0.0	0.000	A
C	472	118	43	864	0.546	471	368	0.8	1.2	9.116	A
D	371	93	327	850	0.437	370	186	0.5	0.8	7.499	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	242	61	263	853	0.284	242	589	0.3	0.4	5.883	A
B	0	0	503	555	0.000	0	2	0.0	0.0	0.000	A
C	578	145	53	859	0.673	575	450	1.2	2.0	12.525	B
D	455	114	400	812	0.560	453	228	0.8	1.2	9.968	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	242	61	264	853	0.284	242	592	0.4	0.4	5.895	A
B	0	0	504	554	0.000	0	2	0.0	0.0	0.000	A
C	578	145	53	859	0.673	578	451	2.0	2.0	12.790	B
D	455	114	402	811	0.561	455	229	1.2	1.3	10.099	B

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	198	49	217	876	0.226	198	487	0.4	0.3	5.312	A
B	0	0	413	610	0.000	0	2	0.0	0.0	0.000	A
C	472	118	43	864	0.546	475	370	2.0	1.2	9.332	A
D	371	93	330	848	0.438	373	188	1.3	0.8	7.614	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.29	0.00	0.00	0.29	0.29			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	1.18	0.09	1.01	1.99	2.74			N/A	N/A
D	0.77	0.13	0.89	1.40	1.46			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.39	0.03	0.25	0.46	0.48			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	1.98	0.03	0.28	1.98	6.62			N/A	N/A
D	1.24	0.03	0.27	1.24	1.25			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.39	0.03	0.31	1.29	1.53			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	2.02	0.03	0.27	2.02	3.56			N/A	N/A
D	1.26	0.03	0.27	1.26	2.64			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.29	0.00	0.00	0.29	0.29			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	1.23	0.07	0.87	2.57	3.56			N/A	N/A
D	0.79	0.10	0.85	1.20	1.20			N/A	N/A

2040, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 83% of the total flow for the roundabout for one or more time segments][Arms A and D have 68% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D3 - 2040, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	84.84	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-15	Arm A	84.84	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D3	2040	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	857	100.000
B		ONE HOUR	✓	8	100.000
C		ONE HOUR	✓	499	100.000
D		ONE HOUR	✓	261	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	2	533	322
	B	0	0	7	1
	C	229	1	0	269
	D	84	5	172	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	0	0	0	0
	C	1	0	0	0
	D	0	0	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.06	146.57	41.0	93.6	F	857	857
B	0.04	18.50	0.0	0.5	C	8	8
C	0.77	21.26	3.1	15.7	C	499	499
D	0.33	6.07	0.5	2.2	A	261	261

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	770	193	160	905	0.851	760	280	2.3	4.9	23.221	C
B	7	2	912	299	0.024	7	7	0.0	0.0	12.324	B
C	449	112	286	740	0.606	446	633	0.9	1.5	12.168	B
D	235	59	206	904	0.259	234	527	0.3	0.3	5.371	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	944	236	196	887	1.064	863	342	4.9	25.0	76.769	F
B	9	2	1050	214	0.041	9	9	0.0	0.0	17.569	C
C	549	137	326	720	0.763	544	734	1.5	3.0	19.774	C
D	287	72	251	881	0.326	287	619	0.3	0.5	6.051	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	944	236	198	886	1.065	880	344	25.0	41.0	146.569	F
B	9	2	1067	203	0.043	9	9	0.0	0.0	18.495	C
C	549	137	332	717	0.767	549	744	3.0	3.1	21.257	C
D	287	72	253	880	0.327	287	627	0.5	0.5	6.073	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	770	193	160	905	0.852	883	284	41.0	12.8	115.780	F
B	7	2	1036	223	0.032	7	7	0.0	0.0	16.700	C
C	449	112	333	716	0.626	454	710	3.1	1.7	14.017	B
D	235	59	209	902	0.260	235	577	0.5	0.4	5.398	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	4.92	0.11	1.89	12.62	17.91			N/A	N/A
B	0.02	0.02	0.25	0.45	0.48			N/A	N/A
C	1.49	0.08	1.07	3.05	4.20			N/A	N/A
D	0.35	0.00	0.00	0.35	0.35			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	24.96	3.81	20.37	48.31	59.14			N/A	N/A
B	0.04	0.03	0.25	0.45	0.48			N/A	N/A
C	2.96	0.03	0.33	5.51	15.65			N/A	N/A
D	0.48	0.03	0.25	0.48	0.48			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	40.97	7.80	34.56	77.26	93.57			N/A	N/A
B	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C	3.12	0.03	0.29	3.12	12.28			N/A	N/A
D	0.48	0.03	0.30	1.35	2.15			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	12.84	0.27	6.88	31.91	43.59			N/A	N/A
B	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C	1.74	0.05	0.68	4.42	6.69			N/A	N/A
D	0.35	0.00	0.00	0.35	0.35			N/A	N/A

2040, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms C and D have 80% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D4 - 2040, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	14.52	B

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		14	Arm C	14.52	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	252	100.000
B		ONE HOUR	✓	2	100.000
C		ONE HOUR	✓	601	100.000
D		ONE HOUR	✓	473	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	0	197	55
	B	1	0	1	0
	C	417	1	0	183
	D	199	1	273	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	0	0	0	0
	C	1	0	0	0
	D	1	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.33	6.47	0.5	2.2	A	252	252
B	0.00	0.00	0.0	~1	A	0	0
C	0.77	18.46	3.3	16.5	C	601	601
D	0.67	13.80	2.0	6.6	B	473	473

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	227	57	246	862	0.263	226	552	0.3	0.4	5.662	A
B	0	0	471	574	0.000	0	2	0.0	0.0	0.000	A
C	540	135	49	861	0.628	538	421	1.1	1.6	11.075	B
D	425	106	374	825	0.515	424	213	0.7	1.0	8.938	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	277	69	301	835	0.332	277	673	0.4	0.5	6.448	A
B	0	0	575	510	0.000	0	2	0.0	0.0	0.000	A
C	662	165	60	855	0.774	656	515	1.6	3.2	17.517	C
D	521	130	456	783	0.665	517	260	1.0	1.9	13.384	B

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	277	69	303	834	0.333	277	678	0.5	0.5	6.472	A
B	0	0	578	508	0.000	0	2	0.0	0.0	0.000	A
C	662	165	61	855	0.774	661	517	3.2	3.3	18.461	C
D	521	130	460	781	0.667	521	262	1.9	2.0	13.805	B

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	227	57	249	860	0.263	227	560	0.5	0.4	5.689	A
B	0	0	474	572	0.000	0	2	0.0	0.0	0.000	A
C	540	135	50	861	0.628	546	425	3.3	1.7	11.672	B
D	425	106	380	822	0.517	429	216	2.0	1.1	9.226	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.35	0.00	0.00	0.35	0.35			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	1.63	0.07	1.06	3.63	5.00			N/A	N/A
D	1.04	0.09	0.95	1.75	2.18			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.49	0.03	0.25	0.49	0.49			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	3.16	0.03	0.32	5.43	16.46			N/A	N/A
D	1.90	0.03	0.28	1.90	6.58			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.50	0.03	0.30	1.35	2.24			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	3.28	0.03	0.29	3.28	11.34			N/A	N/A
D	1.95	0.03	0.28	1.95	4.60			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.36	0.00	0.00	0.36	0.36			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	1.74	0.05	0.49	4.56	7.13			N/A	N/A
D	1.09	0.07	0.82	2.10	2.91			N/A	N/A

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 84% of the total flow for the roundabout for one or more time segments][Arms A and D have 69% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D5 - 2040+Dev, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	268.44	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-25	Arm A	268.44	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	993	100.000
B		ONE HOUR	✓	8	100.000
C		ONE HOUR	✓	535	100.000
D		ONE HOUR	✓	261	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	2	669	322
	B	0	0	7	1
	C	265	1	0	269
	D	84	5	172	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	0	0	0	0
	C	1	0	0	0
	D	0	0	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.23	471.45	118.3	186.6	F	993	993
B	0.04	18.89	0.0	0.5	C	8	8
C	0.80	23.62	3.7	19.0	C	535	535
D	0.33	6.29	0.5	2.3	A	261	261

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	893	223	160	904	0.987	854	312	3.9	13.7	49.845	E
B	7	2	1006	241	0.030	7	7	0.0	0.0	15.406	C
C	481	120	278	744	0.646	478	736	1.1	1.8	13.398	B
D	235	59	238	888	0.264	234	518	0.3	0.4	5.506	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1093	273	196	886	1.234	883	381	13.7	66.3	175.205	F
B	9	2	1070	201	0.044	9	8	0.0	0.0	18.692	C
C	589	147	287	739	0.797	582	791	1.8	3.5	21.924	C
D	287	72	289	861	0.334	287	580	0.4	0.5	6.258	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1093	273	196	886	1.234	885	384	66.3	118.3	381.554	F
B	9	2	1073	199	0.044	9	8	0.0	0.0	18.894	C
C	589	147	288	739	0.797	588	794	3.5	3.7	23.625	C
D	287	72	293	860	0.334	287	584	0.5	0.5	6.288	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	893	223	160	904	0.987	896	317	118.3	117.4	471.452	F
B	7	2	1050	214	0.034	7	7	0.0	0.0	17.405	C
C	481	120	292	737	0.653	488	765	3.7	2.0	14.828	B
D	235	59	243	885	0.265	235	537	0.5	0.4	5.541	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	13.66	0.36	7.87	33.09	44.57			N/A	N/A
B	0.03	0.03	0.25	0.45	0.48			N/A	N/A
C	1.76	0.08	1.15	3.86	5.37			N/A	N/A
D	0.36	0.00	0.00	0.36	0.36			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	66.33	31.19	62.83	98.70	110.87			N/A	N/A
B	0.04	0.03	0.25	0.46	0.48			N/A	N/A
C	3.52	0.03	0.35	7.94	19.03			N/A	N/A
D	0.50	0.03	0.25	0.50	0.50			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	118.31	68.98	114.72	161.88	177.24			N/A	N/A
B	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C	3.70	0.03	0.30	3.70	16.21			N/A	N/A
D	0.50	0.03	0.30	1.35	2.26			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	117.38	61.55	112.73	168.15	186.61			N/A	N/A
B	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C	1.96	0.05	0.47	5.27	8.60			N/A	N/A
D	0.36	0.00	0.00	0.36	0.36			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 69% of the total flow for the roundabout for one or more time segments][Arms C and D have 78% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D6 - 2040+Dev, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	33.95	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-6	Arm C	33.95	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	323	100.000
B		ONE HOUR	✓	2	100.000
C		ONE HOUR	✓	735	100.000
D		ONE HOUR	✓	473	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	0	268	55
	B	1	0	1	0
	C	551	1	0	183
	D	199	1	273	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	0	0	0	0
	C	1	0	0	0
	D	1	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.43	7.53	0.7	2.8	A	323	323
B	0.00	0.00	0.0	~1	A	0	0
C	0.95	55.10	11.6	56.4	F	735	735
D	0.74	19.07	2.7	12.3	C	473	473

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	290	73	246	861	0.337	290	669	0.4	0.5	6.293	A
B	0	0	534	535	0.000	0	2	0.0	0.0	0.000	A
C	661	165	49	860	0.768	655	485	1.7	3.1	17.106	C
D	425	106	492	764	0.556	423	213	0.8	1.2	10.506	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	356	89	300	835	0.426	355	804	0.5	0.7	7.487	A
B	0	0	652	462	0.000	0	2	0.0	0.0	0.000	A
C	809	202	60	855	0.947	783	592	3.1	9.6	40.322	E
D	521	130	588	715	0.729	516	255	1.2	2.5	17.649	C

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	356	89	302	833	0.427	356	819	0.7	0.7	7.534	A
B	0	0	656	460	0.000	0	2	0.0	0.0	0.000	A
C	809	202	61	854	0.947	801	595	9.6	11.6	55.102	F
D	521	130	602	708	0.736	520	260	2.5	2.7	19.072	C

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	290	73	250	859	0.338	291	701	0.7	0.5	6.348	A
B	0	0	540	532	0.000	0	2	0.0	0.0	0.000	A
C	661	165	50	860	0.768	693	490	11.6	3.6	24.723	C
D	425	106	520	750	0.567	430	222	2.7	1.3	11.458	B

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.50	0.50	1.00	1.40	1.45			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	3.07	0.08	1.39	7.87	11.43			N/A	N/A
D	1.22	0.08	0.97	2.35	3.10			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.73	0.03	0.26	0.73	0.73			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	9.56	0.10	2.87	26.54	39.38			N/A	N/A
D	2.51	0.03	0.31	3.40	12.29			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.74	0.03	0.28	0.82	2.81			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	11.63	0.06	1.14	34.14	56.42			N/A	N/A
D	2.66	0.03	0.29	2.66	9.67			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.52	0.52	1.00	1.40	1.45			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	3.60	0.04	0.42	9.94	18.41			N/A	N/A
D	1.35	0.06	0.68	3.14	4.66			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 10 - St Stephen's Hill_Giles Lane Mini Roundabout MITIGATION.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 04/02/2022 17:15:48

»2040+Dev, AM
»2040+Dev, PM

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2040+Dev													
Arm A	D5	18.1	61.67	0.98	F	43.88	-6 % [Arm A]	D6	0.5	5.21	0.34	A	32.55	-6 % [Arm C]
Arm B		0.1	49.36	0.11	E				0.0	0.00	0.00	A		
Arm C		4.5	29.37	0.83	D				11.6	55.10	0.95	F		
Arm D		0.5	5.93	0.32	A				2.3	16.13	0.70	C		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	St Stephens Hill/Giles Lane Mini Roundabout
Location	
Site number	
Date	17/01/2022
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 84% of the total flow for the roundabout for one or more time segments][Arms A and D have 69% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D5 - 2040+Dev, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	43.88	E

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-8	Arm A	43.88	E

Arms

Arms

Arm	Name	Description
A	St Stephen's Hill (north)	
B	Giles Lane (Private Road)	
C	St Stephen's Hill (south)	
D	Giles Lane	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.55	3.03	6.24	16.4	8.05	5.20	0.0	
B	3.30	3.30	10.00	1.1	12.90	8.99	0.0	
C	3.65	3.50	4.70	1.5	14.80	12.99	0.0	✓
D	3.45	3.45	5.05	1.8	15.15	10.10	0.0	✓

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.666	1157
B	0.615	865
C	0.520	892
D	0.514	1058

The slope and intercept shown above include any corrections and adjustments.

Arm Capacity Adjustments

Arm	Type	Reason	Direct capacity adjustment (PCU/hr)
A	Direct	To macth observed queue	100

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	993	100.000
B		ONE HOUR	✓	8	100.000
C		ONE HOUR	✓	535	100.000
D		ONE HOUR	✓	261	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	2	669	322
	B	0	0	7	1
	C	265	1	0	269
	D	84	5	172	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	0	0	0	0
	C	1	0	0	0
	D	0	0	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.98	61.67	18.1	75.3	F	993	993
B	0.11	49.38	0.1	0.5	E	8	8
C	0.83	29.37	4.5	23.3	D	535	535
D	0.32	5.93	0.5	2.1	A	261	261

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	893	223	160	1141	0.782	886	312	1.8	3.4	13.786	B
B	7	2	1039	221	0.033	7	7	0.0	0.0	16.853	C
C	481	120	288	739	0.651	478	758	1.1	1.8	13.663	B
D	235	59	238	923	0.254	234	529	0.3	0.3	5.228	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1093	273	196	1117	0.979	1052	379	3.4	13.8	40.444	E
B	9	2	1239	97	0.091	9	9	0.0	0.1	40.679	E
C	589	147	342	711	0.829	580	905	1.8	4.2	25.693	D
D	287	72	288	897	0.320	287	634	0.3	0.5	5.897	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1093	273	196	1117	0.979	1076	383	13.8	18.1	61.671	F
B	9	2	1263	82	0.108	9	9	0.1	0.1	49.362	E
C	589	147	350	707	0.833	588	922	4.2	4.5	29.370	D
D	287	72	292	895	0.321	287	645	0.5	0.5	5.926	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	893	223	160	1141	0.783	949	319	18.1	3.9	23.307	C
B	7	2	1102	181	0.040	7	7	0.1	0.0	20.735	C
C	481	120	309	728	0.661	491	801	4.5	2.0	15.767	C
D	235	59	244	919	0.255	235	556	0.5	0.3	5.267	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.37	0.06	1.14	9.12	13.89			N/A	N/A
B	0.03	0.03	0.25	0.45	0.48			N/A	N/A
C	1.79	0.07	1.09	4.08	5.78			N/A	N/A
D	0.34	0.00	0.00	0.34	0.34			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	13.77	0.20	6.37	35.89	50.35			N/A	N/A
B	0.10	0.03	0.26	0.47	0.54			N/A	N/A
C	4.16	0.04	0.39	10.91	22.31			N/A	N/A
D	0.47	0.03	0.25	0.47	0.48			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	18.08	0.13	5.77	50.76	75.31			N/A	N/A
B	0.12	0.03	0.25	0.45	0.48			N/A	N/A
C	4.54	0.03	0.32	7.27	23.34			N/A	N/A
D	0.47	0.03	0.30	1.36	2.05			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.90	0.04	0.42	10.69	20.11			N/A	N/A
B	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C	2.03	0.05	0.45	5.52	9.15			N/A	N/A
D	0.35	0.00	0.00	0.35	0.35			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 69% of the total flow for the roundabout for one or more time segments][Arms C and D have 78% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D6 - 2040+Dev, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	32.55	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-6	Arm C	32.55	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	323	100.000
B		ONE HOUR	✓	2	100.000
C		ONE HOUR	✓	735	100.000
D		ONE HOUR	✓	473	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	0	268	55
	B	1	0	1	0
	C	551	1	0	183
	D	199	1	273	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	0	0	0	0
	C	1	0	0	0
	D	1	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.34	5.21	0.5	2.3	A	323	323
B	0.00	0.00	0.0	~1	A	0	0
C	0.95	55.10	11.6	56.4	F	735	735
D	0.70	16.13	2.3	9.2	C	473	473

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	290	73	246	1084	0.268	290	670	0.3	0.4	4.531	A
B	0	0	535	535	0.000	0	2	0.0	0.0	0.000	A
C	661	165	49	860	0.768	655	485	1.7	3.1	17.107	C
D	425	106	492	799	0.532	424	213	0.7	1.1	9.545	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	356	89	300	1048	0.339	355	805	0.4	0.5	5.187	A
B	0	0	653	462	0.000	0	2	0.0	0.0	0.000	A
C	809	202	60	855	0.947	783	593	3.1	9.6	40.330	E
D	521	130	588	750	0.695	517	255	1.1	2.2	15.180	C

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	356	89	303	1047	0.340	356	819	0.5	0.5	5.206	A
B	0	0	656	460	0.000	0	2	0.0	0.0	0.000	A
C	809	202	61	854	0.947	801	595	9.6	11.6	55.101	F
D	521	130	602	743	0.701	520	260	2.2	2.3	16.127	C

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	290	73	250	1082	0.268	291	700	0.5	0.4	4.554	A
B	0	0	539	532	0.000	0	2	0.0	0.0	0.000	A
C	661	165	50	860	0.768	693	489	11.6	3.6	24.718	C
D	425	106	520	785	0.542	429	222	2.3	1.2	10.249	B

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.36	0.00	0.00	0.36	0.36			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	3.07	0.08	1.39	7.87	11.43			N/A	N/A
D	1.11	0.08	0.95	1.93	2.63			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.51	0.03	0.25	0.51	0.51			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	9.57	0.10	2.87	26.54	39.38			N/A	N/A
D	2.16	0.03	0.29	2.16	9.17			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.51	0.03	0.30	1.36	2.35			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	11.63	0.06	1.14	34.15	56.42			N/A	N/A
D	2.27	0.03	0.28	2.27	6.77			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.37	0.00	0.00	0.37	0.37			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	3.60	0.04	0.42	9.94	18.40			N/A	N/A
D	1.21	0.06	0.80	2.60	3.66			N/A	N/A

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: Junction 11 - Calais Hill_Canterbury Hill.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 03/02/2022 14:56:30

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2021													
Stream B-C	D1	0.0	6.44	0.01	A	1.66	41 % [Stream B-A]	D2	0.0	0.00	0.00	A	0.35	116 % [Stream B-A]
Stream B-A		0.5	16.46	0.33	C				0.1	11.25	0.07	B		
Stream C-AB		0.0	4.13	0.02	A				0.0	5.68	0.00	A		
	2040													
Stream B-C	D3	0.0	6.96	0.01	A	2.03	24 % [Stream B-A]	D4	0.0	0.00	0.00	A	0.37	88 % [Stream B-A]
Stream B-A		0.7	20.20	0.41	C				0.1	12.29	0.09	B		
Stream C-AB		0.0	3.89	0.02	A				0.0	5.65	0.00	A		
	2040+Dev													
Stream B-C	D5	0.2	310.42	0.24	F	18.72	-16 % [Stream B-A]	D6	0.0	0.00	0.00	A	1.61	32 % [Stream B-A]
Stream B-A		6.9	97.36	0.92	F				0.5	17.94	0.35	C		
Stream C-AB		0.0	3.91	0.02	A				0.0	5.90	0.00	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Calais Hill / Wood Hill / Canterbury Hill – Roundabout junction
Location	Tyler Hill
Site number	
Date	26/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓
D3	2040	AM	ONE HOUR	07:45	09:15	15	✓	✓
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2021, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	Arm B - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Sets	D1 - 2021, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.66	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	41	Stream B-A	1.66	A

Arms

Arms

Arm	Name	Description	Arm type
A	Canterbury Hill		Major
B	Calais Hill		Minor
C	Wood Hill		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	5.40			94.3	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	9.30	3.55	2.70	2.60	2.60	✓	1.00	23	21

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	510	0.095	0.240	0.151	0.343
B-C	720	0.114	0.288	-	-
C-B	629	0.250	0.250	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2021	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	276	100.000
B		ONE HOUR	✓	102	100.000
C		ONE HOUR	✓	653	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	34	242
	B	99	0	3
	C	649	4	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	1	0	0
	C	1	25	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.01	6.44	0.0	0.5	A	3	3
B-A	0.33	16.46	0.5	2.2	C	99	99
C-AB	0.02	4.13	0.0	0.5	A	13	13
C-A						640	640
A-B						34	34
A-C						242	242

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	3	0.67	603	0.004	3	0.0	0.0	5.991	A
B-A	89	22	360	0.247	89	0.2	0.3	13.240	B
C-AB	11	3	888	0.012	11	0.0	0.0	4.125	A
C-A	577	144			577				
A-B	31	8			31				
A-C	218	54			218				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	3	0.83	563	0.006	3	0.0	0.0	6.431	A
B-A	109	27	328	0.333	108	0.3	0.5	16.362	C
C-AB	16	4	979	0.017	16	0.0	0.0	3.761	A
C-A	703	176			703				
A-B	37	9			37				
A-C	266	67			266				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	3	0.83	562	0.006	3	0.0	0.0	6.439	A
B-A	109	27	328	0.333	109	0.5	0.5	16.456	C
C-AB	16	4	979	0.017	16	0.0	0.0	3.737	A
C-A	703	176			703				
A-B	37	9			37				
A-C	266	67			266				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	3	0.67	603	0.004	3	0.0	0.0	5.999	A
B-A	89	22	360	0.247	90	0.5	0.3	13.336	B
C-AB	11	3	888	0.012	11	0.0	0.0	4.062	A
C-A	577	144			577				
A-B	31	8			31				
A-C	218	54			218				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.25	0.45	0.48			N/A	N/A
B-A	0.32	0.00	0.00	0.32	0.32			N/A	N/A
C-AB	0.01	0.01	0.25	0.45	0.48			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.01	0.00	0.00	0.01	0.01			N/A	N/A
B-A	0.49	0.03	0.26	0.49	0.49			N/A	N/A
C-AB	0.02	0.00	0.00	0.02	0.02			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.01	0.00	0.00	0.01	0.01			N/A	N/A
B-A	0.49	0.03	0.31	1.39	2.20			N/A	N/A
C-AB	0.02	0.00	0.00	0.02	0.02			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.33	0.00	0.00	0.33	0.33			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

2021, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	Arm B - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Sets	D2 - 2021, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.35	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	116	Stream B-A	0.35	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D2	2021	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	537	100.000
B		ONE HOUR	✓	23	100.000
C		ONE HOUR	✓	201	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	78	459
	B	23	0	0
	C	200	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	0	0	0
	C	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.00	0.00	0.0	~1	A	0	0
B-A	0.07	11.25	0.1	0.5	B	23	23
C-AB	0.00	5.68	0.0	0.5	A	1	1
C-A						200	200
A-B						78	78
A-C						459	459

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	584	0.000	0	0.0	0.0	0.000	A
B-A	21	5	376	0.055	21	0.0	0.1	10.142	B
C-AB	1	0.31	636	0.002	1	0.0	0.0	5.673	A
C-A	179	45			179				
A-B	70	18			70				
A-C	413	103			413				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	553	0.000	0	0.0	0.0	0.000	A
B-A	25	6	345	0.073	25	0.1	0.1	11.244	B
C-AB	2	0.42	641	0.003	2	0.0	0.0	5.633	A
C-A	220	55			220				
A-B	86	21			86				
A-C	505	126			505				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	553	0.000	0	0.0	0.0	0.000	A
B-A	25	6	345	0.073	25	0.1	0.1	11.248	B
C-AB	2	0.42	641	0.003	2	0.0	0.0	5.634	A
C-A	220	55			220				
A-B	86	21			86				
A-C	505	126			505				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	584	0.000	0	0.0	0.0	0.000	A
B-A	21	5	376	0.055	21	0.1	0.1	10.149	B
C-AB	1	0.31	636	0.002	1	0.0	0.0	5.677	A
C-A	179	45			179				
A-B	70	18			70				
A-C	413	103			413				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.06	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	0.00	0.00	0.25	0.45	0.48			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.08	0.03	0.26	0.47	0.49			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.08	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.06	0.00	0.00	0.06	0.06			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2040, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	Arm B - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Sets	D3 - 2040, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		2.03	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	24	Stream B-A	2.03	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D3	2040	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	315	100.000
B		ONE HOUR	✓	116	100.000
C		ONE HOUR	✓	746	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	39	276
	B	113	0	3
	C	741	5	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	1	0	0
	C	1	25	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.01	6.98	0.0	0.5	A	3	3
B-A	0.41	20.20	0.7	3.3	C	113	113
C-AB	0.02	3.89	0.0	0.5	A	20	20
C-A						728	728
A-B						39	39
A-C						278	278

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	3	0.67	579	0.005	3	0.0	0.0	6.243	A
B-A	102	25	340	0.299	101	0.3	0.4	15.064	C
C-AB	15	4	945	0.016	15	0.0	0.0	3.892	A
C-A	655	164			655				
A-B	35	9			35				
A-C	248	62			248				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	3	0.83	522	0.006	3	0.0	0.0	6.944	A
B-A	124	31	302	0.411	123	0.4	0.7	19.987	C
C-AB	25	6	1051	0.024	25	0.0	0.0	3.529	A
C-A	797	199			797				
A-B	43	11			43				
A-C	304	76			304				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	3	0.83	520	0.006	3	0.0	0.0	6.964	A
B-A	124	31	302	0.411	124	0.7	0.7	20.203	C
C-AB	25	6	1051	0.024	25	0.0	0.0	3.510	A
C-A	797	199			797				
A-B	43	11			43				
A-C	304	76			304				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	3	0.67	578	0.005	3	0.0	0.0	6.261	A
B-A	102	25	340	0.299	103	0.7	0.4	15.256	C
C-AB	15	4	946	0.016	15	0.0	0.0	3.833	A
C-A	655	164			655				
A-B	35	9			35				
A-C	248	62			248				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.25	0.45	0.48			N/A	N/A
B-A	0.42	0.00	0.00	0.42	0.42			N/A	N/A
C-AB	0.02	0.02	0.25	0.45	0.48			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.01	0.00	0.00	0.01	0.01			N/A	N/A
B-A	0.67	0.03	0.26	0.67	0.67			N/A	N/A
C-AB	0.03	0.00	0.00	0.03	0.03			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.01	0.00	0.00	0.01	0.01			N/A	N/A
B-A	0.69	0.03	0.30	1.48	3.28			N/A	N/A
C-AB	0.03	0.00	0.00	0.03	0.03			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.44	0.04	0.36	1.17	1.34			N/A	N/A
C-AB	0.02	0.00	0.00	0.02	0.02			N/A	N/A

2040, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	Arm B - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Sets	D4 - 2040, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.37	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	88	Stream B-A	0.37	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D4	2040	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	615	100.000
B		ONE HOUR	✓	28	100.000
C		ONE HOUR	✓	230	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	89	526
	B	28	0	0
	C	229	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	0	0	0
	C	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.00	0.00	0.0	~1	A	0	0
B-A	0.09	12.29	0.1	0.5	B	26	26
C-AB	0.00	5.65	0.0	0.5	A	2	2
C-A						228	228
A-B						89	89
A-C						526	526

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	564	0.000	0	0.0	0.0	0.000	A
B-A	23	6	356	0.066	23	0.1	0.1	10.816	B
C-AB	1	0.33	639	0.002	1	0.0	0.0	5.647	A
C-A	205	51			205				
A-B	80	20			80				
A-C	473	118			473				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	529	0.000	0	0.0	0.0	0.000	A
B-A	29	7	321	0.089	29	0.1	0.1	12.285	B
C-AB	2	0.45	645	0.003	2	0.0	0.0	5.592	A
C-A	251	63			251				
A-B	98	24			98				
A-C	579	145			579				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	529	0.000	0	0.0	0.0	0.000	A
B-A	29	7	321	0.089	29	0.1	0.1	12.292	B
C-AB	2	0.45	645	0.003	2	0.0	0.0	5.598	A
C-A	251	63			251				
A-B	98	24			98				
A-C	579	145			579				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	564	0.000	0	0.0	0.0	0.000	A
B-A	23	6	356	0.066	23	0.1	0.1	10.828	B
C-AB	1	0.33	639	0.002	1	0.0	0.0	5.650	A
C-A	205	51			205				
A-B	80	20			80				
A-C	473	118			473				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.07	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	0.00	0.00	0.25	0.45	0.48			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.10	0.03	0.26	0.47	0.50			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.10	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.07	0.00	0.00	0.07	0.07			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	Arm B - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Sets	D5 - 2040+Dev, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		18.72	C

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-16	Stream B-A	18.72	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D5	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	350	100.000
B		ONE HOUR	✓	252	100.000
C		ONE HOUR	✓	746	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	74	276
	B	249	0	3
	C	741	5	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	1	0	0
	C	1	25	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.24	310.42	0.2	0.5	F	3	3
B-A	0.92	97.36	6.9	31.3	F	249	249
C-AB	0.02	3.91	0.0	0.5	A	20	20
C-A						726	726
A-B						74	74
A-C						276	276

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	3	0.67	368	0.007	3	0.0	0.0	9.847	A
B-A	224	56	337	0.665	221	1.0	1.8	30.197	D
C-AB	15	4	942	0.016	15	0.0	0.0	3.910	A
C-A	655	164			655				
A-B	67	17			67				
A-C	248	62			248				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	3	0.83	81	0.041	3	0.0	0.0	46.004	E
B-A	274	69	299	0.918	259	1.8	5.6	72.052	F
C-AB	25	6	1047	0.024	25	0.0	0.0	3.545	A
C-A	796	199			796				
A-B	81	20			81				
A-C	304	76			304				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	3	0.83	14	0.240	3	0.0	0.2	310.424	F
B-A	274	69	299	0.918	269	5.6	6.9	97.359	F
C-AB	25	6	1047	0.024	25	0.0	0.0	3.523	A
C-A	796	199			796				
A-B	81	20			81				
A-C	304	76			304				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	3	0.67	306	0.009	4	0.2	0.0	11.939	B
B-A	224	56	337	0.665	243	6.9	2.2	43.743	E
C-AB	15	4	942	0.016	15	0.0	0.0	3.848	A
C-A	655	164			655				
A-B	67	17			67				
A-C	248	62			248				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.01	0.01	0.25	0.45	0.48			N/A	N/A
B-A	1.82	0.10	1.28	3.79	5.07			N/A	N/A
C-AB	0.02	0.02	0.25	0.45	0.48			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.04	0.00	0.00	0.04	0.04			N/A	N/A
B-A	5.61	0.10	1.99	14.72	21.17			N/A	N/A
C-AB	0.03	0.00	0.00	0.03	0.03			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.22	0.00	0.00	0.22	0.22			N/A	N/A
B-A	6.90	0.07	1.49	19.79	31.30			N/A	N/A
C-AB	0.03	0.00	0.00	0.03	0.03			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.01	0.00	0.00	0.01	0.01			N/A	N/A
B-A	2.20	0.04	0.39	5.86	10.98			N/A	N/A
C-AB	0.02	0.00	0.00	0.02	0.02			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	Arm B - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Sets	D6 - 2040+Dev, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.61	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	32	Stream B-A	1.61	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D6	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	750	100.000
B		ONE HOUR	✓	97	100.000
C		ONE HOUR	✓	230	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	224	526
	B	97	0	0
	C	229	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	0	0	0
	C	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.00	0.00	0.0	~1	A	0	0
B-A	0.35	17.94	0.5	2.4	C	97	97
C-AB	0.00	5.90	0.0	0.5	A	2	2
C-A						228	228
A-B						224	224
A-C						526	526

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	524	0.000	0	0.0	0.0	0.000	A
B-A	87	22	345	0.253	87	0.2	0.3	13.951	B
C-AB	1	0.34	612	0.002	1	0.0	0.0	5.895	A
C-A	205	51			205				
A-B	201	50			201				
A-C	473	118			473				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	478	0.000	0	0.0	0.0	0.000	A
B-A	107	27	307	0.347	106	0.3	0.5	17.816	C
C-AB	2	0.47	613	0.003	2	0.0	0.0	5.884	A
C-A	251	63			251				
A-B	247	62			247				
A-C	579	145			579				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	478	0.000	0	0.0	0.0	0.000	A
B-A	107	27	307	0.347	107	0.5	0.5	17.940	C
C-AB	2	0.47	613	0.003	2	0.0	0.0	5.888	A
C-A	251	63			251				
A-B	247	62			247				
A-C	579	145			579				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	524	0.000	0	0.0	0.0	0.000	A
B-A	87	22	345	0.253	88	0.5	0.3	14.070	B
C-AB	1	0.34	612	0.002	1	0.0	0.0	5.902	A
C-A	205	51			205				
A-B	201	50			201				
A-C	473	118			473				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.33	0.00	0.00	0.33	0.33			N/A	N/A
C-AB	0.00	0.00	0.25	0.45	0.48			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.52	0.03	0.26	0.52	0.52			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.52	0.03	0.31	1.43	2.41			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.35	0.03	0.25	0.46	0.48			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 12 - Kingsmead Road_Broad Oak Road.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 03/02/2022 17:03:03

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
2021														
Arm A	D1	1.7	12.08	0.63	B	12.71	6 % [Arm B]	D2	1.6	12.54	0.62	B	11.12	18 % [Arm B]
Arm B		4.2	23.00	0.82	C				2.3	13.95	0.70	B		
Arm C		1.7	9.67	0.63	A				2.7	11.45	0.73	B		
Arm D		1.3	6.27	0.56	A				1.7	7.82	0.63	A		
2040														
Arm A	D3	3.4	21.60	0.78	C	31.54	-7 % [Arm B]	D4	3.3	23.88	0.78	C	20.75	3 % [Arm B]
Arm B		16.9	79.67	0.99	F				5.0	28.14	0.85	D		
Arm C		2.9	14.79	0.75	B				5.6	21.56	0.86	C		
Arm D		2.0	8.41	0.66	A				3.1	12.50	0.76	B		
2040+Dev														
Arm A	D5	13.6	72.65	0.97	F	67.36	-14 % [Arm B]	D6	7.9	50.58	0.91	F	56.09	-8 % [Arm B]
Arm B		42.3	174.85	1.09	F				16.9	80.83	0.99	F		
Arm C		3.3	16.33	0.78	C				21.7	72.17	1.00	F		
Arm D		2.4	9.99	0.71	A				5.1	20.50	0.85	C		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	B2248 / Kingsmead Road / Broad Oak Road / St Stephens Road – Roundabout junction
Location	Canterbury
Site number	
Date	26/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓			✓	✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2021	AM	ONE HOUR	08:00	09:30	15	✓
D2	2021	PM	ONE HOUR	17:00	18:30	15	✓
D3	2040	AM	ONE HOUR	08:00	09:30	15	✓
D4	2040	PM	ONE HOUR	17:00	18:30	15	✓
D5	2040+Dev	AM	ONE HOUR	08:00	09:30	15	✓
D6	2040+Dev	PM	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2021, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	12.71	B

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	6	Arm B	12.71	B

Arms

Arms

Arm	Name	Description	No give-way line
A	St Stephens Road North		
B	Broad Oak Road		
C	Kingsmead Road		
D	St Stepehns Road South		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	3.28	6.20	8.6	15.2	32.3	59.0		
B	3.25	6.35	5.5	18.2	32.3	54.0		
C	3.25	6.65	5.7	21.4	32.3	21.5		
D	3.08	6.30	19.1	21.9	32.3	12.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.528	1252
B	0.527	1203
C	0.601	1383
D	0.670	1671

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2021	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	464	100.000
B		ONE HOUR	✓	622	100.000
C		ONE HOUR	✓	577	100.000
D		ONE HOUR	✓	674	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	83	294	87
	B	51	0	186	385
	C	258	110	0	209
	D	63	413	198	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	0
	B	2	0	6	1
	C	1	4	0	4
	D	0	3	4	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.63	12.08	1.7	3.9	B	426	639
B	0.82	23.00	4.2	21.3	C	571	856
C	0.63	9.67	1.7	2.5	A	529	794
D	0.56	6.27	1.3	1.5	A	618	928

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	349	87	540	945	0.370	347	278	0.0	0.6	5.996	A
B	468	117	433	945	0.495	464	454	0.0	1.0	7.427	A
C	434	109	391	1116	0.389	432	507	0.0	0.6	5.242	A
D	507	127	314	1414	0.359	505	509	0.0	0.6	3.952	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	417	104	647	887	0.470	416	334	0.6	0.9	7.616	A
B	559	140	519	900	0.621	557	544	1.0	1.6	10.402	B
C	519	130	468	1070	0.485	518	608	0.6	0.9	6.497	A
D	606	151	376	1373	0.441	605	610	0.6	0.8	4.683	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	511	128	792	810	0.631	508	407	0.9	1.7	11.806	B
B	685	171	634	840	0.816	675	665	1.6	3.9	20.822	C
C	635	159	569	1011	0.628	632	741	0.9	1.6	9.436	A
D	742	186	459	1318	0.563	740	742	0.8	1.3	6.211	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	511	128	794	808	0.632	511	409	1.7	1.7	12.081	B
B	685	171	637	838	0.817	684	667	3.9	4.2	23.000	C
C	635	159	575	1007	0.631	635	746	1.6	1.7	9.668	A
D	742	186	461	1316	0.564	742	749	1.3	1.3	6.271	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	417	104	650	886	0.471	420	337	1.7	0.9	7.785	A
B	559	140	524	898	0.623	569	547	4.2	1.7	11.259	B
C	519	130	478	1065	0.487	522	615	1.7	1.0	6.661	A
D	606	151	379	1370	0.442	608	620	1.3	0.8	4.734	A

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	349	87	544	943	0.370	351	281	0.9	0.6	6.089	A
B	468	117	437	943	0.496	471	457	1.7	1.0	7.666	A
C	434	109	396	1113	0.390	436	512	1.0	0.6	5.324	A
D	507	127	316	1412	0.359	508	515	0.8	0.6	3.989	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.58	0.55	1.00	1.40	1.45			N/A	N/A
B	0.97	0.55	1.00	1.40	1.45			N/A	N/A
C	0.63	0.55	1.00	1.40	1.45			N/A	N/A
D	0.56	0.55	1.00	1.40	1.45			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.87	0.09	0.87	1.25	1.69			N/A	N/A
B	1.59	0.08	0.87	3.76	5.45			N/A	N/A
C	0.93	0.08	0.88	1.50	1.86			N/A	N/A
D	0.78	0.09	0.84	1.24	1.24			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.65	0.03	0.28	1.65	3.87			N/A	N/A
B	3.94	0.04	0.36	9.17	21.34			N/A	N/A
C	1.65	0.03	0.27	1.65	2.37			N/A	N/A
D	1.27	0.03	0.26	1.27	1.27			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.69	0.03	0.28	1.69	3.91			N/A	N/A
B	4.18	0.03	0.31	4.49	19.34			N/A	N/A
C	1.68	0.03	0.27	1.68	2.45			N/A	N/A
D	1.28	0.03	0.27	1.28	1.28			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.90	0.07	0.82	1.53	1.91			N/A	N/A
B	1.70	0.05	0.45	4.53	7.41			N/A	N/A
C	0.96	0.09	0.91	1.56	1.90			N/A	N/A
D	0.80	0.19	0.93	1.40	1.46			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.59	0.04	0.43	1.46	1.56			N/A	N/A
B	1.00	0.03	0.33	2.31	4.92			N/A	N/A
C	0.65	0.05	0.48	1.48	1.55			N/A	N/A
D	0.56	0.05	0.58	1.32	1.41			N/A	N/A

2021, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	11.12	B

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	18	Arm B	11.12	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2021	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	417	100.000
B		ONE HOUR	✓	541	100.000
C		ONE HOUR	✓	774	100.000
D		ONE HOUR	✓	718	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	96	263	58
	B	81	0	310	150
	C	261	197	0	316
	D	67	398	253	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	1	0	1	3
	C	1	3	0	2
	D	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.62	12.54	1.6	4.3	B	383	574
B	0.70	13.95	2.3	8.6	B	496	745
C	0.73	11.45	2.7	9.6	B	710	1065
D	0.63	7.82	1.7	2.0	A	659	988

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	314	78	635	905	0.347	312	306	0.0	0.5	6.048	A
B	407	102	430	959	0.425	404	517	0.0	0.7	6.456	A
C	583	146	216	1227	0.475	579	618	0.0	0.9	5.527	A
D	541	135	403	1378	0.392	538	392	0.0	0.6	4.271	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	375	94	761	838	0.447	374	367	0.5	0.8	7.735	A
B	486	122	515	914	0.532	485	620	0.7	1.1	8.348	A
C	696	174	259	1201	0.579	694	741	0.9	1.4	7.072	A
D	645	161	483	1325	0.487	644	470	0.6	0.9	5.281	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	459	115	930	748	0.614	456	448	0.8	1.5	12.219	B
B	596	149	629	855	0.697	591	757	1.1	2.2	13.458	B
C	852	213	316	1167	0.730	847	904	1.4	2.6	11.085	B
D	791	198	590	1253	0.631	788	573	0.9	1.7	7.690	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	459	115	934	746	0.616	459	450	1.5	1.6	12.538	B
B	596	149	632	853	0.698	595	761	2.2	2.3	13.950	B
C	852	213	318	1166	0.731	852	909	2.6	2.7	11.448	B
D	791	198	593	1251	0.632	790	577	1.7	1.7	7.821	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	375	94	766	835	0.449	378	370	1.6	0.8	7.924	A
B	486	122	519	912	0.533	491	625	2.3	1.2	8.630	A
C	696	174	262	1199	0.580	701	748	2.7	1.4	7.293	A
D	645	161	488	1321	0.489	648	475	1.7	1.0	5.374	A

18:15 - 18:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	314	78	640	903	0.348	315	309	0.8	0.5	6.139	A
B	407	102	433	957	0.426	409	522	1.2	0.7	6.586	A
C	583	146	218	1226	0.475	585	624	1.4	0.9	5.633	A
D	541	135	407	1376	0.393	542	396	1.0	0.7	4.322	A

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.53	0.53	1.00	1.40	1.45			N/A	N/A
B	0.73	0.55	1.00	1.40	1.45			N/A	N/A
C	0.89	0.55	1.00	1.40	1.45			N/A	N/A
D	0.64	0.55	1.00	1.40	1.45			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.80	0.09	0.85	1.32	1.32			N/A	N/A
B	1.11	0.08	0.91	1.99	2.78			N/A	N/A
C	1.35	0.06	0.84	2.96	4.25			N/A	N/A
D	0.94	0.07	0.84	1.63	1.98			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.54	0.03	0.27	1.54	3.29			N/A	N/A
B	2.20	0.03	0.29	2.20	8.60			N/A	N/A
C	2.59	0.03	0.29	2.59	9.63			N/A	N/A
D	1.67	0.03	0.27	1.67	1.67			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.57	0.03	0.28	1.57	4.27			N/A	N/A
B	2.26	0.03	0.28	2.26	5.54			N/A	N/A
C	2.65	0.03	0.27	2.65	4.24			N/A	N/A
D	1.70	0.03	0.27	1.70	1.70			N/A	N/A

18:00 - 18:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.83	0.07	0.79	1.25	1.71			N/A	N/A
B	1.16	0.06	0.78	2.47	3.47			N/A	N/A
C	1.41	0.06	0.86	3.14	4.52			N/A	N/A
D	0.97	0.11	0.95	1.46	1.81			N/A	N/A

18:15 - 18:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.54	0.04	0.41	1.22	1.22			N/A	N/A
B	0.75	0.04	0.40	1.69	2.65			N/A	N/A
C	0.92	0.04	0.42	2.14	3.46			N/A	N/A
D	0.65	0.05	0.52	1.41	1.41			N/A	N/A

2040, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	31.54	D

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-7	Arm B	31.54	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2040	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	530	100.000
B		ONE HOUR	✓	709	100.000
C		ONE HOUR	✓	659	100.000
D		ONE HOUR	✓	769	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	95	336	99
	B	58	0	212	439
	C	294	126	0	239
	D	72	471	226	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	0
	B	2	0	6	1
	C	1	4	0	4
	D	0	3	4	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.78	21.60	3.4	17.1	C	486	730
B	0.99	79.67	16.9	64.4	F	651	976
C	0.75	14.79	2.9	12.4	B	605	907
D	0.66	8.41	2.0	2.8	A	706	1058

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	399	100	616	904	0.441	396	317	0.0	0.8	7.043	A
B	534	133	494	913	0.584	528	518	0.0	1.4	9.225	A
C	496	124	444	1084	0.457	493	578	0.0	0.8	6.051	A
D	579	145	357	1385	0.418	576	580	0.0	0.7	4.436	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	476	119	738	838	0.568	474	380	0.8	1.3	9.837	A
B	637	159	592	862	0.740	632	621	1.4	2.7	15.331	C
C	592	148	532	1033	0.574	590	693	0.8	1.3	8.103	A
D	691	173	428	1338	0.517	690	694	0.7	1.1	5.544	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	584	146	902	750	0.778	578	461	1.3	3.2	19.859	C
B	781	195	721	794	0.983	742	757	2.7	12.2	49.831	E
C	726	181	628	976	0.743	720	835	1.3	2.7	13.759	B
D	847	212	520	1277	0.663	843	828	1.1	1.9	8.227	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	584	146	906	748	0.780	583	465	3.2	3.4	21.598	C
B	781	195	727	791	0.987	762	762	12.2	16.9	79.667	F
C	726	181	643	967	0.750	725	846	2.7	2.9	14.790	B
D	847	212	524	1274	0.664	847	844	1.9	2.0	8.412	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	476	119	744	835	0.570	484	389	3.4	1.4	10.486	B
B	637	159	602	857	0.744	692	627	16.9	3.1	27.837	D
C	592	148	576	1007	0.588	598	718	2.9	1.5	8.929	A
D	691	173	438	1332	0.519	695	736	2.0	1.1	5.684	A

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	399	100	621	901	0.443	401	321	1.4	0.8	7.231	A
B	534	133	500	910	0.586	541	523	3.1	1.5	9.904	A
C	496	124	454	1079	0.460	499	587	1.5	0.9	6.231	A
D	579	145	362	1382	0.419	580	590	1.1	0.7	4.499	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.78	0.55	1.00	1.40	1.45			N/A	N/A
B	1.37	0.54	1.27	1.82	1.98			N/A	N/A
C	0.83	0.55	1.00	1.40	1.45			N/A	N/A
D	0.71	0.55	1.00	1.40	1.45			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.29	0.06	0.84	2.77	3.88			N/A	N/A
B	2.67	0.06	0.99	7.08	10.75			N/A	N/A
C	1.32	0.06	0.86	2.85	3.97			N/A	N/A
D	1.06	0.07	0.83	1.95	2.75			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.19	0.03	0.33	6.37	17.08			N/A	N/A
B	12.22	0.24	6.33	30.66	42.11			N/A	N/A
C	2.74	0.03	0.30	2.74	12.36			N/A	N/A
D	1.92	0.03	0.27	1.92	2.81			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.36	0.03	0.30	3.36	14.57			N/A	N/A
B	16.88	0.18	7.12	45.20	64.44			N/A	N/A
C	2.89	0.03	0.28	2.89	8.06			N/A	N/A
D	1.95	0.03	0.27	1.95	1.95			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.36	0.05	0.47	3.43	5.36			N/A	N/A
B	3.15	0.04	0.40	8.45	16.33			N/A	N/A
C	1.46	0.06	0.83	3.39	4.86			N/A	N/A
D	1.09	0.09	0.98	1.83	2.38			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.81	0.03	0.34	1.86	3.72			N/A	N/A
B	1.45	0.03	0.29	1.45	6.42			N/A	N/A
C	0.86	0.04	0.38	2.03	3.56			N/A	N/A
D	0.73	0.05	0.49	1.33	1.86			N/A	N/A

2040, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	20.75	C

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	3	Arm B	20.75	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2040	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	477	100.000
B		ONE HOUR	✓	620	100.000
C		ONE HOUR	✓	887	100.000
D		ONE HOUR	✓	823	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	110	301	66
	B	93	0	355	172
	C	299	226	0	362
	D	77	456	290	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	1	0	1	3
	C	1	3	0	2
	D	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.78	23.88	3.3	16.8	C	438	657
B	0.85	28.14	5.0	26.3	D	569	853
C	0.86	21.56	5.6	28.0	C	814	1221
D	0.76	12.50	3.1	12.6	B	755	1133

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	359	90	727	856	0.420	356	351	0.0	0.7	7.167	A
B	467	117	491	927	0.504	463	592	0.0	1.0	7.895	A
C	668	167	247	1208	0.553	663	707	0.0	1.2	6.544	A
D	620	155	462	1339	0.463	616	448	0.0	0.9	4.958	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	429	107	871	779	0.550	427	420	0.7	1.2	10.165	B
B	557	139	588	876	0.637	555	710	1.0	1.7	11.113	B
C	797	199	296	1179	0.676	794	847	1.2	2.0	9.276	A
D	740	185	553	1277	0.579	738	537	0.9	1.4	6.645	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	525	131	1061	678	0.775	517	510	1.2	3.1	21.526	C
B	683	171	715	809	0.844	671	863	1.7	4.6	24.256	C
C	977	244	358	1142	0.856	964	1028	2.0	5.2	19.045	C
D	906	227	671	1198	0.756	900	651	1.4	2.9	11.821	B

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	525	131	1069	673	0.780	524	516	3.1	3.3	23.877	C
B	683	171	723	805	0.848	681	871	4.6	5.0	28.136	D
C	977	244	364	1138	0.858	975	1040	5.2	5.6	21.561	C
D	906	227	679	1193	0.760	906	659	2.9	3.1	12.498	B

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	429	107	883	773	0.555	437	429	3.3	1.3	10.977	B
B	557	139	599	870	0.641	570	721	5.0	1.8	12.484	B
C	797	199	304	1174	0.679	811	865	5.6	2.2	10.257	B
D	740	185	565	1269	0.583	746	550	3.1	1.4	6.969	A

18:15 - 18:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	359	90	735	852	0.422	361	355	1.3	0.7	7.370	A
B	467	117	497	924	0.505	470	599	1.8	1.0	7.989	A
C	668	167	251	1206	0.554	671	716	2.2	1.3	6.778	A
D	620	155	468	1335	0.464	622	454	1.4	0.9	5.063	A

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.71	0.55	1.00	1.40	1.45			N/A	N/A
B	1.00	0.55	1.00	1.40	1.45			N/A	N/A
C	1.22	0.56	1.06	1.22	1.53			N/A	N/A
D	0.85	0.55	1.00	1.40	1.45			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.20	0.06	0.83	2.51	3.49			N/A	N/A
B	1.70	0.06	0.85	4.09	5.99			N/A	N/A
C	2.03	0.06	0.74	5.28	8.05			N/A	N/A
D	1.35	0.06	0.70	3.15	4.66			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.12	0.03	0.34	6.56	16.77			N/A	N/A
B	4.61	0.04	0.40	12.27	24.71			N/A	N/A
C	5.17	0.04	0.38	12.81	28.03			N/A	N/A
D	2.95	0.03	0.30	2.95	12.57			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.33	0.03	0.30	3.61	15.44			N/A	N/A
B	5.04	0.03	0.33	8.60	26.33			N/A	N/A
C	5.56	0.03	0.31	6.85	26.69			N/A	N/A
D	3.06	0.03	0.28	3.06	6.84			N/A	N/A

18:00 - 18:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.28	0.05	0.46	3.17	4.94			N/A	N/A
B	1.85	0.04	0.43	4.96	8.45			N/A	N/A
C	2.18	0.05	0.45	5.96	10.05			N/A	N/A
D	1.42	0.06	0.78	3.30	4.79			N/A	N/A

18:15 - 18:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.74	0.03	0.33	1.68	3.39			N/A	N/A
B	1.04	0.03	0.32	2.15	5.20			N/A	N/A
C	1.26	0.03	0.33	2.83	6.42			N/A	N/A
D	0.88	0.04	0.38	2.07	3.60			N/A	N/A

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	67.36	F

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-14	Arm B	67.36	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2040+Dev	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	637	100.000
B		ONE HOUR	✓	730	100.000
C		ONE HOUR	✓	687	100.000
D		ONE HOUR	✓	813	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	120	413	104
	B	74	0	212	444
	C	315	126	0	246
	D	73	488	252	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	0
	B	2	0	6	1
	C	1	4	0	4
	D	0	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.97	72.65	13.6	57.2	F	585	877
B	1.09	174.85	42.3	89.5	F	670	1005
C	0.78	16.33	3.3	15.7	C	630	946
D	0.71	9.99	2.4	6.9	A	746	1119

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	480	120	648	887	0.540	475	345	0.0	1.2	8.635	A
B	550	137	574	872	0.630	543	549	0.0	1.6	10.725	B
C	517	129	463	1074	0.482	514	654	0.0	0.9	6.386	A
D	612	153	385	1371	0.447	609	592	0.0	0.8	4.706	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	573	143	777	819	0.700	568	413	1.2	2.2	14.149	B
B	656	164	687	813	0.807	648	658	1.6	3.7	20.783	C
C	618	154	553	1021	0.605	615	783	0.9	1.5	8.826	A
D	731	183	461	1320	0.554	729	707	0.8	1.2	6.075	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	701	175	948	726	0.966	669	497	2.2	10.3	47.454	E
B	804	201	819	744	1.080	723	798	3.7	23.9	84.900	F
C	756	189	622	980	0.772	750	920	1.5	3.2	15.226	C
D	895	224	555	1258	0.712	890	817	1.2	2.4	9.680	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	701	175	953	724	0.969	688	501	10.3	13.6	72.650	F
B	804	201	836	735	1.093	730	805	23.9	42.3	174.853	F
C	756	189	631	975	0.776	756	936	3.2	3.3	16.333	C
D	895	224	559	1255	0.713	895	827	2.4	2.4	9.990	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	573	143	784	815	0.703	617	430	13.6	2.5	21.830	C
B	656	164	729	792	0.829	773	672	42.3	13.0	134.855	F
C	618	154	649	964	0.641	624	853	3.3	1.8	10.766	B
D	731	183	479	1308	0.559	735	794	2.4	1.3	6.334	A

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	480	120	654	884	0.542	485	354	2.5	1.2	9.123	A
B	550	137	584	867	0.634	595	555	13.0	1.8	15.319	C
C	517	129	501	1051	0.492	521	677	1.8	1.0	6.830	A
D	612	153	394	1364	0.449	614	627	1.3	0.8	4.812	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.15	0.53	1.10	1.47	1.75			N/A	N/A
B	1.65	0.20	1.40	2.79	3.53			N/A	N/A
C	0.92	0.55	1.00	1.40	1.45			N/A	N/A
D	0.80	0.55	1.00	1.40	1.45			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.22	0.06	0.79	5.83	8.92			N/A	N/A
B	3.75	0.07	1.43	9.98	14.80			N/A	N/A
C	1.50	0.06	0.88	3.44	4.88			N/A	N/A
D	1.22	0.06	0.78	2.66	3.76			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	10.28	0.16	4.50	26.88	37.95			N/A	N/A
B	23.95	4.24	19.93	45.12	54.76			N/A	N/A
C	3.16	0.03	0.31	4.52	15.71			N/A	N/A
D	2.38	0.03	0.28	2.38	6.95			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	13.58	0.11	3.95	38.26	57.24			N/A	N/A
B	42.29	10.56	37.00	75.31	89.49			N/A	N/A
C	3.32	0.03	0.29	3.32	10.65			N/A	N/A
D	2.44	0.03	0.27	2.44	3.02			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.51	0.04	0.38	6.57	13.05			N/A	N/A
B	13.04	0.77	8.75	29.16	37.88			N/A	N/A
C	1.84	0.06	0.97	4.46	6.46			N/A	N/A
D	1.29	0.07	0.95	2.62	3.57			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.21	0.03	0.29	1.43	5.18			N/A	N/A
B	1.79	0.03	0.28	1.79	6.35			N/A	N/A
C	0.98	0.04	0.37	2.44	4.38			N/A	N/A
D	0.82	0.04	0.43	1.81	2.77			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	56.09	F

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-8	Arm B	56.09	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2040+Dev	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	551	100.000
B		ONE HOUR	✓	696	100.000
C		ONE HOUR	✓	989	100.000
D		ONE HOUR	✓	850	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	141	341	69
	B	152	0	355	189
	C	375	226	0	388
	D	81	465	304	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	1	0	1	3
	C	1	3	0	2
	D	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.91	50.58	7.9	41.3	F	506	758
B	0.99	80.83	16.9	64.0	F	639	958
C	1.00	72.17	21.7	79.7	F	908	1361
D	0.85	20.50	5.1	25.1	C	780	1170

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	415	104	744	847	0.490	411	454	0.0	0.9	8.186	A
B	524	131	533	905	0.579	519	622	0.0	1.3	9.200	A
C	745	186	306	1174	0.634	738	746	0.0	1.7	8.130	A
D	640	160	562	1272	0.503	636	482	0.0	1.0	5.623	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	495	124	890	769	0.644	492	543	0.9	1.7	12.856	B
B	626	156	638	849	0.737	621	744	1.3	2.6	15.377	C
C	889	222	366	1138	0.781	882	893	1.7	3.3	13.728	B
D	764	191	672	1198	0.638	761	576	1.0	1.7	8.184	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	607	152	1074	671	0.904	588	642	1.7	6.5	36.997	E
B	766	192	768	781	0.981	729	894	2.6	11.9	49.703	E
C	1089	272	431	1099	0.991	1041	1066	3.3	15.2	43.776	E
D	936	234	792	1117	0.838	924	680	1.7	4.6	17.679	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	607	152	1088	663	0.914	601	655	6.5	7.9	50.584	F
B	766	192	781	774	0.990	746	908	11.9	16.9	80.827	F
C	1089	272	441	1093	0.996	1063	1087	15.2	21.7	72.175	F
D	936	234	809	1106	0.846	934	695	4.6	5.1	20.499	C

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	495	124	922	752	0.659	519	586	7.9	2.0	16.865	C
B	626	156	664	836	0.748	680	777	16.9	3.2	29.479	D
C	889	222	398	1119	0.795	959	946	21.7	4.3	29.587	D
D	764	191	731	1158	0.660	776	626	5.1	2.0	9.712	A

18:15 - 18:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	415	104	755	841	0.493	419	463	2.0	1.0	8.604	A
B	524	131	542	900	0.582	531	632	3.2	1.4	9.937	A
C	745	186	313	1170	0.636	754	760	4.3	1.8	8.863	A
D	640	160	574	1264	0.506	644	493	2.0	1.0	5.842	A

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.94	0.55	1.00	1.40	1.46			N/A	N/A
B	1.34	0.53	1.25	1.79	1.95			N/A	N/A
C	1.69	0.53	1.06	2.50	2.90			N/A	N/A
D	1.00	0.55	1.00	1.40	1.45			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.74	0.06	0.75	4.37	6.55			N/A	N/A
B	2.63	0.06	0.99	6.95	10.55			N/A	N/A
C	3.35	0.06	1.08	9.12	13.98			N/A	N/A
D	1.72	0.05	0.59	4.42	6.78			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.52	0.06	1.36	18.73	29.84			N/A	N/A
B	11.92	0.23	6.05	30.09	41.49			N/A	N/A
C	15.21	0.30	8.20	38.00	51.94			N/A	N/A
D	4.60	0.04	0.36	10.47	25.08			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	7.95	0.05	0.48	22.65	41.35			N/A	N/A
B	16.89	0.19	7.29	45.02	63.97			N/A	N/A
C	21.66	0.25	10.24	56.81	79.65			N/A	N/A
D	5.07	0.03	0.31	5.53	23.54			N/A	N/A

18:00 - 18:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.02	0.04	0.40	5.45	9.85			N/A	N/A
B	3.23	0.04	0.41	8.83	16.51			N/A	N/A
C	4.27	0.05	0.46	12.06	21.55			N/A	N/A
D	1.99	0.05	0.53	5.30	8.34			N/A	N/A

18:15 - 18:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.99	0.03	0.30	1.23	4.70			N/A	N/A
B	1.43	0.03	0.29	1.43	6.29			N/A	N/A
C	1.79	0.03	0.30	1.93	8.30			N/A	N/A
D	1.04	0.03	0.33	2.31	5.19			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 12 - Kingsmead Road_Broad Oak Road MITIGATION.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 04/02/2022 17:17:34

»2040+Dev, AM
»2040+Dev, PM

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2040+Dev													
Arm A	D5	13.6	72.73	0.97	F	30.73	-6 % [Arm A]	D6	8.3	52.51	0.92	F	23.39	-4 % [Arm A]
Arm B		8.4	40.50	0.92	E				4.6	22.61	0.83	C		
Arm C		1.3	6.31	0.57	A				2.7	8.93	0.73	A		
Arm D		2.5	10.12	0.72	B				5.5	22.19	0.86	C		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	B2248 / Kingsmead Road / Broad Oak Road / St Stephens Road – Roundabout junction
Location	Canterbury
Site number	
Date	26/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓			✓	✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2040+Dev	AM	ONE HOUR	08:00	09:30	15	✓
D6	2040+Dev	PM	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	30.73	D

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-6	Arm A	30.73	D

Arms

Arms

Arm	Name	Description	No give-way line
A	St Stephens Road North		
B	Broad Oak Road		
C	Kingsmead Road		
D	St Stepehns Road South		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	3.28	6.20	8.6	15.2	32.4	59.0		
B	3.25	7.15	10.1	18.2	32.4	54.0		
C	3.25	7.12	25.9	21.4	32.4	21.5		
D	3.08	6.30	19.1	21.9	32.4	12.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.528	1252
B	0.563	1381
C	0.693	1836
D	0.670	1671

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2040+Dev	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	637	100.000
B		ONE HOUR	✓	730	100.000
C		ONE HOUR	✓	687	100.000
D		ONE HOUR	✓	813	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	120	413	104
	B	74	0	212	444
	C	315	126	0	246
	D	73	488	252	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	0
	B	2	0	6	1
	C	1	4	0	4
	D	0	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.97	72.73	13.6	57.3	F	585	877
B	0.92	40.50	8.4	45.6	E	670	1005
C	0.57	6.31	1.3	1.5	A	630	946
D	0.72	10.12	2.5	7.3	B	746	1119

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	480	120	649	887	0.540	475	346	0.0	1.2	8.636	A
B	550	137	574	1024	0.536	545	549	0.0	1.1	7.440	A
C	517	129	464	1472	0.351	515	655	0.0	0.5	3.753	A
D	612	153	386	1370	0.447	609	593	0.0	0.8	4.711	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	573	143	777	819	0.700	568	414	1.2	2.2	14.152	B
B	656	164	687	961	0.683	653	658	1.1	2.1	11.524	B
C	618	154	556	1410	0.438	617	784	0.5	0.8	4.532	A
D	731	183	462	1319	0.554	729	710	0.8	1.2	6.083	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	701	175	949	726	0.966	669	505	2.2	10.3	47.563	E
B	804	201	819	887	0.906	784	799	2.1	7.0	30.307	D
C	756	189	665	1335	0.567	754	937	0.8	1.3	6.175	A
D	895	224	564	1252	0.715	890	856	1.2	2.4	9.831	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	701	175	953	724	0.969	688	508	10.3	13.6	72.727	F
B	804	201	836	878	0.916	798	806	7.0	8.4	40.498	E
C	756	189	679	1326	0.570	756	955	1.3	1.3	6.314	A
D	895	224	566	1250	0.716	895	869	2.4	2.5	10.123	B

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	573	143	783	815	0.703	617	419	13.6	2.5	21.801	C
B	656	164	729	938	0.700	680	671	8.4	2.4	15.143	C
C	618	154	583	1391	0.444	620	826	1.3	0.8	4.679	A
D	731	183	467	1316	0.555	736	736	2.5	1.3	6.253	A

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	480	120	654	885	0.542	485	349	2.5	1.2	9.114	A
B	550	137	584	1019	0.539	555	555	2.4	1.2	7.830	A
C	517	129	473	1467	0.353	518	666	0.8	0.5	3.802	A
D	612	153	389	1368	0.447	614	602	1.3	0.8	4.787	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.15	0.53	1.10	1.47	1.75			N/A	N/A
B	1.14	0.55	1.06	1.14	1.54			N/A	N/A
C	0.54	0.54	1.00	1.40	1.45			N/A	N/A
D	0.80	0.55	1.00	1.40	1.45			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.22	0.06	0.78	5.83	8.92			N/A	N/A
B	2.07	0.06	0.76	5.41	8.24			N/A	N/A
C	0.77	0.08	0.82	1.23	1.23			N/A	N/A
D	1.22	0.06	0.77	2.68	3.79			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	10.31	0.16	4.53	26.92	37.98			N/A	N/A
B	7.02	0.06	1.07	20.39	33.82			N/A	N/A
C	1.29	0.03	0.26	1.29	1.29			N/A	N/A
D	2.42	0.03	0.28	2.42	7.35			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	13.59	0.11	3.98	38.29	57.26			N/A	N/A
B	8.45	0.04	0.44	23.15	45.62			N/A	N/A
C	1.31	0.03	0.27	1.31	1.37			N/A	N/A
D	2.47	0.03	0.27	2.47	3.22			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.51	0.04	0.38	6.55	13.04			N/A	N/A
B	2.44	0.04	0.43	6.71	11.74			N/A	N/A
C	0.81	0.21	0.94	1.40	1.48			N/A	N/A
D	1.27	0.07	0.92	2.62	3.60			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.21	0.03	0.29	1.42	5.16			N/A	N/A
B	1.19	0.03	0.30	1.81	5.90			N/A	N/A
C	0.55	0.05	0.54	1.31	1.41			N/A	N/A
D	0.82	0.04	0.43	1.81	2.79			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	23.39	C

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-4	Arm A	23.39	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2040+Dev	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	551	100.000
B		ONE HOUR	✓	696	100.000
C		ONE HOUR	✓	989	100.000
D		ONE HOUR	✓	850	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	141	341	69
	B	152	0	355	189
	C	375	226	0	388
	D	81	465	304	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	1	0	1	3
	C	1	3	0	2
	D	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.92	52.51	8.3	42.5	F	506	758
B	0.83	22.61	4.6	22.8	C	639	958
C	0.73	8.93	2.7	7.1	A	908	1361
D	0.86	22.19	5.5	27.6	C	780	1170

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	415	104	745	847	0.490	411	455	0.0	0.9	8.192	A
B	524	131	533	1060	0.494	520	622	0.0	1.0	6.623	A
C	745	186	306	1590	0.468	741	747	0.0	0.9	4.222	A
D	640	160	564	1271	0.504	636	483	0.0	1.0	5.636	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	495	124	891	768	0.645	492	545	0.9	1.7	12.877	B
B	626	156	638	1001	0.625	623	745	1.0	1.6	9.460	A
C	889	222	367	1548	0.574	887	895	0.9	1.3	5.429	A
D	764	191	675	1196	0.639	761	579	1.0	1.7	8.225	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	607	152	1082	667	0.910	587	664	1.7	6.8	38.137	E
B	766	192	766	929	0.825	756	902	1.6	4.2	19.731	C
C	1089	272	444	1495	0.728	1084	1079	1.3	2.6	8.647	A
D	936	234	824	1096	0.854	922	704	1.7	5.1	19.385	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	607	152	1094	660	0.919	601	669	6.8	8.3	52.511	F
B	766	192	781	921	0.832	765	914	4.2	4.6	22.614	C
C	1089	272	450	1491	0.730	1089	1096	2.6	2.7	8.934	A
D	936	234	829	1093	0.856	934	710	5.1	5.5	22.188	C

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	495	124	909	759	0.652	521	552	8.3	2.0	16.536	C
B	626	156	666	986	0.635	637	764	4.6	1.8	10.633	B
C	889	222	377	1541	0.577	894	925	2.7	1.4	5.607	A
D	764	191	682	1191	0.642	779	589	5.5	1.8	9.021	A

18:15 - 18:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	415	104	752	843	0.492	419	459	2.0	1.0	8.566	A
B	524	131	542	1055	0.497	527	630	1.8	1.0	6.857	A
C	745	186	311	1587	0.469	747	758	1.4	0.9	4.292	A
D	640	160	569	1268	0.505	643	488	1.8	1.0	5.796	A

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.94	0.55	1.00	1.41	1.46			N/A	N/A
B	0.96	0.55	1.00	1.40	1.45			N/A	N/A
C	0.87	0.55	1.00	1.40	1.45			N/A	N/A
D	1.00	0.55	1.00	1.40	1.45			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.75	0.06	0.73	4.40	6.61			N/A	N/A
B	1.62	0.06	0.77	3.94	5.87			N/A	N/A
C	1.33	0.05	0.66	3.09	4.61			N/A	N/A
D	1.73	0.05	0.51	4.49	6.96			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.76	0.07	1.05	19.32	30.33			N/A	N/A
B	4.19	0.04	0.36	9.74	22.76			N/A	N/A
C	2.59	0.03	0.28	2.59	7.06			N/A	N/A
D	5.09	0.04	0.38	12.74	27.56			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	8.25	0.05	0.53	23.78	42.50			N/A	N/A
B	4.58	0.03	0.31	5.33	21.63			N/A	N/A
C	2.65	0.03	0.27	2.65	2.65			N/A	N/A
D	5.48	0.03	0.32	7.37	26.86			N/A	N/A

18:00 - 18:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.96	0.04	0.39	5.21	9.72			N/A	N/A
B	1.79	0.05	0.47	4.76	7.68			N/A	N/A
C	1.38	0.07	0.99	2.86	3.91			N/A	N/A
D	1.84	0.04	0.44	4.93	8.31			N/A	N/A

18:15 - 18:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.99	0.03	0.30	1.13	4.61			N/A	N/A
B	1.00	0.03	0.33	2.25	4.94			N/A	N/A
C	0.89	0.04	0.44	1.96	3.03			N/A	N/A
D	1.03	0.03	0.32	2.10	5.18			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 13 - Broad Oak Road_Vauxhall Road.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 04/02/2022 17:19:44

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2021													
Arm A	D1	1.4	7.95	0.59	A	42.58	-8 % [Arm B]	D2	3.0	13.46	0.75	B	14.81	13 % [Arm C]
Arm B		15.5	79.53	0.98	F				0.4	6.38	0.27	A		
Arm C		3.3	31.89	0.78	D				2.9	20.14	0.75	C		
	2040													
Arm A	D3	2.1	10.09	0.68	B	140.57	-19 % [Arm B]	D4	6.3	25.63	0.88	D	27.54	-2 % [Arm C]
Arm B		72.8	305.28	1.19	F				0.5	7.32	0.33	A		
Arm C		6.0	52.44	0.88	F				6.1	38.37	0.88	E		
	2040+Dev													
Arm A	D5	2.3	11.00	0.70	B	162.06	-21 % [Arm B]	D6	7.1	28.32	0.89	D	33.46	-5 % [Arm C]
Arm B		82.1	363.09	1.22	F				0.5	7.46	0.33	A		
Arm C		6.1	52.61	0.88	F				8.4	50.79	0.92	F		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	17/01/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2021	AM	ONE HOUR	08:00	09:30	15	✓
D2	2021	PM	ONE HOUR	16:30	18:00	15	✓
D3	2040	AM	ONE HOUR	08:00	09:30	15	✓
D4	2040	PM	ONE HOUR	16:30	18:00	15	✓
D5	2040+Dev	AM	ONE HOUR	08:00	09:30	15	✓
D6	2040+Dev	PM	ONE HOUR	16:30	18:00	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2021, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	42.58	E

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-8	Arm B	42.58	E

Arms

Arms

Arm	Name	Description
A	Broad Oak Road (West)	
B	Broad Oak Road (East)	
C	Vauxhall Road	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.30	3.20	4.50	18.4	17.90	18.20	0.0	✓
B	3.05	2.95	4.55	3.9	15.30	12.50	0.0	
C	3.80	3.70	3.80	1.8	17.60	12.50	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.650	1186
B	0.622	831
C	0.627	806

The slope and intercept shown above include any corrections and adjustments.

Arm Capacity Adjustments

Arm	Type	Reason	Direct capacity adjustment (PCU/hr)
B	Direct		250

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2021	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	594	100.000
B		ONE HOUR	✓	657	100.000
C		ONE HOUR	✓	354	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	145	449
	B	421	0	236
	C	302	52	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	3
	B	4	0	3
	C	1	10	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.59	7.95	1.4	1.7	A	545	818
B	0.98	79.53	15.5	60.8	F	603	904
C	0.78	31.89	3.3	16.5	D	325	487

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	447	112	39	1119	0.400	445	538	0.0	0.7	5.315	A
B	495	124	336	836	0.592	489	147	0.0	1.4	10.228	B
C	267	67	313	588	0.453	263	512	0.0	0.8	10.973	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	534	133	46	1114	0.479	533	645	0.7	0.9	6.186	A
B	591	148	403	794	0.744	585	177	1.4	2.7	16.813	C
C	318	80	375	549	0.580	316	613	0.8	1.3	15.338	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	654	164	56	1107	0.591	652	768	0.9	1.4	7.873	A
B	723	181	493	739	0.979	688	215	2.7	11.5	51.373	F
C	390	97	441	507	0.769	383	740	1.3	2.9	27.749	D

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	654	164	57	1107	0.591	654	785	1.4	1.4	7.949	A
B	723	181	494	738	0.980	708	217	11.5	15.5	79.529	F
C	390	97	453	499	0.781	388	749	2.9	3.3	31.885	D

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	534	133	48	1113	0.480	536	687	1.4	0.9	6.258	A
B	591	148	405	793	0.745	640	179	15.5	3.2	29.397	D
C	318	80	410	527	0.604	325	635	3.3	1.6	18.389	C

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	447	112	40	1119	0.400	448	551	0.9	0.7	5.376	A
B	495	124	339	834	0.593	501	149	3.2	1.5	11.031	B
C	267	67	321	583	0.457	269	519	1.6	0.9	11.579	B

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.66	0.55	1.00	1.40	1.45			N/A	N/A
B	1.41	0.55	1.31	1.83	1.98			N/A	N/A
C	0.81	0.55	1.00	1.40	1.45			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.91	0.10	0.91	1.31	1.71			N/A	N/A
B	2.71	0.07	1.12	7.06	10.53			N/A	N/A
C	1.33	0.09	1.06	2.55	3.36			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.41	0.03	0.27	1.41	1.41			N/A	N/A
B	11.53	0.22	5.82	29.11	40.16			N/A	N/A
C	2.95	0.04	0.36	7.01	15.72			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.43	0.03	0.27	1.43	1.43			N/A	N/A
B	15.46	0.15	5.90	42.08	60.82			N/A	N/A
C	3.27	0.03	0.32	4.88	16.45			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.93	0.12	0.95	1.28	1.68			N/A	N/A
B	3.18	0.04	0.40	8.54	16.50			N/A	N/A
C	1.60	0.05	0.51	4.04	6.29			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.67	0.06	0.64	1.15	1.15			N/A	N/A
B	1.50	0.03	0.30	1.58	6.85			N/A	N/A
C	0.86	0.03	0.34	1.97	3.98			N/A	N/A

2021, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 86% of the total flow for the roundabout for one or more time segments]
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	14.81	B

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		13	Arm C	14.81	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2021	PM	ONE HOUR	16:30	18:00	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	745	100.000
B		ONE HOUR	✓	188	100.000
C		ONE HOUR	✓	485	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	318	427
	B	121	0	67
	C	357	128	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	3	0	0
	C	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.75	13.46	3.0	13.0	B	684	1025
B	0.27	6.38	0.4	1.2	A	173	259
C	0.75	20.14	2.9	14.4	C	445	668

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	561	140	95	1116	0.502	557	357	0.0	1.0	6.390	A
B	142	35	319	864	0.164	141	333	0.0	0.2	4.971	A
C	365	91	91	738	0.495	361	369	0.0	1.0	9.455	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	670	167	115	1104	0.607	668	428	1.0	1.5	8.216	A
B	169	42	383	825	0.205	169	400	0.2	0.3	5.484	A
C	436	109	109	727	0.600	434	443	1.0	1.5	12.207	B

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	820	205	140	1087	0.754	815	522	1.5	2.9	12.940	B
B	207	52	467	773	0.268	207	487	0.3	0.4	6.350	A
C	534	133	133	711	0.751	529	541	1.5	2.8	19.149	C

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	820	205	141	1086	0.755	820	526	2.9	3.0	13.462	B
B	207	52	470	771	0.268	207	491	0.4	0.4	6.378	A
C	534	133	133	711	0.751	534	544	2.8	2.9	20.144	C

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	670	167	116	1103	0.607	675	434	3.0	1.6	8.535	A
B	169	42	387	822	0.206	169	405	0.4	0.3	5.519	A
C	436	109	109	727	0.600	441	447	2.9	1.5	12.849	B

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	561	140	97	1115	0.503	563	362	1.6	1.0	6.543	A
B	142	35	323	862	0.164	142	337	0.3	0.2	5.002	A
C	365	91	91	738	0.495	367	373	1.5	1.0	9.773	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.00	0.55	1.00	1.40	1.45			N/A	N/A
B	0.19	0.00	0.00	0.19	0.19			N/A	N/A
C	0.96	0.55	1.00	1.40	1.45			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.51	0.06	0.90	3.46	4.90			N/A	N/A
B	0.26	0.00	0.00	0.26	0.26			N/A	N/A
C	1.45	0.08	1.08	2.90	3.92			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.91	0.03	0.30	2.91	12.99			N/A	N/A
B	0.36	0.03	0.25	0.46	0.48			N/A	N/A
C	2.79	0.03	0.32	4.73	14.44			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.99	0.03	0.28	2.99	6.61			N/A	N/A
B	0.36	0.03	0.32	1.17	1.17			N/A	N/A
C	2.89	0.03	0.29	2.89	10.50			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.58	0.06	0.73	3.86	5.76			N/A	N/A
B	0.26	0.00	0.00	0.26	0.26			N/A	N/A
C	1.55	0.05	0.50	3.92	6.09			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.03	0.04	0.40	2.56	4.28			N/A	N/A
B	0.20	0.00	0.00	0.20	0.20			N/A	N/A
C	1.00	0.04	0.38	2.50	4.38			N/A	N/A

2040, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	140.57	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-19	Arm B	140.57	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2040	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	677	100.000
B		ONE HOUR	✓	749	100.000
C		ONE HOUR	✓	404	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	165	512
	B	480	0	269
	C	345	59	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	3
	B	4	0	3
	C	1	10	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.68	10.09	2.1	4.9	B	621	932
B	1.19	305.26	72.8	119.5	F	687	1031
C	0.88	52.44	6.0	32.5	F	371	556

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	510	127	44	1116	0.457	508	612	0.0	0.8	5.875	A
B	564	141	383	807	0.699	555	167	0.0	2.2	13.866	B
C	304	76	356	561	0.542	300	582	0.0	1.1	13.536	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	609	152	52	1110	0.548	607	729	0.8	1.2	7.138	A
B	673	168	459	760	0.886	658	200	2.2	6.0	31.599	D
C	363	91	422	519	0.700	359	696	1.1	2.2	21.943	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	745	186	63	1102	0.676	742	810	1.2	2.0	9.898	A
B	825	206	561	697	1.184	688	244	6.0	40.1	135.998	F
C	445	111	441	507	0.878	433	808	2.2	5.2	42.538	E

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	745	186	65	1102	0.677	745	822	2.0	2.1	10.093	B
B	825	206	564	695	1.186	694	246	40.1	72.8	298.502	F
C	445	111	445	505	0.882	442	813	5.2	6.0	52.437	F

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	609	152	55	1108	0.549	612	798	2.1	1.2	7.296	A
B	673	168	463	757	0.889	747	204	72.8	54.3	305.256	F
C	363	91	479	483	0.752	374	731	6.0	3.4	35.468	E

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	510	127	45	1115	0.457	511	758	1.2	0.9	5.978	A
B	564	141	387	804	0.701	769	170	54.3	3.0	128.758	F
C	304	76	493	474	0.642	310	663	3.4	1.9	22.707	C

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.83	0.55	1.00	1.40	1.45			N/A	N/A
B	2.21	0.12	1.04	4.63	6.13			N/A	N/A
C	1.14	0.55	1.04	1.27	1.27			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.19	0.08	0.95	2.29	3.00			N/A	N/A
B	5.98	0.14	2.70	15.00	20.91			N/A	N/A
C	2.16	0.09	1.36	4.84	6.67			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.02	0.03	0.28	2.02	4.95			N/A	N/A
B	40.08	15.77	37.08	62.98	72.01			N/A	N/A
C	5.24	0.06	1.02	14.96	24.24			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.06	0.03	0.27	2.06	2.15			N/A	N/A
B	72.78	35.50	69.23	106.85	119.52			N/A	N/A
C	6.02	0.04	0.41	16.16	32.47			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.24	0.08	0.96	2.43	3.26			N/A	N/A
B	54.34	26.84	51.66	79.15	88.40			N/A	N/A
C	3.37	0.05	0.48	9.51	16.04			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.85	0.05	0.48	1.77	2.58			N/A	N/A
B	2.98	0.03	0.30	3.04	13.63			N/A	N/A
C	1.90	0.04	0.39	5.02	9.40			N/A	N/A

2040, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 86% of the total flow for the roundabout for one or more time segments]
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	27.54	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-2	Arm C	27.54	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2040	PM	ONE HOUR	16:30	18:00	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	853	100.000
B		ONE HOUR	✓	216	100.000
C		ONE HOUR	✓	556	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	364	489
	B	139	0	77
	C	409	147	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	3	0	0
	C	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.88	25.63	6.3	33.2	D	783	1174
B	0.33	7.32	0.5	2.1	A	198	297
C	0.88	38.37	6.1	33.4	E	510	765

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	642	161	109	1107	0.580	637	408	0.0	1.4	7.568	A
B	163	41	365	836	0.195	162	381	0.0	0.2	5.331	A
C	419	105	104	730	0.574	413	423	0.0	1.3	11.205	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	767	192	131	1093	0.702	763	490	1.4	2.3	10.800	B
B	194	49	438	791	0.245	194	457	0.2	0.3	6.023	A
C	500	125	125	717	0.698	496	507	1.3	2.2	16.079	C

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	939	235	158	1075	0.874	925	593	2.3	5.8	22.150	C
B	238	59	530	734	0.324	237	553	0.3	0.5	7.235	A
C	612	153	153	699	0.876	599	615	2.2	5.5	32.334	D

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	939	235	161	1073	0.875	937	602	5.8	6.3	25.629	D
B	238	59	537	730	0.326	238	561	0.5	0.5	7.315	A
C	612	153	153	699	0.876	610	622	5.5	6.1	38.372	E

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	767	192	136	1090	0.704	782	504	6.3	2.5	12.248	B
B	194	49	448	785	0.248	195	470	0.5	0.3	6.111	A
C	500	125	125	716	0.698	514	518	6.1	2.4	18.980	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	642	161	112	1106	0.581	646	416	2.5	1.4	7.910	A
B	163	41	371	832	0.195	163	388	0.3	0.2	5.381	A
C	419	105	105	729	0.574	423	429	2.4	1.4	11.907	B

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.35	0.57	1.20	1.66	1.83			N/A	N/A
B	0.24	0.00	0.00	0.24	0.24			N/A	N/A
C	1.31	0.56	1.12	1.50	1.75			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.27	0.06	0.90	5.88	8.86			N/A	N/A
B	0.32	0.00	0.00	0.32	0.32			N/A	N/A
C	2.18	0.08	1.21	5.22	7.42			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.81	0.04	0.42	15.83	31.02			N/A	N/A
B	0.47	0.03	0.25	0.47	0.48			N/A	N/A
C	5.51	0.05	0.50	15.81	27.38			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.32	0.03	0.33	10.98	33.21			N/A	N/A
B	0.48	0.03	0.31	1.40	2.08			N/A	N/A
C	6.11	0.04	0.37	14.50	33.45			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.47	0.04	0.44	6.80	11.79			N/A	N/A
B	0.33	0.00	0.00	0.33	0.33			N/A	N/A
C	2.44	0.04	0.42	6.70	12.01			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.41	0.03	0.33	3.06	7.27			N/A	N/A
B	0.24	0.00	0.00	0.24	0.24			N/A	N/A
C	1.39	0.03	0.33	2.93	7.14			N/A	N/A

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	162.06	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-21	Arm B	162.06	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2040+Dev	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	704	100.000
B		ONE HOUR	✓	749	100.000
C		ONE HOUR	✓	411	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	165	539
	B	480	0	269
	C	352	59	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	3
	B	4	0	3
	C	1	10	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.70	11.00	2.3	7.3	B	646	969
B	1.22	363.09	82.1	129.0	F	687	1031
C	0.88	52.61	6.1	33.1	F	377	566

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	530	133	44	1116	0.475	528	616	0.0	0.9	6.069	A
B	564	141	403	794	0.710	555	167	0.0	2.3	14.518	B
C	309	77	355	562	0.551	305	602	0.0	1.2	13.775	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	633	158	52	1110	0.570	631	733	0.9	1.3	7.492	A
B	673	168	483	745	0.904	656	200	2.3	6.7	35.024	E
C	369	92	420	520	0.710	365	719	1.2	2.3	22.588	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	775	194	63	1103	0.703	771	808	1.3	2.3	10.732	B
B	825	206	590	678	1.215	672	244	6.7	44.9	153.480	F
C	453	113	431	514	0.881	440	832	2.3	5.4	42.912	E

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	775	194	65	1102	0.704	775	818	2.3	2.3	11.000	B
B	825	206	593	677	1.219	676	246	44.9	82.1	341.125	F
C	453	113	433	512	0.884	449	836	5.4	6.1	52.609	F

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	633	158	55	1109	0.571	637	796	2.3	1.4	7.692	A
B	673	168	488	742	0.907	733	204	82.1	67.1	363.087	F
C	369	92	470	489	0.756	380	751	6.1	3.4	35.728	E

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	530	133	45	1115	0.475	532	770	1.4	0.9	6.189	A
B	564	141	407	792	0.712	780	170	67.1	13.1	190.892	F
C	309	77	500	469	0.659	315	687	3.4	2.1	24.074	C

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.89	0.55	1.00	1.40	1.45			N/A	N/A
B	2.31	0.09	1.36	5.39	7.51			N/A	N/A
C	1.19	0.56	1.06	1.19	1.57			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.30	0.07	0.94	2.69	3.70			N/A	N/A
B	6.71	0.15	3.13	16.81	23.34			N/A	N/A
C	2.26	0.10	1.41	5.08	6.97			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.28	0.03	0.28	2.28	7.29			N/A	N/A
B	44.85	19.46	42.00	68.34	77.39			N/A	N/A
C	5.37	0.06	1.09	15.35	24.74			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.32	0.03	0.27	2.32	2.99			N/A	N/A
B	82.05	43.62	78.77	116.53	129.04			N/A	N/A
C	6.15	0.04	0.42	16.57	33.11			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.36	0.07	0.92	2.88	3.99			N/A	N/A
B	67.10	33.05	63.87	98.07	109.57			N/A	N/A
C	3.45	0.05	0.46	9.69	16.89			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.92	0.05	0.45	2.00	3.10			N/A	N/A
B	13.05	0.29	7.14	32.20	43.80			N/A	N/A
C	2.06	0.04	0.40	5.56	10.10			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 86% of the total flow for the roundabout for one or more time segments]
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	33.46	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-5	Arm C	33.46	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2040+Dev	PM	ONE HOUR	16:30	18:00	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	867	100.000
B		ONE HOUR	✓	216	100.000
C		ONE HOUR	✓	582	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	364	503
	B	139	0	77
	C	435	147	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	3	0	0
	C	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.89	28.32	7.1	38.5	D	796	1193
B	0.33	7.46	0.5	2.2	A	198	297
C	0.92	50.79	8.4	43.9	F	534	801

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	653	163	109	1107	0.590	647	427	0.0	1.4	7.733	A
B	163	41	375	829	0.196	162	381	0.0	0.2	5.382	A
C	438	110	104	730	0.600	432	433	0.0	1.5	11.882	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	779	195	131	1093	0.713	775	513	1.4	2.4	11.203	B
B	194	49	450	784	0.248	194	457	0.2	0.3	6.101	A
C	523	131	125	717	0.730	519	519	1.5	2.5	17.806	C

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	955	239	157	1076	0.887	939	618	2.4	6.4	23.850	C
B	238	59	545	725	0.328	237	551	0.3	0.5	7.365	A
C	641	160	153	699	0.917	622	629	2.5	7.2	39.495	E

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	955	239	161	1073	0.889	952	628	6.4	7.1	28.324	D
B	238	59	552	721	0.330	238	560	0.5	0.5	7.455	A
C	641	160	153	699	0.917	636	637	7.2	8.4	50.786	F

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	779	195	138	1088	0.716	797	533	7.1	2.6	13.041	B
B	194	49	462	776	0.250	195	472	0.5	0.3	6.203	A
C	523	131	125	716	0.730	545	532	8.4	2.9	23.268	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	653	163	112	1105	0.591	657	436	2.6	1.5	8.118	A
B	163	41	381	826	0.197	163	388	0.3	0.2	5.435	A
C	438	110	105	729	0.601	444	439	2.9	1.6	12.829	B

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.41	0.58	1.29	1.73	1.87			N/A	N/A
B	0.24	0.00	0.00	0.24	0.24			N/A	N/A
C	1.45	0.59	1.36	1.77	1.90			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.39	0.06	0.92	6.26	9.46			N/A	N/A
B	0.33	0.00	0.00	0.33	0.33			N/A	N/A
C	2.53	0.08	1.31	6.21	8.86			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.40	0.05	0.46	18.01	33.25			N/A	N/A
B	0.48	0.03	0.25	0.48	0.48			N/A	N/A
C	7.22	0.07	1.29	20.58	32.01			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	7.07	0.04	0.35	14.68	38.51			N/A	N/A
B	0.49	0.03	0.31	1.40	2.16			N/A	N/A
C	8.42	0.05	0.49	24.03	43.87			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.63	0.04	0.43	7.28	12.79			N/A	N/A
B	0.34	0.00	0.00	0.34	0.34			N/A	N/A
C	2.91	0.04	0.41	7.97	14.72			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.47	0.03	0.33	3.06	7.65			N/A	N/A
B	0.25	0.00	0.00	0.25	0.25			N/A	N/A
C	1.55	0.03	0.32	2.94	8.06			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 13 - Broad Oak Road_Vauxhall Road MITIGATION.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 04/02/2022 17:22:44

»2040+Dev, AM
»2040+Dev, PM

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2040+Dev													
Arm A	D5	2.3	10.99	0.70	B	132.18	-19 % [Arm B]	D6	7.1	28.32	0.89	D	33.42	-5 % [Arm C]
Arm B		70.0	285.61	1.18	F				0.5	7.10	0.32	A		
Arm C		6.9	58.84	0.90	F				8.4	50.79	0.92	F		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	17/01/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2040+Dev	AM	ONE HOUR	08:00	09:30	15	✓
D6	2040+Dev	PM	ONE HOUR	16:30	18:00	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	132.18	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-19	Arm B	132.18	F

Arms

Arms

Arm	Name	Description
A	Broad Oak Road (West)	
B	Broad Oak Road (East)	
C	Vauxhall Road	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.30	3.20	4.50	18.4	17.90	18.20	0.0	✓
B	3.05	2.95	4.93	4.6	15.30	12.50	0.0	
C	3.80	3.70	3.80	1.8	17.60	12.50	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.650	1186
B	0.627	859
C	0.627	806

The slope and intercept shown above include any corrections and adjustments.

Arm Capacity Adjustments

Arm	Type	Reason	Direct capacity adjustment (PCU/hr)
B	Direct		250

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2040+Dev	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	704	100.000
B		ONE HOUR	✓	749	100.000
C		ONE HOUR	✓	411	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	165	539
	B	480	0	269
	C	352	59	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	3
	B	4	0	3
	C	1	10	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.70	10.99	2.3	7.3	B	646	969
B	1.18	285.61	70.0	116.8	F	687	1031
C	0.90	58.84	6.9	35.7	F	377	566

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	530	133	44	1116	0.475	528	617	0.0	0.9	6.069	A
B	564	141	403	819	0.689	555	167	0.0	2.1	13.282	B
C	309	77	356	561	0.551	305	603	0.0	1.2	13.794	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	633	158	52	1110	0.570	631	735	0.9	1.3	7.492	A
B	673	168	483	769	0.876	659	200	2.1	5.6	29.688	D
C	369	92	423	519	0.712	365	720	1.2	2.3	22.782	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	775	194	63	1103	0.703	771	819	1.3	2.3	10.727	B
B	825	206	590	702	1.175	693	244	5.6	38.5	130.236	F
C	453	113	444	505	0.896	438	839	2.3	5.8	46.128	E

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	775	194	64	1102	0.703	775	832	2.3	2.3	10.994	B
B	825	206	593	700	1.178	699	246	38.5	70.0	285.610	F
C	453	113	448	503	0.900	448	844	5.8	6.9	58.836	F

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	633	158	55	1108	0.571	637	811	2.3	1.4	7.694	A
B	673	168	488	766	0.879	755	204	70.0	49.5	284.337	F
C	369	92	484	480	0.770	382	759	6.9	3.8	40.073	E

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	530	133	45	1115	0.475	532	753	1.4	0.9	6.191	A
B	564	141	407	816	0.691	751	170	49.5	2.6	102.877	F
C	309	77	482	481	0.643	317	677	3.8	1.9	22.806	C

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.89	0.55	1.00	1.40	1.45			N/A	N/A
B	2.11	0.13	1.49	4.35	5.76			N/A	N/A
C	1.19	0.56	1.07	1.23	1.61			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.30	0.07	0.94	2.69	3.70			N/A	N/A
B	5.59	0.12	2.33	14.26	20.08			N/A	N/A
C	2.28	0.09	1.40	5.19	7.16			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.28	0.03	0.28	2.28	7.28			N/A	N/A
B	38.54	14.57	35.48	61.27	70.29			N/A	N/A
C	5.83	0.07	1.43	16.51	25.74			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.32	0.03	0.27	2.32	2.98			N/A	N/A
B	69.99	33.05	68.35	104.02	116.78			N/A	N/A
C	6.87	0.05	0.46	19.41	35.73			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.36	0.07	0.92	2.88	3.99			N/A	N/A
B	49.49	23.45	46.82	73.11	81.99			N/A	N/A
C	3.78	0.05	0.66	10.70	17.57			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.92	0.05	0.45	2.00	3.10			N/A	N/A
B	2.59	0.03	0.29	2.59	10.40			N/A	N/A
C	1.91	0.04	0.37	4.93	9.68			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 86% of the total flow for the roundabout for one or more time segments]
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	33.42	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-5	Arm C	33.42	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2040+Dev	PM	ONE HOUR	16:30	18:00	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	867	100.000
B		ONE HOUR	✓	216	100.000
C		ONE HOUR	✓	582	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	364	503
	B	139	0	77
	C	435	147	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	3	0	0
	C	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.89	28.32	7.1	38.5	D	796	1193
B	0.32	7.10	0.5	2.0	A	198	297
C	0.92	50.79	8.4	43.9	F	534	801

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	653	163	109	1107	0.590	647	427	0.0	1.4	7.733	A
B	163	41	375	855	0.190	162	381	0.0	0.2	5.189	A
C	438	110	104	730	0.600	432	433	0.0	1.5	11.883	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	779	195	131	1093	0.713	775	513	1.4	2.4	11.203	B
B	194	49	450	808	0.240	194	457	0.2	0.3	5.856	A
C	523	131	125	717	0.730	519	519	1.5	2.5	17.807	C

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	955	239	157	1076	0.887	939	618	2.4	6.4	23.850	C
B	238	59	545	750	0.317	237	551	0.3	0.5	7.020	A
C	641	160	153	699	0.917	622	629	2.5	7.2	39.499	E

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	955	239	161	1073	0.889	952	628	6.4	7.1	28.324	D
B	238	59	552	745	0.319	238	560	0.5	0.5	7.100	A
C	641	160	153	699	0.917	636	637	7.2	8.4	50.792	F

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	779	195	138	1088	0.716	797	533	7.1	2.6	13.041	B
B	194	49	462	801	0.243	195	472	0.5	0.3	5.947	A
C	523	131	125	716	0.730	545	532	8.4	2.9	23.267	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	653	163	112	1105	0.591	657	436	2.6	1.5	8.118	A
B	163	41	381	851	0.191	163	388	0.3	0.2	5.236	A
C	438	110	105	729	0.601	444	439	2.9	1.6	12.829	B

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.41	0.58	1.29	1.73	1.87			N/A	N/A
B	0.23	0.00	0.00	0.23	0.23			N/A	N/A
C	1.45	0.59	1.36	1.77	1.90			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.39	0.06	0.92	6.26	9.46			N/A	N/A
B	0.31	0.00	0.00	0.31	0.31			N/A	N/A
C	2.53	0.08	1.31	6.21	8.86			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.40	0.05	0.46	18.01	33.25			N/A	N/A
B	0.46	0.03	0.25	0.46	0.48			N/A	N/A
C	7.22	0.07	1.29	20.58	32.01			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	7.07	0.04	0.35	14.68	38.51			N/A	N/A
B	0.47	0.03	0.31	1.39	1.98			N/A	N/A
C	8.42	0.05	0.49	24.03	43.88			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.63	0.04	0.43	7.28	12.79			N/A	N/A
B	0.32	0.00	0.00	0.32	0.32			N/A	N/A
C	2.91	0.04	0.41	7.97	14.72			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.47	0.03	0.33	3.06	7.65			N/A	N/A
B	0.24	0.00	0.00	0.24	0.24			N/A	N/A
C	1.55	0.03	0.32	2.94	8.06			N/A	N/A

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: Site Access - Right-Left Staggered_Rev2.0.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10
Report generation date: 04/02/2022 11:34:46

»2040+Dev, AM
»2040+Dev, PM

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2040+Dev													
Stream B-C	D1	4.4	114.76	0.91	F	18.77	-14 % [Stream B-AD]	D2	0.2	9.22	0.16	A	2.72	8 % [Stream B-AD]
Stream B-AD		5.1	126.71	0.90	F				0.7	26.08	0.41	D		
Stream A-BCD		0.0	7.63	0.02	A				0.0	8.30	0.01	A		
Stream D-ABC		0.1	15.16	0.07	C				0.0	12.88	0.05	B		
Stream C-ABD		0.1	10.29	0.10	B				0.4	10.28	0.29	B		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	18/01/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓
D2	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2040+Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D1 - 2040+Dev, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		18.77	C

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-14	Stream B-AD	18.77	C

Arms

Arms

Arm	Name	Description	Arm type
A	Whistable Road (North)		Major
B	Site Access		Minor
C	Whitstable Road (South)		Major
D	Highfield Close		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	6.00		✓	2.50	120.4	✓	3.00
C	6.00		✓	3.00	69.2	✓	4.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare		10.00	5.88	4.49	4.14	3.80		2.00	48	78
D	One lane	3.16								58	15

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
A-D	665	-	-	-	0.258	0.258	0.258	-	0.258	-	-
B-AD	556	0.101	0.256	-	-	-	0.161	0.365	0.161	0.101	0.256
B-C	696	0.107	0.270	-	-	-	-	-	-	0.107	0.270
C-B	668	0.259	0.259	-	-	-	-	-	-	0.259	0.259
D-A	643	-	-	-	0.249	0.099	0.249	-	0.099	-	-
D-BC	512	0.148	0.148	0.337	0.236	0.093	0.236	-	0.093	-	-

The slopes and intercepts shown above include custom intercept adjustments only.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2040+Dev	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	962	100.000
B		ONE HOUR	✓	273	100.000
C		ONE HOUR	✓	525	100.000
D		ONE HOUR	✓	17	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	44	909	9
	B	141	0	132	0
	C	488	35	0	2
	D	8	0	9	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.91	114.76	4.4	15.8	F	132	132
B-AD	0.90	128.71	5.1	21.8	F	141	141
A-BCD	0.02	7.63	0.0	0.5	A	9	9
A-B						44	44
A-C						909	909
D-ABC	0.07	15.16	0.1	0.5	C	17	17
C-ABD	0.10	10.29	0.1	0.5	B	35	35
C-D						2	2
C-A						488	488

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	119	30	387	0.307	118	0.3	0.4	13.369	B
B-AD	127	32	252	0.504	125	0.5	1.0	28.032	D
A-BCD	8	2	518	0.016	8	0.0	0.0	7.058	A
A-B	40	10			40				
A-C	817	204			817				
D-ABC	15	4	323	0.047	15	0.0	0.0	11.683	B
C-ABD	31	8	440	0.072	31	0.1	0.1	8.818	A
C-D	2	0.45			2				
C-A	439	110			439				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	145	36	203	0.715	139	0.4	2.1	51.529	F
B-AD	155	39	176	0.883	143	1.0	3.9	89.891	F
A-BCD	10	2	485	0.020	10	0.0	0.0	7.579	A
A-B	48	12			48				
A-C	1001	250			1001				
D-ABC	19	5	259	0.072	19	0.0	0.1	14.942	B
C-ABD	39	10	388	0.099	38	0.1	0.1	10.282	B
C-D	2	0.55			2				
C-A	537	134			537				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	145	36	160	0.906	136	2.1	4.4	114.763	F
B-AD	155	39	173	0.898	151	3.9	5.1	128.706	F
A-BCD	10	2	482	0.021	10	0.0	0.0	7.629	A
A-B	48	12			48				
A-C	1001	250			1001				
D-ABC	19	5	256	0.073	19	0.1	0.1	15.165	C
C-ABD	39	10	388	0.099	39	0.1	0.1	10.289	B
C-D	2	0.55			2				
C-A	537	134			537				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	119	30	366	0.325	134	4.4	0.5	16.586	C
B-AD	127	32	250	0.507	143	5.1	1.1	37.793	E
A-BCD	8	2	513	0.016	8	0.0	0.0	7.127	A
A-B	40	10			40				
A-C	817	204			817				
D-ABC	15	4	318	0.048	15	0.1	0.1	11.881	B
C-ABD	31	8	440	0.072	32	0.1	0.1	8.826	A
C-D	2	0.45			2				
C-A	439	110			439				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.43	0.04	0.37	1.19	1.34			N/A	N/A
B-AD	0.96	0.07	0.82	1.71	2.19			N/A	N/A
A-BCD	0.02	0.02	0.25	0.45	0.48			N/A	N/A
D-ABC	0.05	0.03	0.25	0.45	0.48			N/A	N/A
C-ABD	0.08	0.03	0.26	0.46	0.49			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	2.07	0.04	0.36	5.19	10.81			N/A	N/A
B-AD	3.95	0.09	1.25	10.27	14.87			N/A	N/A
A-BCD	0.02	0.00	0.00	0.02	0.02			N/A	N/A
D-ABC	0.08	0.03	0.26	0.47	0.49			N/A	N/A
C-ABD	0.11	0.03	0.26	0.47	0.49			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	4.43	0.11	1.75	11.20	15.82			N/A	N/A
B-AD	5.10	0.07	1.46	14.23	21.83			N/A	N/A
A-BCD	0.02	0.00	0.00	0.02	0.02			N/A	N/A
D-ABC	0.08	0.03	0.25	0.45	0.48			N/A	N/A
C-ABD	0.11	0.03	0.25	0.45	0.48			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.49	0.04	0.36	1.43	1.59			N/A	N/A
B-AD	1.10	0.03	0.35	2.69	5.30			N/A	N/A
A-BCD	0.02	0.00	0.00	0.02	0.02			N/A	N/A
D-ABC	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-ABD	0.08	0.00	0.00	0.08	0.08			N/A	N/A

2040+Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D2 - 2040+Dev, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		2.72	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	8	Stream B-AD	2.72	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D2	2040+Dev	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	609	100.000
B		ONE HOUR	✓	155	100.000
C		ONE HOUR	✓	831	100.000
D		ONE HOUR	✓	12	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	163	441	5
	B	86	0	69	0
	C	695	131	0	5
	D	7	0	5	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	3	0
	B	0	0	0	0
	C	1	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.16	9.22	0.2	0.5	A	69	69
B-AD	0.41	26.08	0.7	3.2	D	86	86
A-BCD	0.01	8.30	0.0	0.5	A	5	5
A-B						163	163
A-C						441	441
D-ABC	0.05	12.88	0.0	0.5	B	12	12
C-ABD	0.29	10.28	0.4	1.7	B	132	132
C-D						5	5
C-A						694	694

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	62	16	522	0.119	62	0.1	0.1	7.825	A
B-AD	77	19	293	0.264	77	0.2	0.3	16.597	C
A-BCD	4	1	481	0.009	4	0.0	0.0	7.555	A
A-B	147	37			147				
A-C	396	99			396				
D-ABC	11	3	351	0.031	11	0.0	0.0	10.589	B
C-ABD	118	30	524	0.225	118	0.2	0.3	8.847	A
C-D	4	1			4				
C-A	624	156			624				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	76	19	468	0.162	76	0.1	0.2	9.175	A
B-AD	95	24	233	0.407	93	0.3	0.7	25.662	D
A-BCD	6	1	439	0.013	5	0.0	0.0	8.294	A
A-B	179	45			179				
A-C	486	121			486				
D-ABC	13	3	293	0.045	13	0.0	0.0	12.857	B
C-ABD	146	36	496	0.294	145	0.3	0.4	10.252	B
C-D	5	1			5				
C-A	764	191			764				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	76	19	466	0.163	76	0.2	0.2	9.224	A
B-AD	95	24	232	0.407	95	0.7	0.7	26.082	D
A-BCD	6	1	439	0.013	6	0.0	0.0	8.300	A
A-B	179	45			179				
A-C	486	121			486				
D-ABC	13	3	293	0.045	13	0.0	0.0	12.878	B
C-ABD	146	36	496	0.294	146	0.4	0.4	10.281	B
C-D	5	1			5				
C-A	764	191			764				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	62	16	520	0.119	62	0.2	0.1	7.867	A
B-AD	77	19	293	0.264	79	0.7	0.4	16.848	C
A-BCD	4	1	480	0.009	5	0.0	0.0	7.566	A
A-B	147	37			147				
A-C	396	99			396				
D-ABC	11	3	350	0.031	11	0.0	0.0	10.608	B
C-ABD	118	30	524	0.225	119	0.4	0.3	8.883	A
C-D	4	1			4				
C-A	624	156			624				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.13	0.00	0.00	0.13	0.13			N/A	N/A
B-AD	0.35	0.00	0.00	0.35	0.35			N/A	N/A
A-BCD	0.01	0.01	0.25	0.45	0.48			N/A	N/A
D-ABC	0.03	0.03	0.25	0.45	0.48			N/A	N/A
C-ABD	0.29	0.00	0.00	0.29	0.29			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.19	0.03	0.26	0.46	0.49			N/A	N/A
B-AD	0.66	0.03	0.27	0.66	1.05			N/A	N/A
A-BCD	0.01	0.00	0.00	0.01	0.01			N/A	N/A
D-ABC	0.05	0.03	0.25	0.46	0.48			N/A	N/A
C-ABD	0.41	0.03	0.26	0.46	0.49			N/A	N/A

17:00 - 17:15

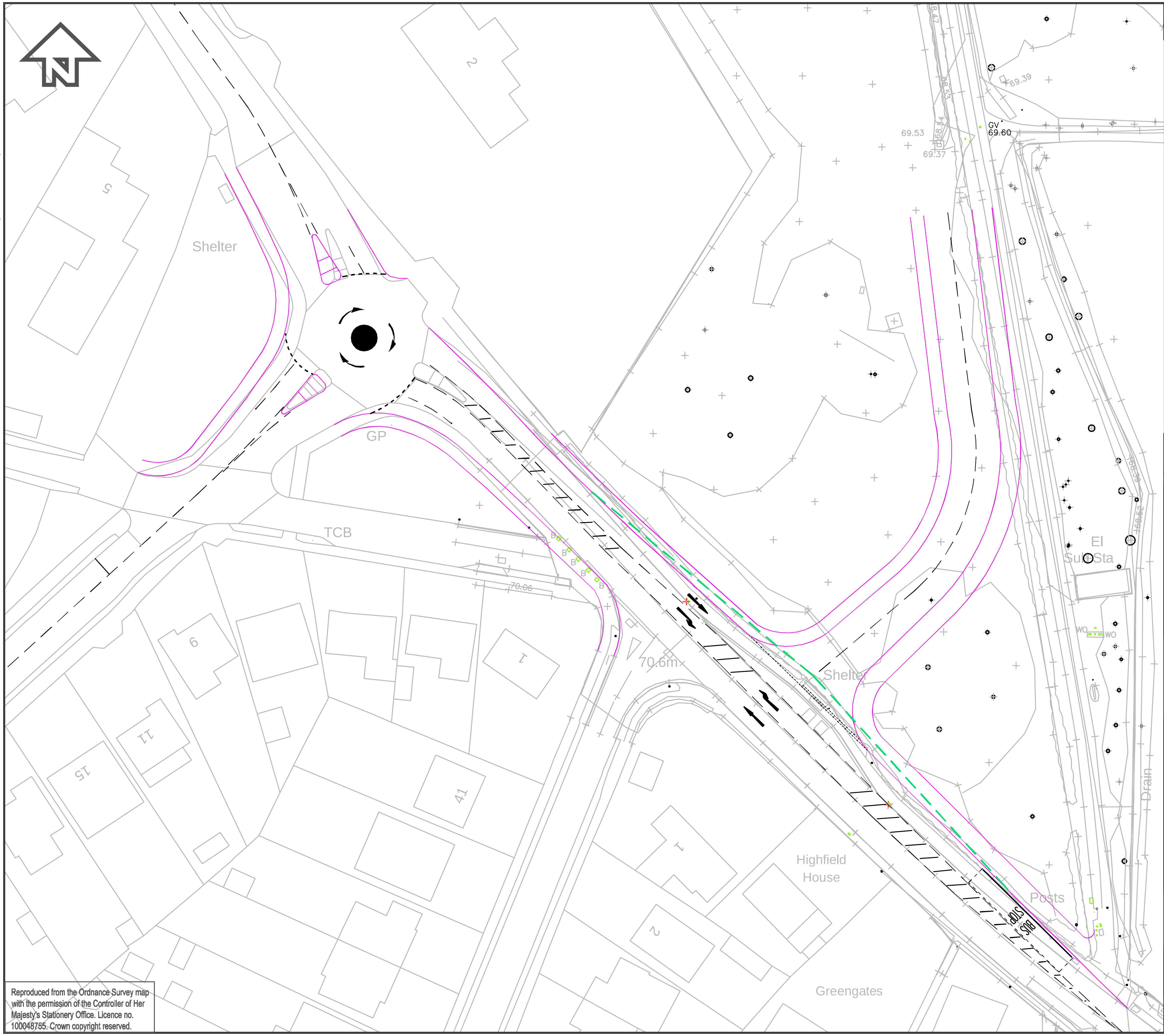
Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.19	0.03	0.26	0.46	0.49			N/A	N/A
B-AD	0.67	0.03	0.31	1.31	3.18			N/A	N/A
A-BCD	0.01	0.00	0.00	0.01	0.01			N/A	N/A
D-ABC	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-ABD	0.42	0.03	0.31	1.32	1.72			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.14	0.00	0.00	0.14	0.14			N/A	N/A
B-AD	0.37	0.03	0.29	0.84	1.17			N/A	N/A
A-BCD	0.01	0.00	0.00	0.01	0.01			N/A	N/A
D-ABC	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-ABD	0.30	0.00	0.00	0.30	0.30			N/A	N/A

Appendix D

Site Access and Mitigation Drawings



DO NOT SCALE

KEY

Magenta line	Proposed Kerb Line
Black line	Proposed Road Marking

DRAWING STATUS:

wsp

Mountbatten House, Basing View, Basingstoke, RG21 4HJ, UK
T+ 44 (0) 1256 318 800, F+ 44 (0) 1256 318 700
wsp.com

CLIENT: University of Kent

ARCHITECT: PRP

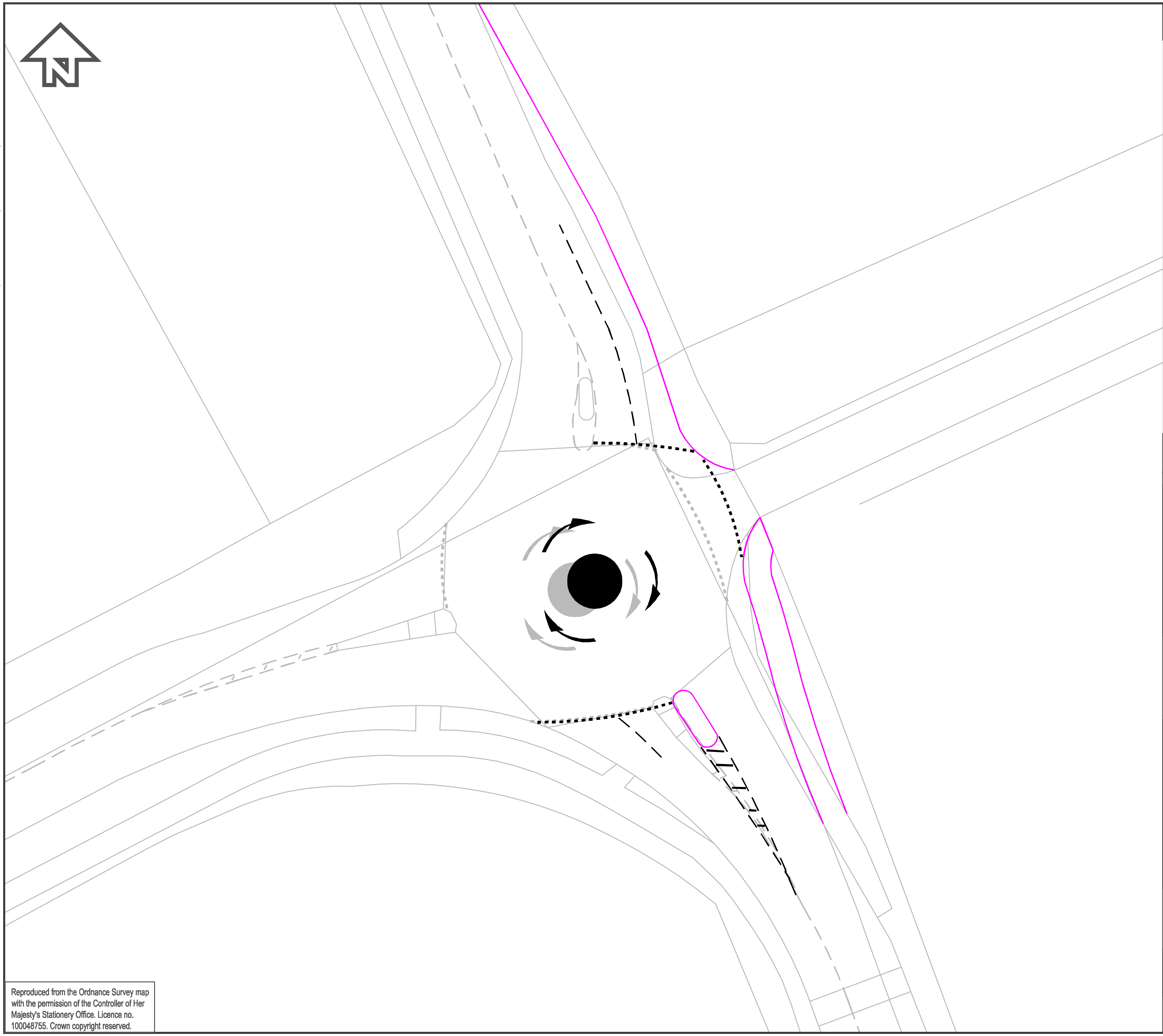
PROJECT: University of Kent, Canterbury

TITLE: Preliminary Transport Appraisal
Site Access

SCALE @ A3:	CHECKED:	APPROVED:
NTS	JS	AA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
70080896	JS	JS	February 2022

DRAWING No:	REV:
70080896-XX-XX-TP-016 SITE ACCESS	-



DO NOT SCALE

KEY

Proposed Kerb Line

Proposed Road Marking

DRAWING STATUS:

Mountbatten House, Basing View, Basingstoke, RG21 4HJ, UK
T+ 44 (0) 1256 318 800, F+ 44 (0) 1256 318 700
wsp.com

CLIENT: University of Kent

ARCHITECT: PRP

PROJECT: University of Kent, Canterbury

TITLE: Preliminary Transport Appraisal J10 Giles Lane Mitigation

SCALE @ A3:	CHECKED:		APPROVED:
NTS	JS		AA
PROJECT No:	DESIGNED:	DRAWN:	DATE:
70080896	JS	JS	February 2022

DRAWING No:	REV:
70080896-XX-XX-TP-017 J10 GILES LANE	-

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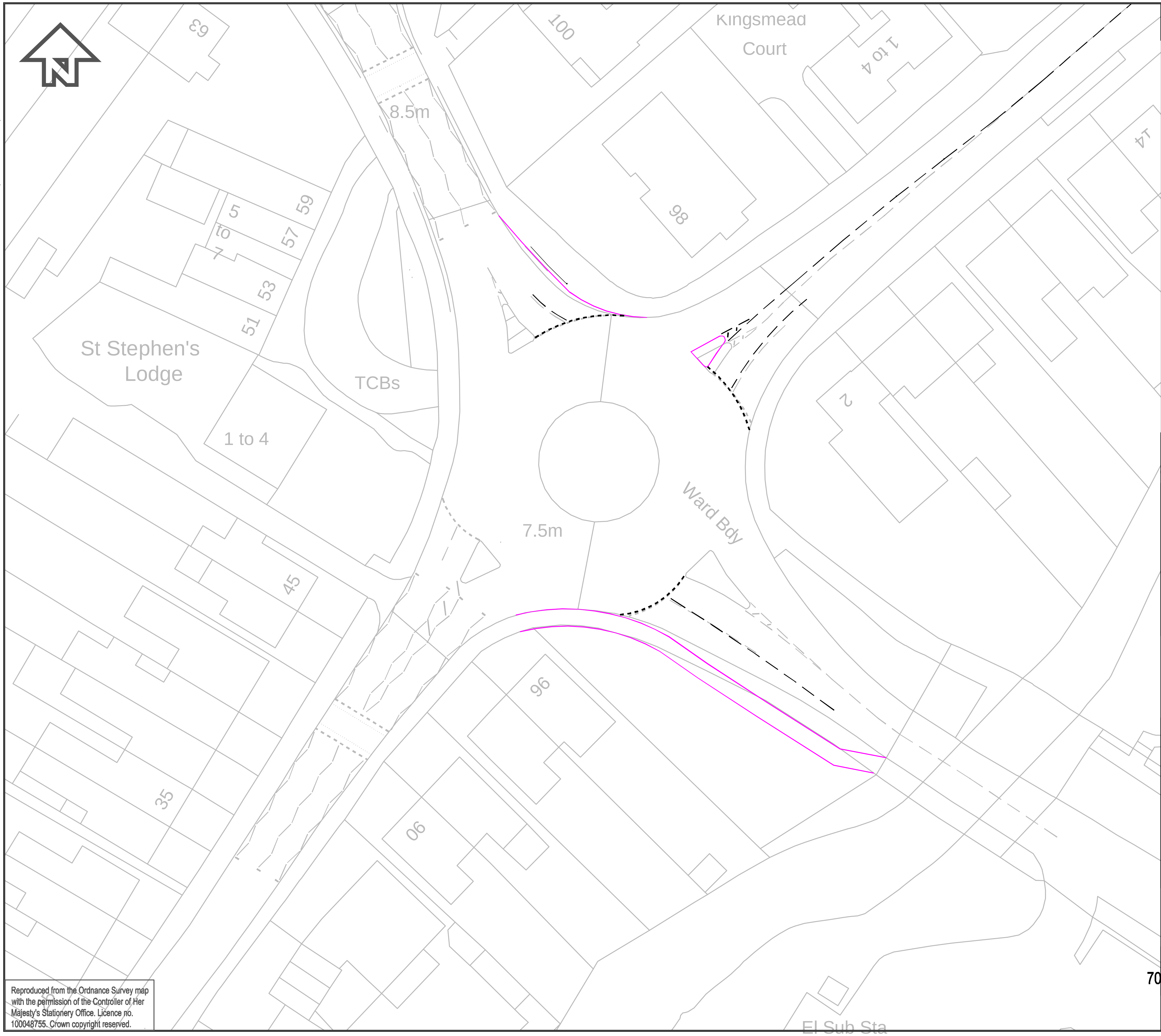

DO NOT SCALE

KEY

(magenta line)	Proposed Kerb Line
(black line)	Proposed Road Marking

DRAWING STATUS:

Mountbatten House, Basing View, Basingstoke, RG21 4HJ, UK
T+ 44 (0) 1256 318 800, F+ 44 (0) 1256 318 700
wsp.com

CLIENT: University of Kent

ARCHITECT: PRP

PROJECT: University of Kent, Canterbury

TITLE: Preliminary Transport Appraisal
J12 Broad Oak Road Mitigation

SCALE @ A3:	CHECKED:		APPROVED:
NTS	JS		AA
PROJECT No:	DESIGNED:	DRAWN:	DATE:
70080896	JS	JS	February 2022

DRAWING No: 70080896-XX-XX-TP-018 J12 BROAD OAK ROAD -

REV:

File name \\UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\70080XXX\70080896 - UNIVERSITY OF KENT\03 WIP\TP TRANSPORT PLANNING\DRAWINGS\70080896-XX-XX-TP-018 J12 BROAD OAK ROAD.DWG, printed on 01 February 2022 09:46:26, by Sherlock, Justin

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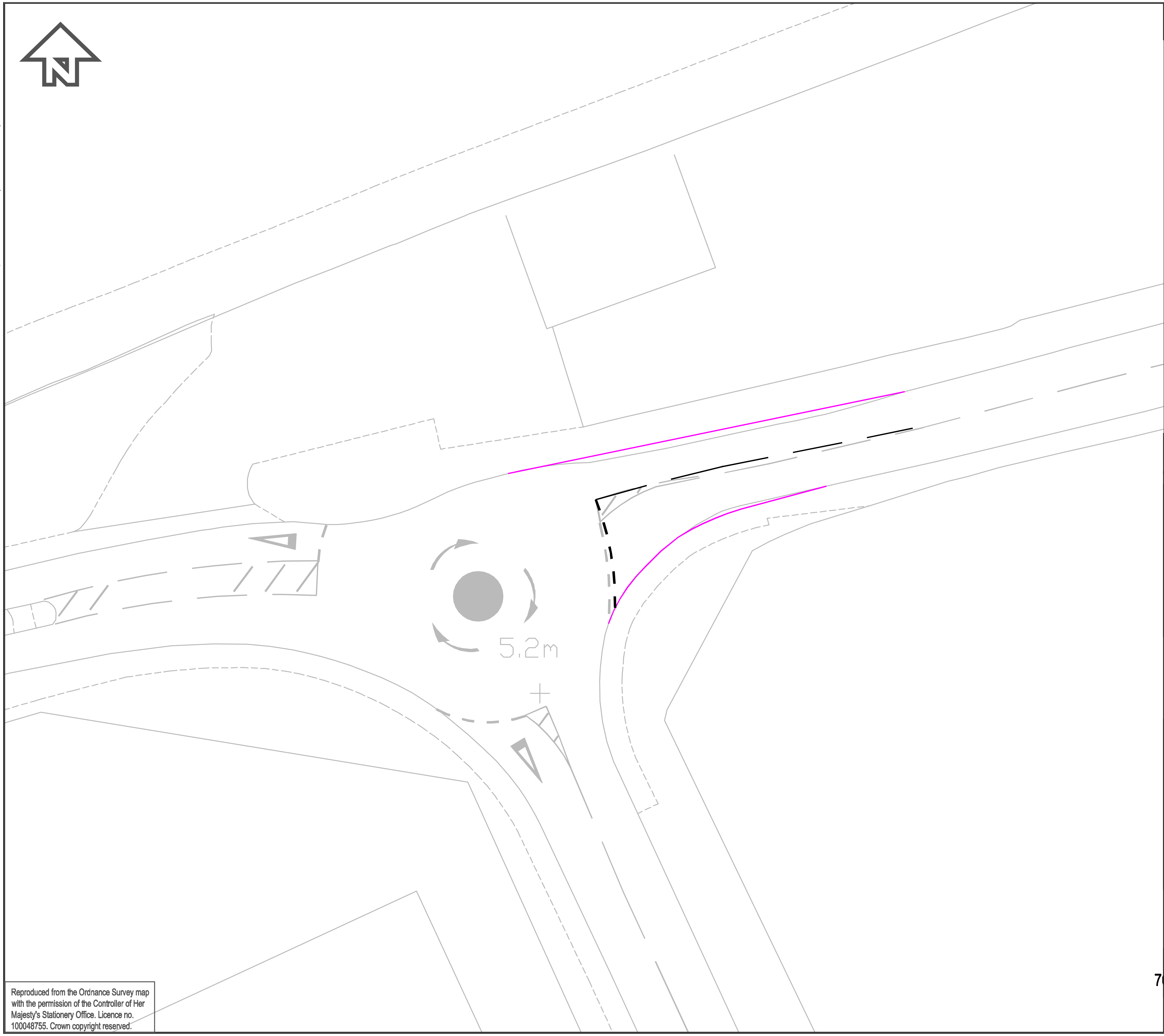

DO NOT SCALE

KEY

Magenta line	Proposed Kerb Line
Black line	Proposed Road Marking

DRAWING STATUS:

wsp

Mountbatten House, Basing View, Basingstoke, RG21 4HJ, UK
T+ 44 (0) 1256 318 800, F+ 44 (0) 1256 318 700
wsp.com

CLIENT: University of Kent

ARCHITECT: PRP

PROJECT: University of Kent, Canterbury

TITLE: Preliminary Transport Appraisal
J13 Vauxhall Road Mitigation

SCALE @ A3:	CHECKED:		APPROVED:
NTS	JS		AA
PROJECT No:	DESIGNED:	DRAWN:	DATE:
70080896	JS	JS	February 2022

DRAWING No: 70080896-XX-XX-TP-019 J13 VAUXHALL ROAD

REV: -

2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

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Appendix C

2023 PTA

Public

University of Kent, Canterbury Campus

Preliminary Transport Appraisal: Disposal Sites BCD

January 2023

Public

University of Kent, Canterbury Campus

Preliminary Transport Appraisal: Disposal Sites BCD

Type of document (version) Public

Project no. 70080896

Date: January 2023

WSP

2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

Phone: +44 148 352 8400

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Quality control

Issue/revision	First issue	1st Issue	2nd Issue	3rd Issue
Remarks	Draft for client comment	Final	V2	V2
Date	February 2022	February 2022	January 2023	January 2023
Prepared by	Will Forster	Will Forster	Will Forster / Sarah Thomas	Will Forster / Sarah Thomas
Signature				
Checked by	Sarah Thomas	Justin Sherlock	David Dixon	David Dixon
Signature				
Authorised by	Justin Sherlock	Alex Andrews	Justin Sherlock	Justin Sherlock
Signature				
Project number	70080896	70080896	70080896	70080896
Report number	NA	NA	NA	NA
File reference	\\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Reports			

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Appendix E

Rough Common Road Study

Executive summary

1.1.1. 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.

1.1.2. In August 2021 UoK submitted representations to Canterbury City Council's (CCC) Preferred Options Local Plan Consultation (which followed previous responses submitted in response to CCC's 'Call for Sites' consultations). This submission included proposals for development of a residential led new community on land to the north of the University's Campus referred to as Sites BCD. As part of that submission a Transport Strategy (August 2021) was included to consider the potential transport impacts of the Proposed Development (i.e. an illustrative scheme proposing circa 2000 homes alongside a new local centre and other complimentary uses).

1.1.3. A Preliminary Transport Appraisal (PTA) was subsequently prepared to supplement the information presented in the Transport Strategy and was submitted to Kent County Council (KCC) as highway authority. Following feedback from KCC the PTA has been updated to include consideration of the impacts of the Proposed Development using a micro-simulation model and in the context of the emerging Canterbury Transport Strategy.

1.1.4. The Proposed Development site benefits from access by a range of modes of transport and provisional strategies have been developed to ensure that access by sustainable modes is prioritised above that of the private car.

1.1.5. Access onto Whitstable Road was initially focused on a new access in the far south of the University's Campus. However, following initial testing of the access strategy and feedback from KCC further options were explored with the proposed access strategy now incorporating two points of access to A290 Whitstable Road. The initial primary point of access would be delivered onto Whitstable Road in the far south of the University Campus with a second point of access under continued review, of which 'one current illustrative option' being the option to utilise the Blean Primary School, which would be delivered at an appropriate point in the development's build out to provide additional permeability to the site. In this option, the Blean Primary School would be reconfigured on land within its existing site and surrounding land owned by the University.

1.1.6. The trip generation for the Proposed Development has been developed using person trip rates and split down by land use and journey purpose allowing for consideration of internalisation.

1.1.7. A highway network assessment has been developed using a two-stage approach. Firstly, a trip distribution has been derived using Census Travel to Work data to distribute trips to and from the site on the wider highway network. Within close proximity of the site a micro-simulation model has been developed to distribute trips on the roads immediately surrounding the site. A combination of outputs from the micro-simulation model along with a spreadsheet model that considers the distribution of wider trips has been used to derive turning movements at key junctions on the highway network within a study area agreed with KCC. This agreed study area consists of 13 locations.

1.1.8. The highway network assessment identified a number of locations where the existing highway network is anticipated to operate at/above capacity in the future year of 2045 and the Proposed Development was likely to increase queueing and delay.

1.1.9. Mitigation measures have been developed at four locations which effectively reduce the impacts of the Proposed Development and improved the performance of the highway network when compared to the Do Nothing scenario.

1.1.10. At one location (Junction 6 – Whitstable Road/London Road) a review of the junction layout identified limited opportunities for improvements within the highway boundary. It was noted that the level crossing on St Dunstan's Street is likely to affect the level of queueing and delay that occurs in this location as well as the attractiveness of this junction for journeys within Canterbury. Whilst no specific mitigation has been proposed at this location it is likely that drivers could re-route or re-time their journey should delays in this location increase significantly.

1.1.11. As such, a review of Junction 6 is ongoing and subject to further testing of these junctions and the wider highway network within the strategic model which is likely to identify opportunities for re-routing which will likely reduce impacts to an acceptable level. Furthermore, it has been shown that through the introduction of the Canterbury Transport Strategy, as part of the Local Plan, the impact at this junction reduces considerably and additional mitigation is not required through the delivery of the Proposed Development.

1.1.12. It was therefore concluded that the Proposed Development can be accommodated on the highway network and from a transport perspective following development and consideration of the proposals using the micro-simulation model and a number of mitigation measures together with sustainable travel planning measures, there are no reasons why the site should not be allocated within the forthcoming Local Plan.

Contact name Justin Sherlock

2 Introduction

2.1 Background

2.1.1. 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.

2.1.2. In August 2021 UoK submitted representations to Canterbury City Council's (CCC) Preferred Options Local Plan Consultation. As part of this submission a Transport Strategy was included that identified how land to the north of the University's Campus could be unlocked to facilitate a residential led new community.

2.1.3. Kent County Council (KCC), in their capacity as highway authority reviewed the Transport Strategy[1] and requested further information regarding the likely impacts of the Proposed Development on the transport network with a focus on likely highway impacts.

2.1.4. A Preliminary Transport Appraisal (PTA)[2] was prepared and submitted to KCC in February 2022. Following feedback from KCC the PTA was updated to include the outputs from a micro-simulation model developed for the road network immediately surrounding the site. This PTA has been developed to understand the deliverability of the Proposed Development.

2.1.5. At this early stage in the development of proposals a full Transport Assessment (as would be expected to accompany a planning application) has not been prepared. Instead, an initial assessment has been undertaken based upon a scope agreed with KCC, acknowledging that further, more detailed assessment will likely be undertaken in due course as the proposals develop.

2.2 Scope

2.2.1. WSP approached KCC Highways in the Autumn of 2021 to discuss and agree the scope of this PTA prior to its preparation. It was acknowledged in the Autumn of 2021 that two potential approaches could be utilised to understand the impacts of the Proposed Development on the highway network:

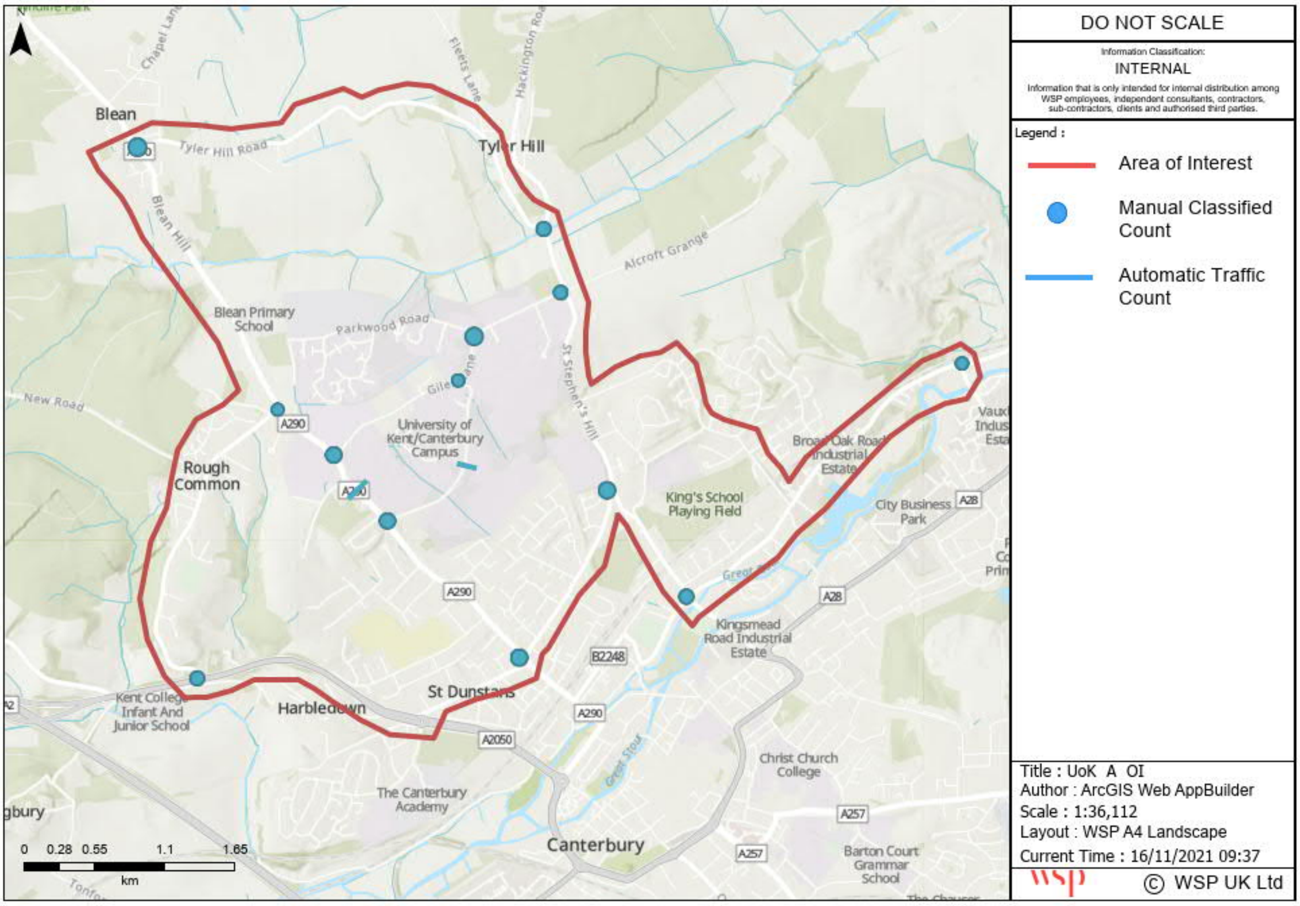
- Utilising the Canterbury strategic transport model developed by Jacobs; or
- A manual spreadsheet-based trip assignment with individual junction capacity assessments

[1] WSP Transport Strategy: Disposal Sites (August 2021)
[2] WSP Preliminary Transport Appraisal, Sites BCD (February 2022)

2.2.2. Both options were explored, and it was agreed that owing to the work required to the Canterbury strategic transport model to make it suitable for use in the PTA that a manual spreadsheet-based trip assignment and individual junction capacity assessments was the most appropriate for this stage of the process and would be utilised to understand the likely impacts arising from the Proposed Development.

2.2.3. A study area consisting of 13 key junctions was agreed with KCC Highways. This study area is shown in **Figure 1**.

Figure 1: PTA Area of Interest

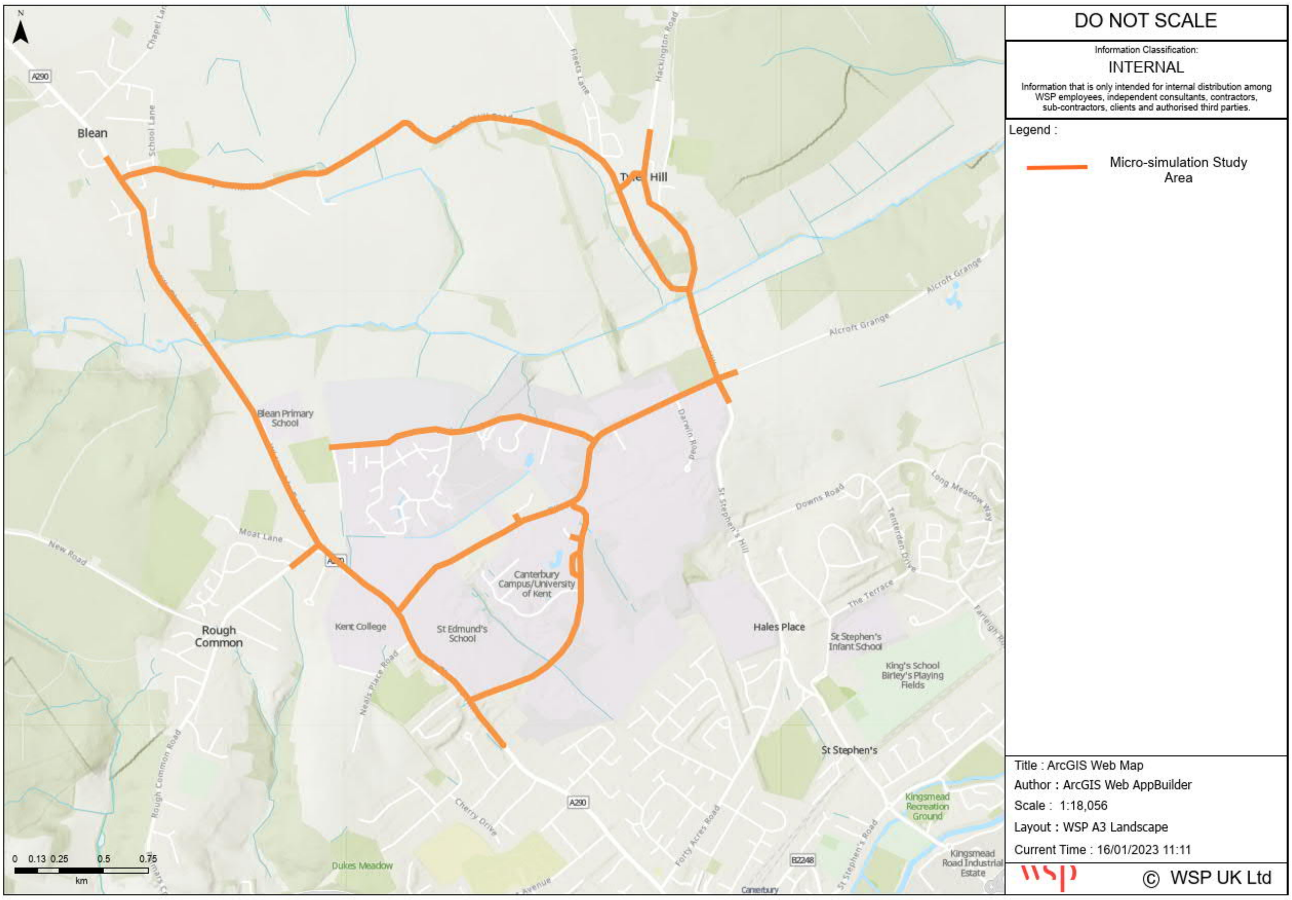


2.2.4. Junction turning counts were undertaken at the key junctions identified and agreed with KCC on Tuesday 7th December 2021. In addition, two week-long surveys were undertaken on Whitstable Road and University Road. These surveys were used to verify the results of the counts undertaken on the 7th December 2021 and for the purposes of producing data suitable for use within the separately prepared air quality assessment.

2.2.5. Following submission of the PTA and consideration by KCC a request was made to further consider the routing and therefore impacts of the Proposed Development in the immediate vicinity of the site and to also consider the impacts in the context of the emerging Canterbury Transport Strategy.

2.2.6. It was agreed that a micro-simulation model would be developed to understand in more detail how traffic would distribute in and around the Proposed Development site. The scope of the micro-simulation model was agreed with KCC and the study area agreed is shown in **Figure 2**.

Figure 2: Micro-simulation Scope



2.2.7. The micro-simulation study area only covered the site and its immediate surroundings. The spreadsheet model previously developed was used to identify the wider distribution across the highway network.

2.2.8. Two highway network assessment scenarios were requested to be considered:

- A core scenario considering the impacts of the Proposed Development on the existing highway network. This approach used a combination of Census Travel to Work data, an online journey planner and the micro-simulation model
- A sensitivity test scenario considering the impacts of the Proposed Development in the context of the emerging Canterbury Transport Strategy. This scenario utilised Census Travel to Work data, assumptions about how traffic could re-distribute as a result of the measures incorporated within the emerging Canterbury Transport Strategy and the micro-simulation model.

2.2.9. A meeting was held with KCC in December 2022 to outline the updated scope being adopted and preliminary outputs from the assessment. This PTA details the findings of the updated assessment.

2.3 Report structure

2.3.1. Following this introduction, the remainder of this PTA is set out as follows:

- Section 3 considers the existing site and transport conditions
- Section 4 provides an overview of the emerging development proposals and transport strategy
- Section 5 provides a trip generation and distribution for the development proposals
- Section 6 considers the impacts of the development proposals on the highway network
- Section 7 considers potential mitigation;
- Section 8 considers access phasing; and
- Section 9 provides a summary, conclusion and considers next steps.

3 Existing Transport Conditions

3.1 Introduction

3.1.1. This section outlines the existing transport conditions in the vicinity of the disposal sites, assessing the walking, cycling, public transport and local highway network facilities and accessibility.

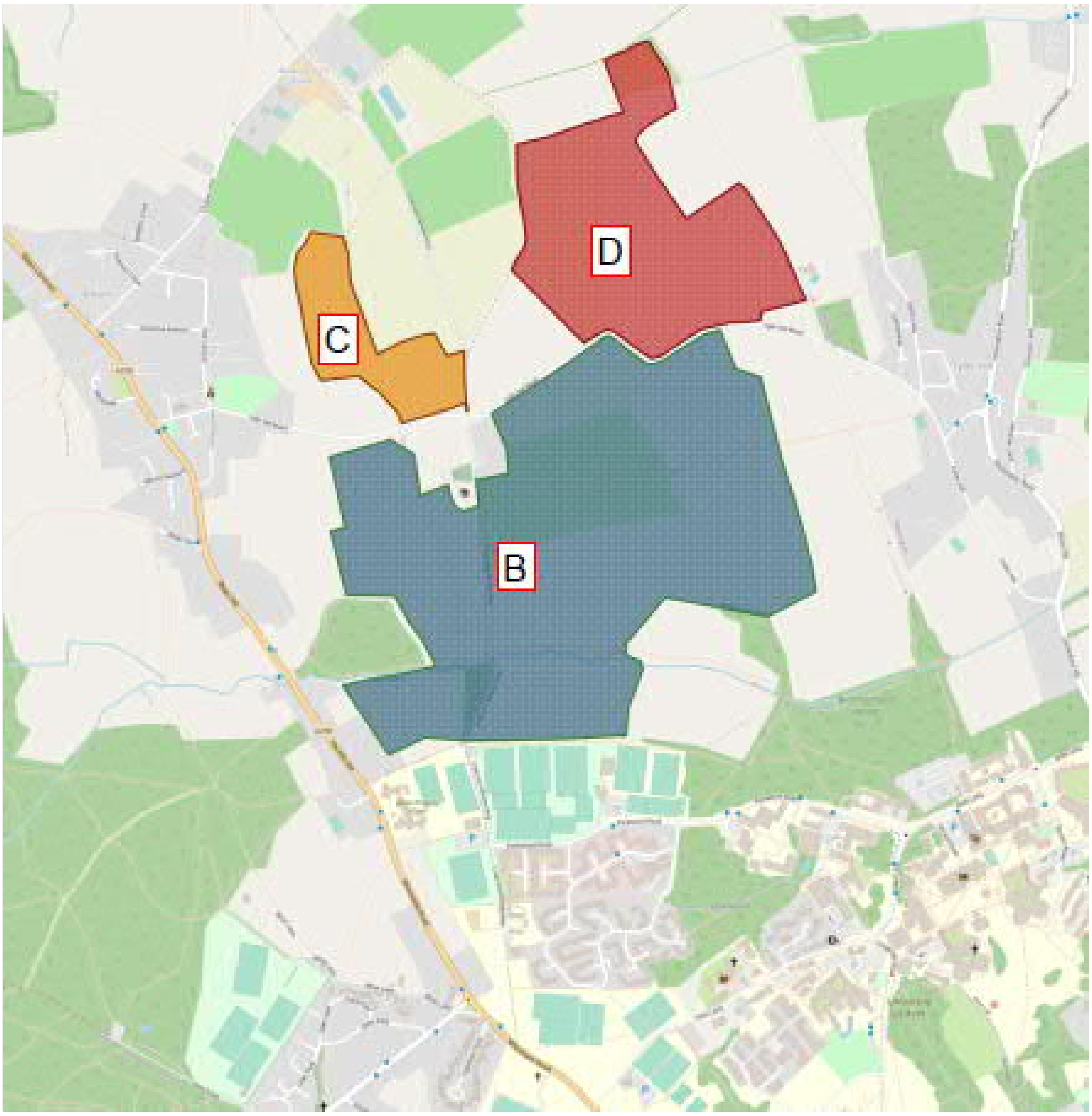
3.2 Site location

3.2.1. The UoK Canterbury Campus is located to the north of the centre of Canterbury on the urban fringe of the City. Covering an area of approximately 105 hectares the University Campus features a mixture of academic and student accommodation buildings alongside associated sports and recreational facilities.

3.2.2. The focus of this PTA is land that the University has identified to the north of the University Campus and referred to as sites BCD. Sites BCD are currently accessed from Tyler Hill Road, an unclassified rural road that runs approximately east west between Blean and the A290 Whitstable Road in the west to the village of Tyler Hill in the east. Frontage to this road from Sites BCD is limited with third party land between the site boundary and adopted highway.

3.2.3. **Figure 3** identifies the location of Sites BCD in the context of the surrounding highway network.

Figure 3: UoK Disposal Sites BCD Site Location



3.3 Pedestrians

3.3.1. The area benefits from a combination of pedestrian footways bounding highway routes in the local area and a series of public rights of way that provide connections across the surrounding rural hinterland.

3.3.2. Several footways, bridleways and byways provide pedestrian access to the University campus and the surrounding surplus land. The main footways are provided along the neighbouring Whitstable Road in the west and St Stephen's Hill in the east. The University Campus is then accessed via either University Road or Giles Lane. Both Giles Lane and University Road feature footways along their length albeit in some locations these are only provided along one side of the carriageway. Continuous pedestrian routes are therefore provided east west through the University Campus to connect Whitstable Road in the west with St Stephen's Hill in the east.

3.3.3. CB24A (The Crab and Winkle Way) provides a strategic walking connection between Canterbury and Whitstable (a distance of approximately 7.2km). The route commences on Whitstable Road in the west of the University Campus and heads north directly through the Campus on a combination of dedicated off road shared use pedestrian/footway and shared surface (used by both vehicles and active mode users). To the north of the University Campus the route continues across open farmland as a shared footway/cycleway within Site B before reaching Tyler Hill Road. The route from Whitstable Road to Tyler Hill Road is a designated bridleway. The route then crosses Tyler Hill Road at an uncontrolled crossing point before continuing north along the boundary of Site C and is designated as a byway. North of Site C the route continues towards Whitstable on a combination of bridleway and footpaths.

3.3.4. A series of public footpaths run east west across Site B including CB12 which follows the alignment of the watercourse and connects Blean in the west with Tyler Hill in the east. CB12 also connects with footpath CB13 which connects into the University Campus and Giles Lane. Footpath CB14 runs east west between Tyler Hill Road and Tyler Hill.

3.3.5. Site C is bound by byway CB27 in the east along with footpath CB16 both of which form part of the Crab and Winkle Way. Site C is also bound to the north by footpath CB18A which connects with Blean in the west.

3.3.6. Site D is bound in the west by byway CB27 and in the north by bridleway CB24.

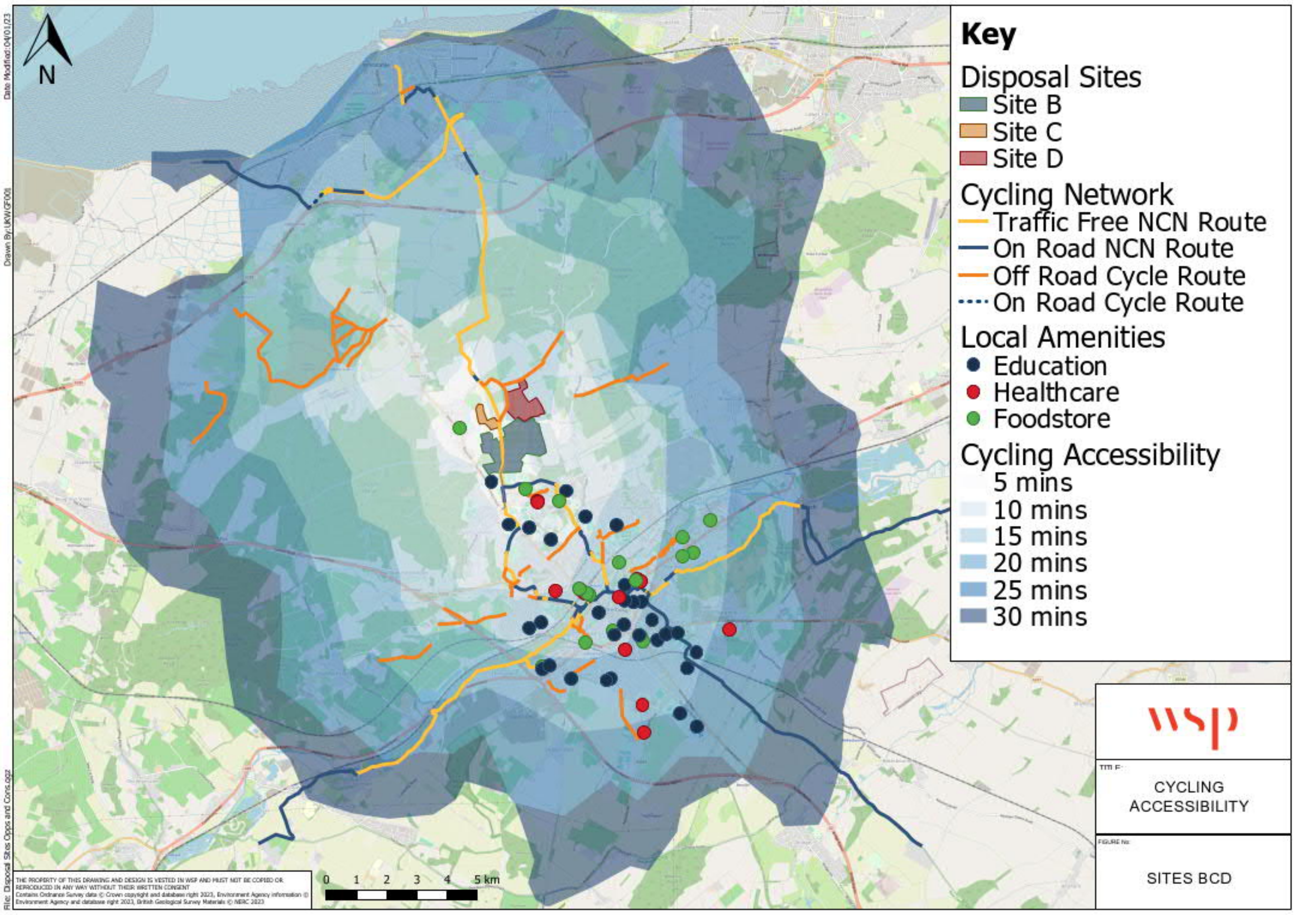
3.4 Cyclists

3.4.1. There are several cycle paths that currently provide access to the University Campus and surplus land. The National Cycle Network (NCN) route 1, also known as the Crab and Winkle Way runs from north to south, part on carriageway and part traffic free through the University Campus and Site B and bounds Site C in the east. Locally the route runs between Canterbury in the south and Whitstable in the north. In addition to the NCN route, there are several off-road cycle routes that run through the University Campus east to west.

3.4.2. As shown in **Figure 4** the whole of Canterbury and areas to the north including Whitstable are all accessible within a five mile (30 minute) cycle of the centre of these sites. Five miles is considered to be the maximum distance that people could realistically swap car-based travel for cycling[3]. A range of amenities and facilities can be accessed within these existing settlements including schools, convenience retail and healthcare.

[3] Department for Transport's Local Transport Note 1/20: Cycle Infrastructure Design (2020) Paragraph 2.2.2

Figure 4 – Sites BCD Cycling Isochrone



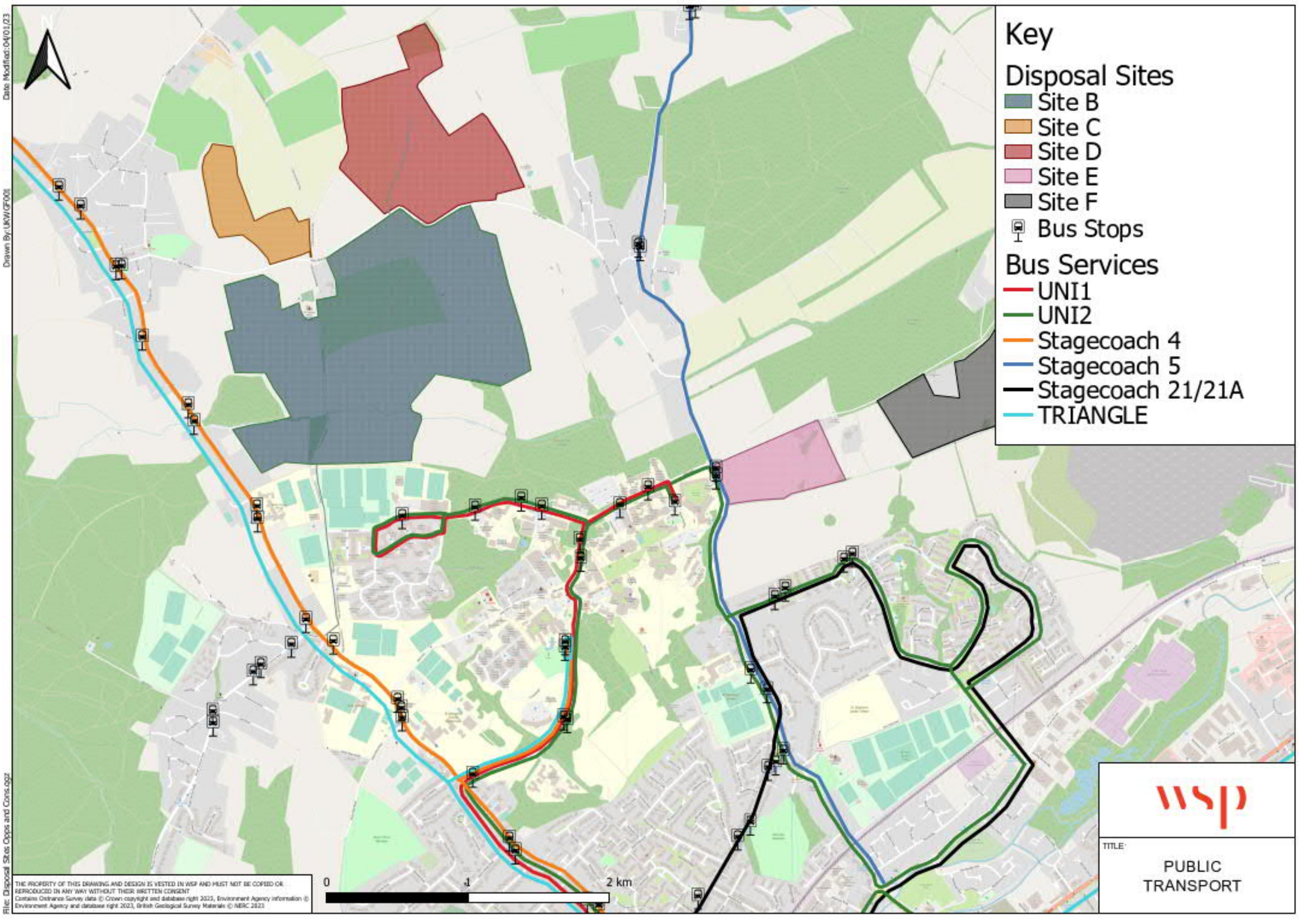
3.5 Public Transport

3.5.1. The University Campus and surrounding land benefits from access to a range of public transport services that primarily connect the University with wider Canterbury and destinations further afield.

Bus Services

3.5.2. **Figure 5** illustrates the bus stops and bus routes that are accessible from the bus stops in the vicinity of the University Campus and surrounding area.

Figure 5 – Local Bus Stops and Routes



3.5.3. **Figure 5** demonstrates that the University is served directly by four bus services whilst further services are accessible from both Whitstable Road in the west and St Stephen's Hill in the east.

3.5.4. **Table 1** provides a summary of the bus services accessible from the University Campus, Whitstable Road and St Stephen's Hill that could be utilised by users of Sites BCD.

Table 1 - Bus Services in the Vicinity of the Sites

Bus Service	Route	First Bus	Last Bus	Frequency			Nearest Bus Bus Stop
				Mon - Fri	Sat	Sun	
4	Canterbury - University of Kent – Whitstable – Tankerton - Greenhill	07:58	17:20	30 minutes	30 minutes	N/A	University of Kent, Keynes College (Stop A)
5	Canterbury – Tyler Hill – Chestfield – Whitstable - Seasalter	07:15	17:03	Hourly	Hourly	N/A	University of Kent Alcroft Grange
21/21A	City Centre - St. Dunstan's - Hales Place - City Centre	07:20	18:06	15 minutes	15 minutes	Hourly	Hales Place, Downs Road
UNI1	University of Kent – Canterbury City Centre	08:24	18:34	10 minutes	15 minutes	N/A	University of Kent, Keynes College (Stop A)
UNI2	Canterbury – Westgate Towers, University of Kent	09:00	18:12	30 minutes	30 minutes	N/A	University of Kent, Park Wood
TRIANGL	Canterbury – Whitstable – Herne Bay	05:57	00:05	20 minutes	30 minutes	30 minutes	University of Kent, Keynes College (Stop A)

3.5.5. **Table 1** demonstrates that a range of services are available in the area surrounding the sites that operate on a range of frequencies up to every 10 minutes. Key destinations served include Canterbury City Centre, Canterbury West Railway Station, Sittingbourne, Whitstable and Herne Bay.

Rail services

3.5.6. Canterbury West Railway Station is located approximately 1.7 km from the closest access point to the University and 2.7 km from the heart of the University Campus. To Sites BCD the station is 3.7 km. Canterbury West Railway Station is located beyond a reasonable walking distance but could reasonable be access by bicycle.

3.5.7. **Tables 2-4** provide details of the rail services from Canterbury West Station from Monday to Friday and Saturday and Sunday Respectively. All timings are from Canterbury West Station.

Table 2 - Rail Services (Monday – Friday)

Direct Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West – London Charing Cross	06:07	21:12	30 minutes	126 minutes
Margate – Canterbury West – London St Pancras	05:19	23:37	Hourly	54 minutes
Canterbury to Ashford International	05:19	23:50	Hourly	15 minutes

Table 3 - Rail Services (Saturday)

Direct Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West – London Charing Cross	06:12	22:59	30 minutes	127 minutes
Margate – Canterbury West – London St Pancras	05:23	23:37	Hourly	55 minutes
Canterbury to Ashford International	05:23	23:50	Hourly	15 minutes

Table 4 - Rail Services (Sunday)

Direct Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West – London Charing Cross	07:05	22:29	30 minutes	120 minutes
Margate – Canterbury West – London St Pancras	05:26	23:37	Hourly	55 minutes
Canterbury to Ashford International	07:26	23:50	Hourly	15 minutes

3.5.8. **Tables 2-4** demonstrate that Canterbury West Station provides train services to a range of locations including Margate, Ramsgate, London Charing Cross, London St Pancras and Ashford International.

3.5.9. The analysis presented above demonstrates that the railway station is accessible by either bus or by cycling from the disposal sites. Space for 134 cycles is provided at Canterbury West Station[4].

3.6 Highway Network

3.6.1. The local highway network in the vicinity of Sites BCD is characterised by a series of north south radial routes that converge on Canterbury City Centre in the south and connect with the settlements of Herne Bay and Whitstable in the north. In the west the A290 Whitstable Road provides a connection between the City Centre Ring Road, the University, Blean and north towards the A299 and Whitstable. This road also connects in the vicinity of the University with Rough Common Road which provides a connection to the A2050 and A2 in the west.

3.6.2. In the east St Stephen's Hill connects the City Centre and areas to the east of Canterbury along the A28 corridor with the University and north towards the A299 and Herne Bay.

3.6.3. The University Campus itself is accessible from either Whitstable Road or St Stephen's Hill. Giles Lane provides a continuous east-west connection through the University Campus between Whitstable Road and St Stephen's Hill. However, its width is constrained within part of the University resulting in an informal priority working system. University Road

[4] Source: National Rail Website

provides a connection between Whitstable Road in the west and Giles Lane in the centre of the University Campus. The road forms a priority junction with Giles Lane. Within the centre of the University Campus both Giles Lane and University Road are subject to a 20mph speed limit.

3.6.4. Park Wood Road is a private internal university road that connects Giles Lane with areas in the north of the University.

3.6.5. Tyler Hill Road provides an east-west connection between the villages of Blean and Tyler Hill and runs between Sites BCD. The road is a rural country lane which whilst subject to national speed limit (60mph speed limit) features constrained geometry which limits the speed of vehicles.

3.7 Summary

3.7.1. This Section has provided a summary of the existing transport conditions in the vicinity of the site. It is evident from this that Sites BCD could benefit from access to a range of modes of transport. The proposed transport strategy responds to these existing conditions and is outlined in Section 4.

4 Development Proposals

4.1 Introduction

4.1.1. This section provides an overview of the Development Proposals that have been considered within this PTA.

4.2 Development Proposals

4.2.1. Potential for a residential led mixed-use development is currently envisaged to the north of the University Campus on Sites BCD. Initial masterplanning optioneering indicated potential for approximately 2000 homes supported by a local centre (incorporating transport hub) and primary school to serve the new population.

4.2.2. Access to the site would focus movement towards a north-south axis with movement to/from Tyler Hill Road managed through incorporation of the road within the site where it bounds the development.

4.2.3. A new access road for all users (pedestrians, cyclists and vehicles) would be delivered through the University Campus and access onto the public highway on Whitstable Road (A290). Previous work undertaken for the University Masterplan identified the potential for a traffic signal junction on Whitstable Road to facilitate access in this location. The form of access proposed is considered in more detail within Section 6.

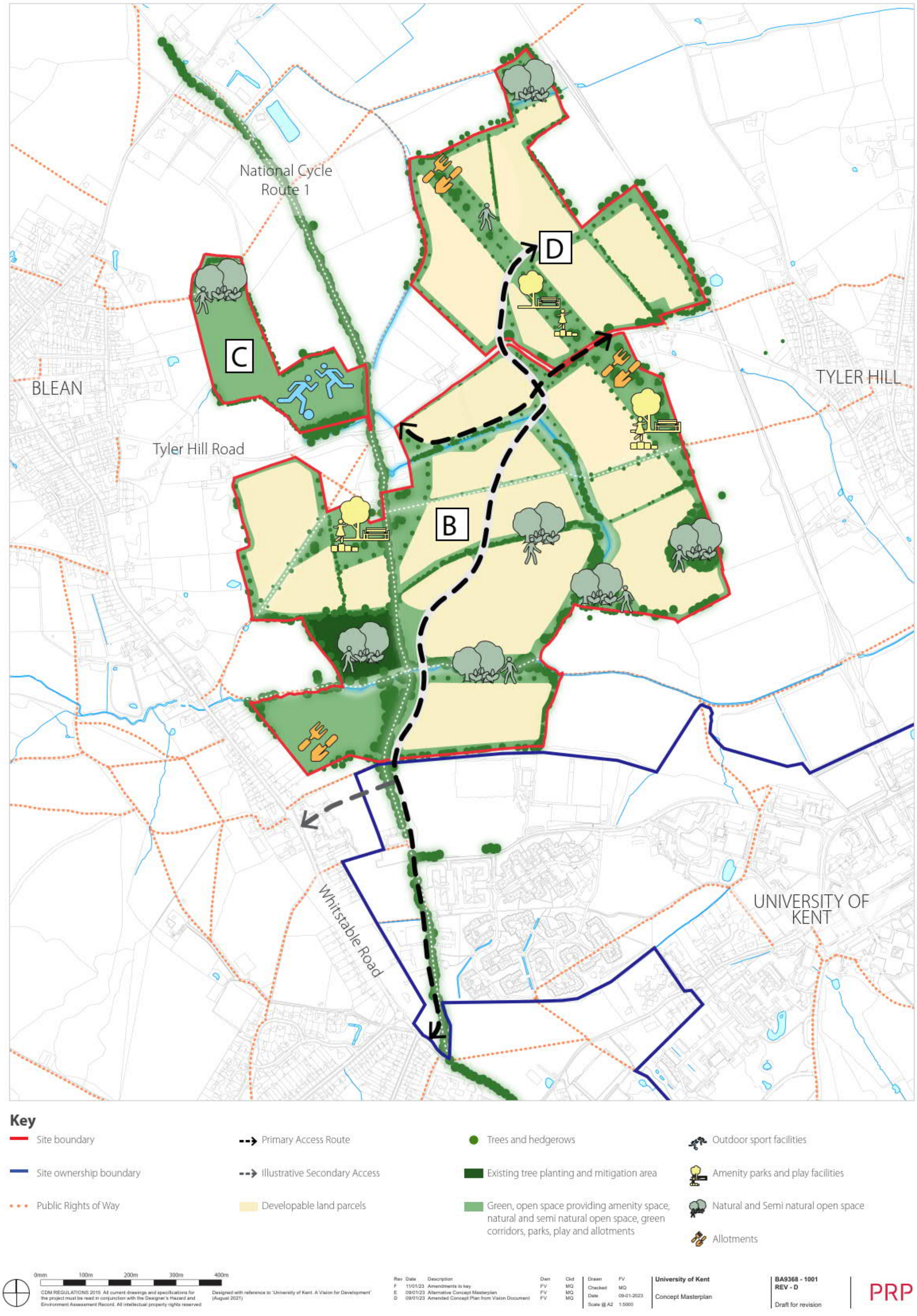
4.2.4. To support the increase in traffic expected as a result of the development proposals, it is also proposed that a secondary access will be required off Whitstable Road. A review is underway on a range of alternative secondary access options into the Site (involving the introduction of a secondary access from Whitstable Road). These options will involve an element of land assembly in due course, however for the purpose of this assessment, a new illustrative secondary access route would be via a second point of access to Whitstable Road (A290) at Blean Primary School.

4.2.5. To date, the Applicant has undertaken early-stage discussions with KCC officers concerning the potential use of the Blean Primary School site as a secondary access. KCC officers have broadly accepted the principle of this approach (subject to more detailed discussions and on the basis that the school would be replaced elsewhere within the BCD masterplan and operational delivered at an appropriate point in the development's phasing to ensure no impacts on the School's operation).

4.2.6. Limited vehicular access to Site C would lend the site to provision of open space to contribute towards the overall provision across Sites BCD albeit acknowledging that should alternative access opportunities arise (for instance in the form of third-party land) then there may be opportunity to deliver further residential development in this location.

4.2.7. **Figure 6** outlines the current emerging masterplan for Sites BCD.

Figure 6: Emerging Masterplan Option (Source: PRP)



4.3 Access Strategy

Vehicular Access

4.3.1. 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 (**Figures 7-10**).

Figure 7 – View west along Tyler Hill Road adjacent to Hothe Lodge

Figure 8 – View east along Tyler Hill Road adjacent to Hothe Lodge

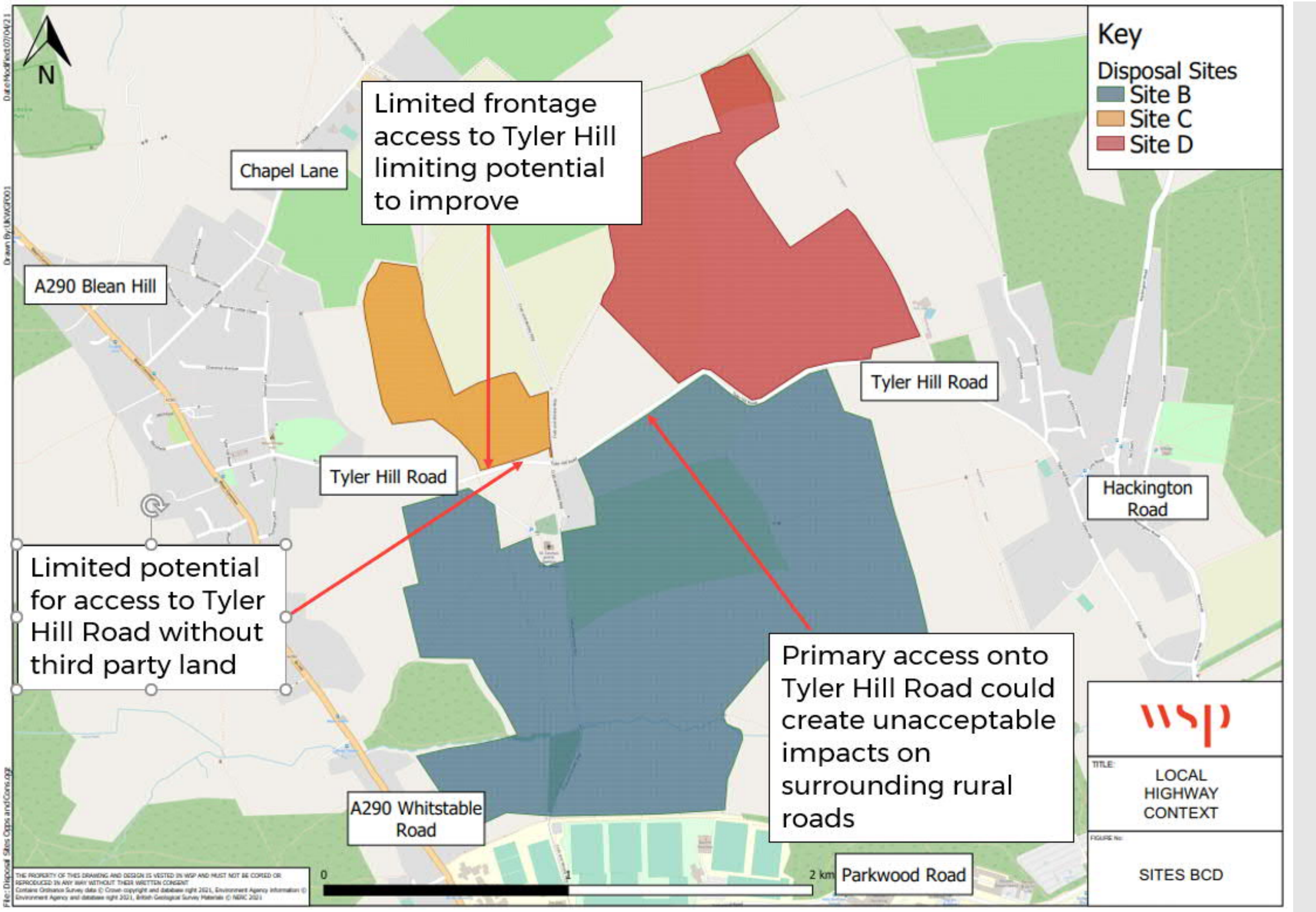
Figure 9 – View east along Tyler Hill Road from Blean Village

Figure 10 – View east along Tyler Hill Road from Hothe Court Farm

4.3.2. 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 (**Figure 11**).

Figure 11 – Access Constraints

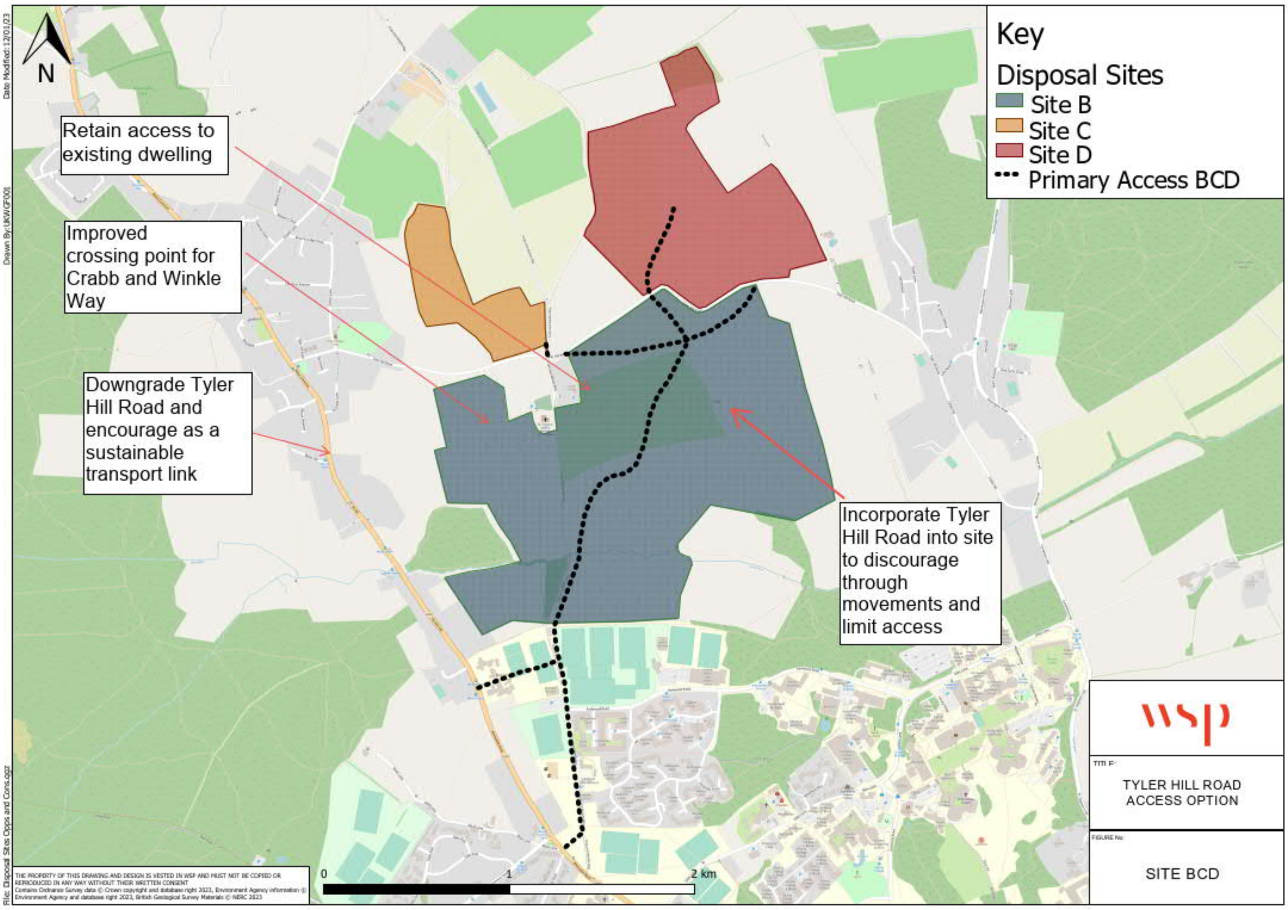


4.3.3. Consideration has been given to whether access could be achieved through third party land acquisition to enable Tyler Hill Road to become a main point of access. However, the multiple land ownerships restrict the ability to achieve this at this early stage (although opportunities may arise in due course).

4.3.4. In addition, significantly increasing traffic volumes on Tyler Hill Road could result in additional 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 KCC as a concern and have therefore been assessed as part of this PTA.

4.3.5. On the basis of the above, the access strategy for unlocking Sites BCD recommended developing a new north-south route through the University Campus. 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 (**Figure 12**).

Figure 12 – Access Strategy



4.3.6. A range of alignments were considered for the southern section of the new access road to minimise impacts on the existing University Campus and other constraints such as the ancient woodland and watercourse.

4.3.7. The road itself would be designed in accordance with the principles established within the Department for Transport's (DfT) 'Manual for Streets' and meet the standards of a Major Access Road in accordance with the Kent Design Standards and likely feature a 30mph design speed. For the purposes of the initial feasibility design work a highway corridor of 15m was assumed to ensure sufficient space to accommodate the carriageway, pedestrian and cycle infrastructure in accordance with DfT Local Transport Note 1/20 'Cycle Infrastructure Design'.

4.3.8. The highway corridor has been designed as a separate movement corridor to the existing internal University infrastructure and the Crab and Winkle Way. Where the alignment either shares the same corridor or crosses the Crab and Winkle Way careful consideration will be made to preserve the priority of this strategic pedestrian and cycle corridor, integrating with it where appropriate.

4.3.9. The access road would also have the benefit of facilitating the ambitions of the University Masterplan to deliver a new access onto Whitstable Road and allow access to the new parking areas proposed within the masterplan.

4.3.10. Construction of a new highway corridor across the University will have an impact on existing facilities on the Campus and this would need to be fully considered within a Construction Traffic Management Plan.

4.3.11. Access onto Whitstable Road was initially focused on a new access in the far south of the University's Campus. However, following initial testing of the access strategy and feedback from KCC further options were explored with the proposed access strategy now incorporating two points of access to A290 Whitstable Road. The initial primary point of access would be delivered onto Whitstable Road in the far south of the University Campus with a second point of access under continued review, of which one illustrative option is to utilise the Blean Primary School, which would be delivered at an appropriate point in the development's build out to provide additional permeability to the site. In this option, Blean Primary School would be reconfigured on land within its existing site and surrounding land owned by the University. The access proposals for Whitstable Road are considered in more detail in Section 6.

Pedestrians and Cyclists

4.3.12. Pedestrians and cyclists would be afforded a high level of priority within the proposed masterplan to ensure that active travel can be a genuine alternative for shorter distance trips than the private car. To deliver this the following access infrastructure is proposed:

- Provision of footways and cycleways on the key movement corridors into and out of the site
- Integration of the on-site provision with the Crab and Winkle Way and surrounding infrastructure
- Improvements to Public Rights of Way in the local area to enhance connectivity with local destinations.

4.4 Public Transport Strategy

4.4.1. A key principle of the transport strategy is the delivery of a transport hub on the development site to focus and provide access to a range of transport options, with the overarching aim of reducing reliance on the private car (**Figure 13**). A mobility hub can be understood as a 'place' or interchange providing different and connected transport modes supplemented with enhanced facilities to both attract and benefit the traveller. They are usually focussed around mass public transport (e.g. bus stops or rail station) and last mile mobility solutions (e.g. cycles). The transport hub would be located adjacent to the local centre and be complimentary to the uses within the local centre itself. Whilst the principle of a mobility hub (transport hub) is still evolving the key transport components of the facility would include:

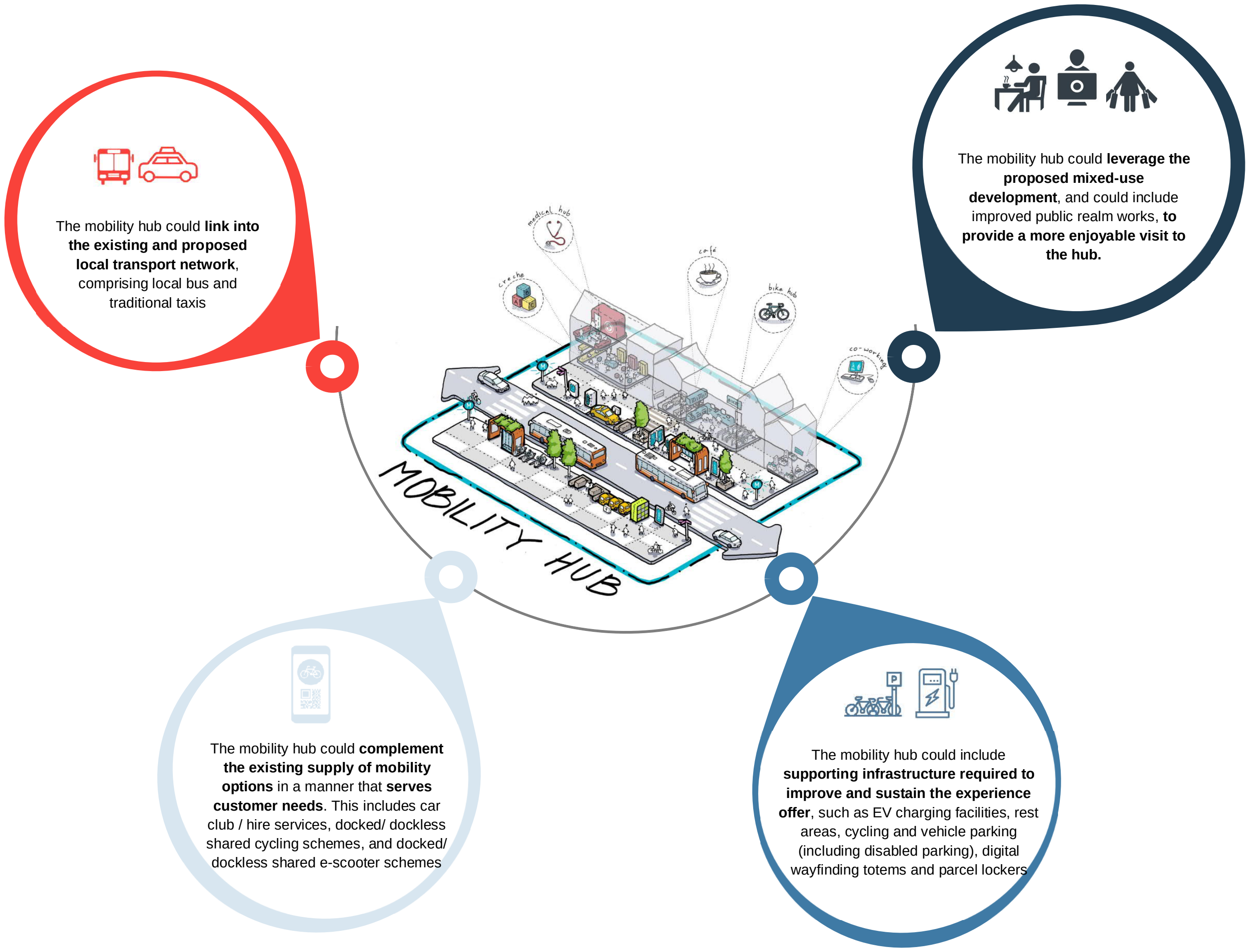
- Bus stop including access to real time passenger information
- Cycle parking to facilitate modal interchange including bike pump and repair facilities
- A focal point for ride sharing and hailing services (such as Uber)
- Car club spaces
- Micro-mobility (bike and scooter hire docking stations)
- Rapid electric vehicle charging

4.4.2. Complimentary facilities may include:

- Micro-consolidation facilities such as parcel lockers (e.g. Amazon lockers)
- Retail
- Digital services (real time public transport information, community news etc)

4.4.3. The deployment of mobility hubs has already started across the UK with proposals emerging in Manchester (Ancoates and New Islington) and incorporation within the new garden settlement at Otterpool near Folkestone in Kent.

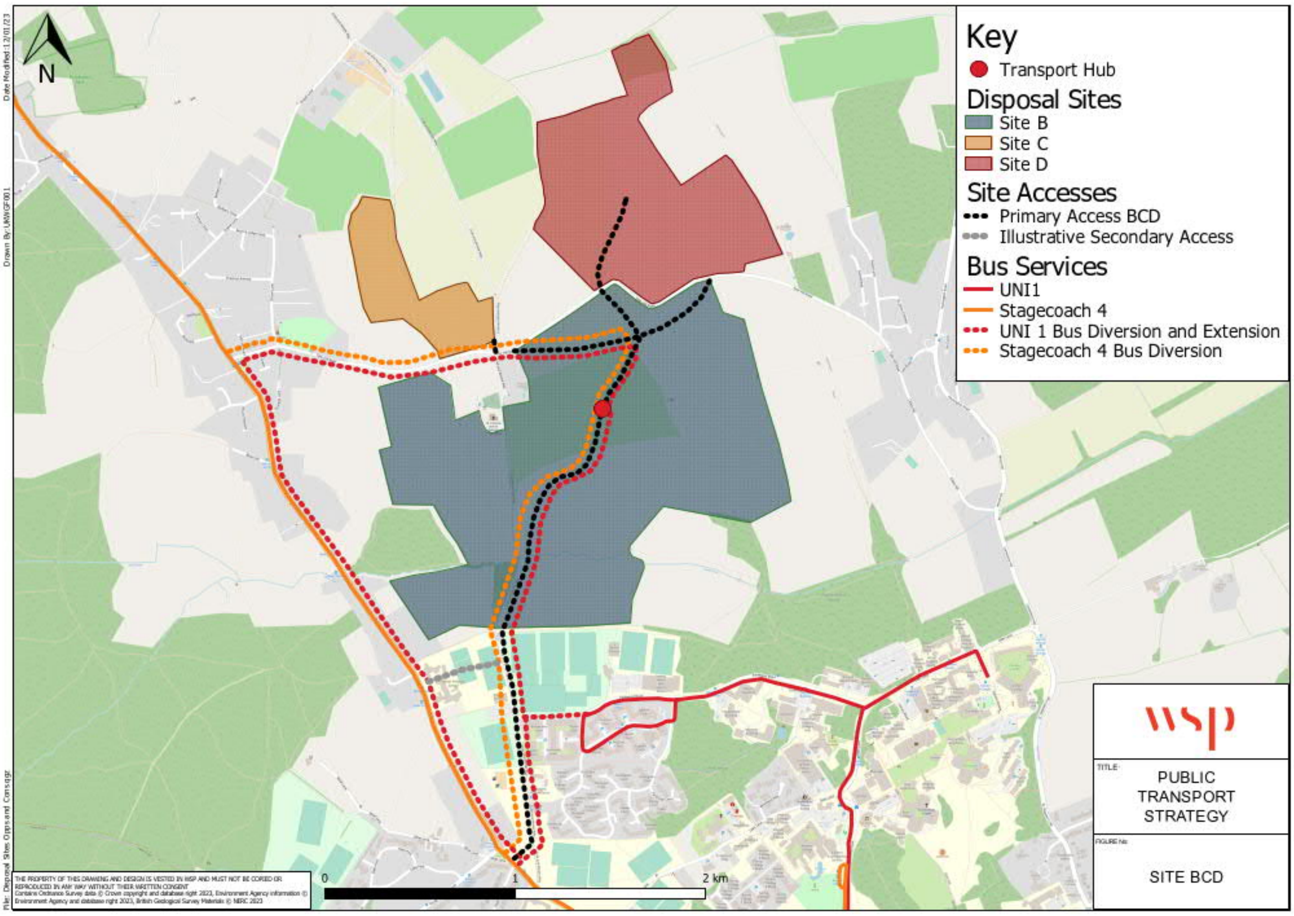
Figure 13 – Illustration of Transport Hub



4.4.4. Alongside the emergence of mobility hubs technology has facilitated the development of personalised journey planning platforms. When combined across modes these are known as Mobility as a Service (MaaS). KCC are currently developing a MaaS platform for deployment across Dartford and Gravesham with a focus on the Ebbsfleet Garden Community. This app-based platform enables access to a wide range of mobility services (traditional bus, rail and taxi services) as well as emerging technologies such as car clubs and e-scooter and cycle hire. By providing access to information about all the services in one place people can make informed decisions about the most appropriate mode or multiple modes for their entire journey. Deployment of this platform could be done on a regional basis (as per the KCC example) or on a development specific basis (Enterprise Car Club for instance have developed their own platform which is being deployed in parts of Scotland). The use of a MaaS is considered a key element of future developments alongside the provision of the Transport Hub to offer a range of services to residents and visitors of the site.

4.4.5. The Sites benefit from the high levels of public transport that access the University Campus. The public transport strategy will seek to build on the existing network of bus routes by extension of existing services to serve the on-site public transport hub located on the site. **Figure 14** indicates how existing bus routes could be extended to serve the development's on-site transport hub.

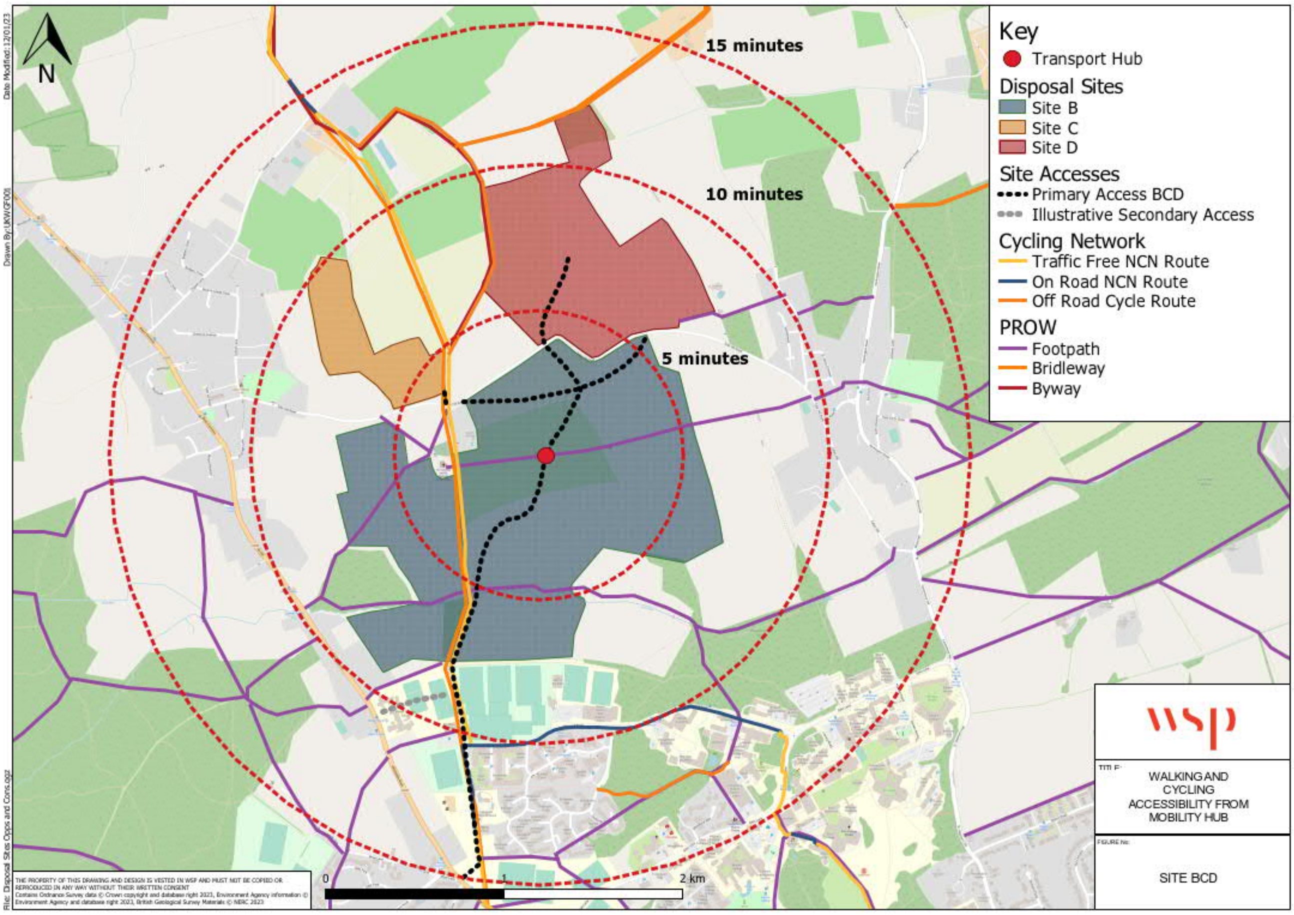
Figure 14: Public Transport Strategy



4.4.6. The strategy currently assumes an extension to Uni1 to serve the on-site transport hub. This would provide a weekday daytime frequency of up to every 10 minutes. This would be further enhanced with the diversion of Route 4 southbound through the site to increase connectivity to the City Centre. However, further discussions would be held with the University and Stagecoach as local bus operator to ensure integration of the site with the public transport network.

4.4.7. **Figure 12** provides indicative walking times from the transport hub to all parts of the development site. These walking times would be further reduced through development of the site infrastructure and final siting of the public transport hub.

Figure 15: Public Transport Hub Walking Distances



4.5 Walking, Cycling and Micro-mobility Strategy

4.5.1. The emergence of new forms of personal mobility (e-scooters, e-bikes, cargo bikes, electric skateboards, shared bicycles and scooters) are collectively referred to as Micro-mobility. Whilst some of these modes may be personal (owned by the user) there is a growing trend towards shared usage (Santander cycle hire in London for instance). Through the MaaS platform mentioned previously residents and visitors of the site would have access to a range of mobility services to facilitate travel to and from the development.

4.5.2. The development site benefits from access to the Crab and Winkle Way and as identified in **Figure 4** the site benefits from access to the whole of Canterbury within a 30 minute cycle distance. The proximity of Canterbury to the site and available infrastructure alongside any enhancements that may be identified make travel by micro-mobility mobility an attractive option for future residents and visitors to the site.

4.6 Parking Strategy

4.6.1. The vision for the Proposed Development is to provide a sustainable new residential community. The site will prioritise pedestrian and cycle movements over that of vehicles, and to achieve this, it is envisaged that the development will be an early adopter of innovative transport and servicing solutions based around the “Future Mobility” agenda, namely mechanisation and shared and autonomous transport solutions.

4.6.2. Whilst walking, cycling and public transport will be the primary modes of transport adopted for travel to and from the site, there will still be a role for personal vehicle travel. It is anticipated that a proportion of this demand can be catered for through shared mobility services such as car clubs and taxis. However, there will still be, particularly in the early years of the development a demand for private vehicle ownership and use which will drive a demand for parking.

4.6.3. The final level of parking to be provided will be determined at a later stage of design. However, reference will be made to KCCs vehicle parking standards with due regard given to demand for electric vehicle parking. The proposed development is anticipated to fall under the ‘suburban’ location type in terms of residential parking provision.

4.6.4. Parking provision will be designed in such a way that areas could be adapted for other uses should parking demand diminish over time.

4.6.5. A key consideration will also be cycle parking and ensuring this is sufficient for the needs and vision of the development. Sufficient space will be provided to accommodate parking on plot with space for adaptive cycles and trailers. Visitor cycle parking will also be conveniently located to facilitate access to the site by cycle.

4.7 Servicing and Waste Strategy

4.7.1. The Covid Pandemic has resulted in an acceleration of online shopping trends. It is anticipated that this form of shopping will continue to grow as traditional retail responds to this growing demand. However, one detractor of the growth in online shopping has been the increase in delivery vehicles to accommodate demand.

4.7.2. Micro-consolidation offers the ability to reduce the number of deliveries and total mileage driven by couriers. The transport hub would be able to accommodate facilities such as parcel lockers offering a consolidated location for delivery of certain items that could then be picked up by residents at their own convenience and by active mode.

4.7.3. The waste strategy for the site will be developed in conjunction with CCC in due course but will need to have due regard to the Environment Bill which has recently been approved.

4.8 Future Trends Strategy

4.8.1. Technology is playing an increasing role in our day to day lives and this is having a transformative effect. The Covid-19 Pandemic has brought this further into focus and opportunities to accelerate the process of change have emerged.

4.8.2. Research undertaken by WSPs Future Mobility team anticipates the following changes emerging:

- Initially, the continued evolution of new mobility business models will increase the breadth of mobility services available and offer a viable alternative to personal vehicle ownership. These mobility business models capitalise on the ability to match customers and trips in real-time, to offer customers a more personalised form of mobility. Examples include:

- **Ride Sharing** – Schemes/digital platforms that match drivers and passengers who share similar destinations. These operate at both individual and corporation levels. E.g. Faxi, Liftshare;
- **Ride Sourcing** – Real-time, dynamic allocation of customers to drivers based on origin and destination and payment services using pre-approved accounts. Usually rides are in private hire vehicles however increasing offering of micro-transit vehicles to use operating model. E.g. Uber, ArrivaClick, ViaVan;
- **Car Sharing** – On-demand short-term car rentals with the vehicle owned and managed by a fleet operator or private individual. E.g. Zipcar.
- **Micro mobility** – On demand services are increasingly being introduced initially in the form of bikes but now with e-scooters

- Emergence of MaaS schemes, which unlock the use and adoption of both shared and public transport through seamless and personalised information, reservation, booking and payments integration. e.g. Whim.
- Lastly, the adoption of increasingly automated, connected and autonomous vehicles which enable travellers to migrate to shared assets; they also provide door-to-door transport whilst providing access on a personal or shared basis. These advances are expected to be commercially deployed at scale within private hire and city taxi fleets from 2025.

4.8.3. In addition, the recent Covid-19 Pandemic has seen the emergence of new policies promoting a shift towards walking and cycling as the primary modes of transport. The recent Emergency Active Travel Fund grant has seen urban areas closed to vehicular traffic and the re-prioritisation of walking and cycling which should in the longer term increase the use of these modes.

4.8.4. The continued growth and evolution of these new forms of mobility is very dependent on future external levers, such as the regulatory environment, the affordability and acceptability of technology, and the customers' willingness to share. However, wider automotive sector trends already indicate how transport offerings are influencing customer behaviours:

- Driving licencing amongst young people has been falling since a peak of 48% (17-20 year olds) and 75% (21-29year olds) in 1993, to 29% and 63% respectively in 2014; with

research suggesting that changing behaviours are more than just a postponement of driving[5]
- The uptake of car clubs within urban areas has created an opportunity for car free living without compromising on the ability to have access to a car for leisure and recreational purposes. Canterbury currently has a car club operated by Co-wheels for instance.
- Traditional car manufacturers, concerned about losing customer ownership, are actively planning and investing in integrated mobility services. Volvo has recently launched ‘Care’ a monthly car subscription service[6] with no long-term commitments
- Rates of urbanisation are increasing and city residents are being pressed to reassess the benefits of personal vehicle ownership as the breadth of mobility services available increases[7]
- Increasing prevalence of home working which has been an area of focus during the recent Covid-19 Pandemic.

4.8.5. The transport strategy outlined in this section has reflected upon the most recent trends and innovations across the transport industry and will be developed and refined as the proposals are developed.

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5 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/673176/young-peoples-travel-whats-changed.pdf
6 https://www.volvocars.com/uk/care-by-volvo/
7 https://www.bbc.co.uk/news/uk-44482291

5 Trip Generation and Distribution

5.1 Introduction

5.1.1. This section outlines a trip generation for the Proposed Development along with detailing how the trip distribution has been derived. The impacts of the Proposed Development are considered under two separate scenarios and the trip generation and distribution methodology used for each differs. The two scenarios considered are as follows:

- A Core Development (CD) scenario considering the impacts of the Proposed Development on the existing highway network. This approach uses a combination of Census Travel to Work data, an online journey planner and the micro-simulation model
- A Sensitivity Test (ST) scenario considering the impacts of the Proposed Development in the context of the emerging Canterbury Transport Strategy. This scenario utilises Census Travel to Work data, assumptions about how traffic will re-distribute as a result of the measures incorporated within the emerging Canterbury Transport Strategy and the micro-simulation model.

5.1.2. Whilst the impacts of the Proposed Development are considered in the AM and PM network peak hours the trip generation presented in this Section includes trips across the day as this data has been used in separate assessments undertaken as part of the promotion of the site.

5.2 Development Quantum

5.2.1. For the purposes of this PTA the illustrative development proposals that have been considered are as follows:

- 2,000 dwellings with a mixture of housing and tenure type. Based upon the emerging masterplan the residential development quantum has been split down with 1447 dwellings (approximately 72%) assumed on Site B and 553 dwellings (approximately 28%) assumed on Site D.
- Local Centre located on Site B to serve the needs of the new community including a transport hub
- Primary School located on Site B to accommodate the primary school age pupils living on site
- Public open space to accommodate the needs of the development

5.3 Residential Trip Generation

Core Scenario

5.3.1. The industry standard TRICS trip generation database has been interrogated to identify trip rates for the residential land use. 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 (source: TRICS Land use definitions). Multi-modal trip rates were selected to allow for the person trip generation to be calculated. This is considered to be robust given the emerging local plan proposes 30% affordable housing.

5.3.2. The AM and PM peak person trip rates (per dwelling) extracted from TRICS are shown in **Table 5** along with the resultant person trip generation. The TRICS output is contained in **Appendix A.**

Table 5 - Residential Person Trip Rates and Trip Generation

	AM Peak (08:00 - 09:00)			PM Peak (17:00 - 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Residential Person Trip Rate (per dwelling)	0.173	0.754	0.927	0.590	0.300	0.890	3.557	3.621	7.178
Residential Person Trip Generation (2000 dwellings)	346	1508	1854	1180	600	1780	7114	7242	14356

5.3.3. As seen in **Table 5** above, the provisional person trip generation would total 1854 in the AM peak and 1780 in the PM peak.

5.3.4. 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.

5.3.5. The methodology utilised the National Travel Survey (NTS0502) data which identified journey purpose by time of day as shown in **Table 6**.

Table 6 – NTS0502 Journey Purpose By Start Time (2019)

Journey Purpose	AM Peak (08:00-09:00)	PM Peak (17:00 – 18:00)	Daily
Commuting	20%	32%	18%
Business	3%	3%	4%
Education	29%	3%	9%
Escort Education	23%	2%	8%
Shopping	4%	12%	17%
Other work, other escort or personal business	14%	20%	19%
Visiting friends / entertainment / sport	3%	20%	18%
Holiday / Day trip / Other	4%	8%	9%

5.3.6. The journey purposes outlined in **Table 6** were then combined to reduce the number of individual trip generations required as follows:

- Commuting and Business
- Education
- Education Escort
- Shopping
- Other work, visiting friends, holiday

5.3.7. **Table 7** presents the person trip generation for Sites B and D split by journey purpose based upon the person trip generation shown in **Table 5.**

Table 7 – Residential Person Trip Generation By Journey Purpose and Site

Journey Purpose/ Peak Period	Private Houses (Total)	Commuting / Business	Retail	Education	Education Escort	Other Work, visiting friends, holiday
Site B						
AM Peak (08:00-09:00)	1341	307	56	383	307	288
PM Peak (17:00 – 18:00)	1288	458	155	38	28	608
Daily	10387	2314	1718	1013	831	4511
Site D						
AM Peak (08:00-09:00)	513	117	22	146	117	110
PM Peak (17:00 – 18:00)	492	175	59	15	11	233
Daily	3969	884	656	387	317	1724

5.3.8. Education trips are separated within NTS 0502 into those that are escorted and those that are not. For the purpose of the trip generation, it was assumed that unescorted trips represent those undertaken by secondary, further and higher education pupils, whilst education escort trips were assumed to be undertaken by primary school pupils.

5.3.9. The following mode share and internalisation assumptions were applied after the trips were split by journey purpose.

- Retail – 10% of the residential trips were internalised reflecting the presence of a local centre on site to serve the needs of the development.
- Escort Education – 100% of the residential trips were internalised to reflect the presence of a primary school on site.

5.3.10. The residential person trip generation by site taking account of the internalisation factors outlined above is detailed in **Table 8**.

Table 8 – Residential Person Trip Generation By Journey Purpose and Site (Including Internalisation)

Journey Purpose/ Peak Period	Private Houses (Total)	Commuting / Business	Retail	Education	Education Escort	Other Work, visiting friends, holiday
Site B						
AM Peak (08:00-09:00)	1029	307	51	383	0	288
PM Peak (17:00 – 18:00)	1244	458	140	38	0	608
Daily	9384	2314	1546	1013	0	4511
Site D						
AM Peak (08:00-09:00)	393	117	19	146	0	110
PM Peak (17:00 – 18:00)	475	175	53	15	0	233
Daily	3586	884	591	387	0	1724

5.3.11. A review of 2011 Census Travel to Work data was undertaken to identify the likely mode share of residential external trip making by all journey purposes. 2011 Census data has been used in the absence of 2021 data at the time of preparation of this PTA. **Table 9** illustrates the mode share derived for the Mid Layer Super Output Area (MSOA) that the site is located within.

Table 9: 2011 Census Travel to Work Mode Share

Mode	Percentage (based upon Canterbury 012 and Census Table WU03EW)
Rail (including underground)	5.41%
Bus	8.04%
Taxi	0.84%
Motorcycle	0.48%
Car Driver	58.33%
Car Passenger	4.90%
Bicycle	4.20%
Foot	17.80%
Other	0.00%
Total	100%

5.3.12. The mode share identified in **Table 9** has been applied to the following trip purposes:

- Commuting and Business
- Shopping; and
- Other work, visiting friends, holiday

5.3.13. For the education trip generation, a review was undertaken to identify a more locally specific mode share relevant to education trips. NTS Table 9908 provides the mode share of education trips split down by region of England. Information is available for each year between 2002 and 2020. Data for 2018/2019 for the south-east of England was extracted and is summarised in **Table 10**.

Table 10: Census and NTS Mode Shares

Mode	NTS 9908 – 2018/2019 South-East
Rail (including underground)	2%
Bus	9%
Taxi	0%
Motorcycle	0%
Car Driver	39%
Car Passenger	
Bicycle	3%
Foot	42%
Other	1%
Total	100%

5.3.14. It should be noted that there is no distinction made in NTS Table 9908 regarding car driver or passenger. For robustness we have assumed that for every car passenger trip there would be a corresponding car driver trip.

5.3.15. **Tables 11** and **12** show the resultant residential trip generation my mode for Sites B and D.

Table 11 – Site B Core Scenario Residential Development Trip Generation

Mode	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	28	121	148	112	57	168	643	645	1288
Taxi	1	4	5	7	3	10	36	34	70
Motorcycle	1	2	3	4	2	6	20	19	40
Car Driver	98	428	526	476	242	718	2660	2618	5278
Car Passenger	34	147	181	49	25	74	373	432	805
Cycle	7	31	39	34	17	52	192	190	382
Pedestrian	51	224	276	153	78	231	938	978	1915
Total	220	959	1179	835	424	1259	4862	4917	9779
Vehicular Total	121	435	535	487	260	734	2716	2672	5388

Table 12 – Site D Core Scenario Residential Development Trip Generation

Mode	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	11	46	57	43	22	64	246	247	492
Taxi	0	2	2	3	1	4	14	13	27
Motorcycle	0	1	1	1	1	2	8	7	15
Car Driver	38	164	201	182	93	275	1016	1001	2017
Car Passenger	13	56	69	19	10	28	143	165	308
Cycle	3	12	15	13	7	20	74	73	146
Pedestrian	20	86	105	58	30	88	358	374	732
Total	84	366	450	319	162	481	1858	1879	3737
Vehicular Total	38	166	204	186	95	281	1038	1021	2059

5.3.16. The resultant residential trip generation for both Sites B and D combined is shown in **Table 13**.

Table 13 – Total Core Scenario Residential Trip Generation (Sites B and D)

Mode	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	38	167	205	154	78	233	888	892	1780
Taxi	1	6	8	9	5	14	50	48	97
Motorcycle	1	3	4	5	3	8	28	27	55
Car Driver	136	592	727	658	335	993	3676	3619	7295
Car Passenger	47	204	250	68	34	102	516	597	1113
Cycle	10	43	53	47	24	72	266	262	528
Pedestrian	71	310	381	211	107	319	1296	1351	2648
Total	304	1325	1629	1154	587	1740	6721	6796	13516
Vehicular Total	159	601	739	673	355	1015	3754	3694	7448

Sensitivity Test Scenario

5.3.17. To reflect the changes in infrastructure provision proposed as part of the emerging Canterbury Transport Strategy it has been agreed with KCC that a five-percentage point increase in bus-based mode share can be applied to the trip generation. The change in mode share is shown alongside the 2011 Census Travel to Work mode shares that are used for all journey purposes except education (**Table 14)**.

Table 14: Census and Sensitivity Test Scenario Mode Share Comparison

Mode	Percentage (based upon Canterbury 012 and Census Table WU03EW)	Sensitivity test Revised Mode Share
Rail (including underground)	5.41%	5.12%
Bus	8.04%	13.04%
Taxi	0.84%	0.79%
Motorcycle	0.48%	0.45%
Car Driver	58.33%	55.16%
Car Passenger	4.90%	4.63%
Bicycle	4.20%	3.97%
Foot	17.80%	16.83%
Other	0.00%	0.00%
Total	100%	100%

5.3.18. The residential trip generation methodology for the sensitivity test scenario remains the same as that used for the core scenario with the exception of the change in mode share applied to journey purposes with the exception of education (i.e. Commuting and Business, Shopping and Other work, visiting friends, holiday).

5.3.19. The resultant sensitivity test scenario residential trip generation for Sites B and D is presented in **Tables 15** and **16.**

Table 15 – Site B Sensitivity Test Scenario Residential Development Trip Generation

Mode	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	33	145	179	149	76	225	844	838	1682
Taxi	1	4	5	6	3	10	34	33	67
Motorcycle	1	2	3	4	2	5	19	18	38
Car Driver	94	411	506	451	229	680	2524	2489	5013
Car Passenger	33	146	179	47	24	71	362	421	783
Cycle	7	30	37	33	17	49	183	180	363
Pedestrian	50	219	270	145	74	219	896	938	1834
Total	220	959	1179	835	424	1259	4862	4917	9779
Vehicular Total	117	418	514	461	247	695	2577	2540	5117

Table 15 – Site B Sensitivity Test Scenario Residential Development Trip Generation

Mode	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	13	56	68	57	29	86	323	320	643
Taxi	0	2	2	2	1	4	13	12	25
Motorcycle	0	1	1	1	1	2	7	7	14
Car Driver	36	157	193	172	88	260	965	951	1916
Car Passenger	13	56	69	18	9	27	138	161	299
Cycle	3	12	14	12	6	19	70	69	139
Pedestrian	19	84	103	55	28	84	343	358	701
Total	84	366	450	319	162	481	1858	1879	3737
Vehicular Total	37	160	196	176	90	266	985	971	1955

5.3.20. The resultant residential trip generation for both Sites B and D combined is shown in **Table 16**.

Table 16 – Total Sensitivity Test Residential Trip Generation (Sites B and D)

Mode	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	46	201	247	206	105	311	1167	1158	2325
Taxi	1	6	7	9	4	13	47	45	92
Motorcycle	1	3	4	5	3	7	27	25	52
Car Driver	130	569	699	623	317	940	3489	3440	6928
Car Passenger	46	202	248	65	33	98	500	582	1082
Cycle	10	42	51	45	23	68	252	249	502
Pedestrian	70	303	373	201	102	303	1239	1296	2536
Total	304	1325	1629	1154	587	1740	6721	6796	13516
Vehicular Total	154	578	710	637	337	961	3562	3510	7072

5.4 Other land use trip generation

Local Centre

5.4.1. The local centre is proposed to serve the needs of the Proposed Development and as such will not attract trips external to the development except a limited number of staff and servicing trips. For the purposes of this PTA no trip generation has been assumed associated with this land use.

Primary school

5.4.2. The primary school is proposed to serve the needs of the Proposed Development. The only trips associated with this land use will therefore be staff trips and a limited number of servicing trips. A provisional external to site trip generation has been developed on the basis of provision of a two-form of entry primary school. **Table 17** presents the staff trip generation on the basis of the following assumptions:

- A two-form of entry primary school would have approximately 42 full time equivalent staff of which 69% would be teaching staff and 31% non-teaching staff
- 20% of these staff are likely to live on the development site
- 50% of teaching staff would arrive and depart in the peak hours. 90% of non-teaching would arrive in the AM peak and 10% depart in the PM peak
- External to site staff trips will be 100% via private vehicle

Table 17 – Primary School Staff Vehicular Trip Generation

	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Primary School Staff Trips	21	0	21	0	13	13	34	34	68

Public open space

5.4.3. Public open space will be provided to accommodate the needs of the development, and this will not have an external trip generation.

5.5 Development Trip Generation

5.5.1. **Table 18** and **Table 19** illustrates the total trip generation for the Core Scenario and Sensitivity Test Scenario for the Proposed Development.

Table 18 ‑ Total Development Trip Generation (Core Scenario)

Mode	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	38	167	205	154	78	233	888	892	1780
Taxi	1	6	8	9	5	14	50	48	97
Motorcycle	1	3	4	5	3	8	28	27	55
Car Driver	157	592	749	658	348	1006	3710	3653	7363
Car Passenger	47	204	250	68	34	102	516	597	1113
Cycle	10	43	53	47	24	72	266	262	528
Pedestrian	71	310	381	211	107	319	1296	1351	2648
Total	325	1325	1650	1154	600	1753	6755	6830	13584
Vehicular Total	159	601	760	673	355	1028	3788	3728	7516

Table 19 - Total Development Trip Generation (Sensitivity Test Scenario)

Mode	AM Peak (08:00-09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	46	201	247	206	105	311	1167	1158	2325
Taxi	1	6	7	9	4	13	47	45	92
Motorcycle	1	3	4	5	3	7	27	25	52
Car Driver	152	569	720	623	330	953	3523	3474	6996
Car Passenger	46	202	248	65	33	98	500	582	1082
Cycle	10	42	51	45	23	68	252	249	502
Pedestrian	70	303	373	201	102	303	1239	1296	2536
Total	325	1325	1650	1154	600	1753	6755	6830	13584
Vehicular Total	154	578	731	637	337	974	3596	3544	7140

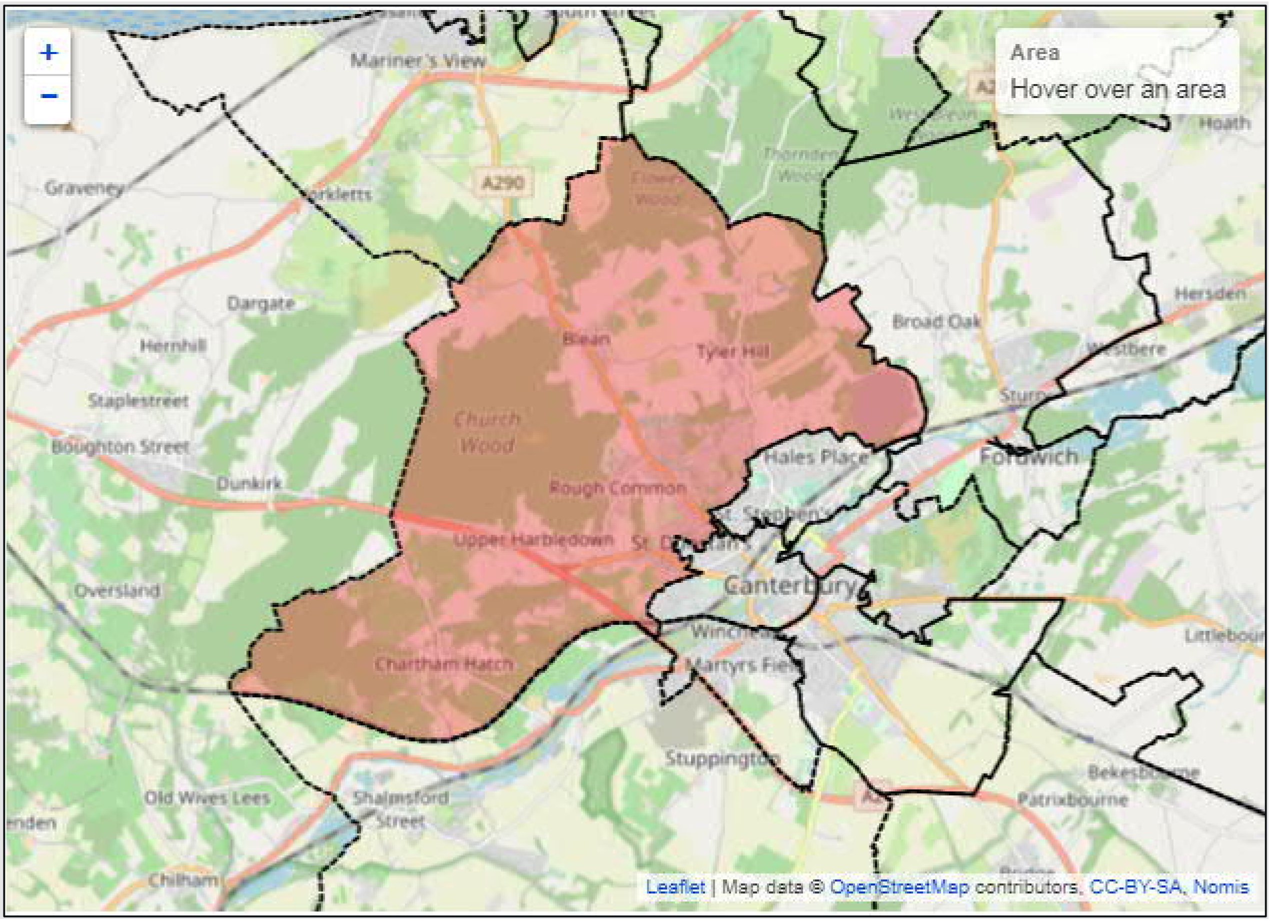
5.6 Trip Distribution

5.6.1. A two-stage trip distribution process has been adopted to calculate the anticipated provisional trip distribution for the trips associated with the Proposed Development. The first stage involved calculating the wider distribution of development trips using Census Origin-destination data. For trips in the immediate vicinity of the proposal site a micro-simulation model was used. Details of this two-stage approach are outlined below.

Stage One – Wider Trip Distribution

5.6.2. Firstly, 2011 Census, 'Location of usual residence and place of work by method of travel to work' data at the MSOA level (Table WU03EW) was extracted from the Nomis database to provide the proportion of trips to each MSOA across the Country from the MSOA used to derive the mode share for the Site (Canterbury 012), as shown in **Figure 15.** 2011 Census data was used because 2021 Census data at this level of analysis was not available at the time of preparation of this PTA.

Figure 15 - MSOA Canterbury 012 (Source: Nomis)



5.6.3. Data for the mode car driver was used to ensure that trip patterns replicated the mode to be used within the highway network assessment. The destination MSOA's were then ranked by the total number of people making the journey per MSOA.

5.6.4. An online journey planner was then used to find the quickest route to the destination MSOA from the Proposed Development in order to assign the trips to the network. The journey planner was set to a weekday 8am start time to ensure that peak period congestion was accounted for.

5.6.5. The initial stage of the trip distribution identified that the majority of car based trips (70%) remained within the Canterbury City Council area, the next most popular destination was identified as Dover (7%) followed by Swale (6%) and Ashford (6%). This was followed by Thanet (4%), Shepway (2%) and Maidstone (2%). Remaining destinations included Medway, Dartford, Tonbridge and Malling and Reigate.

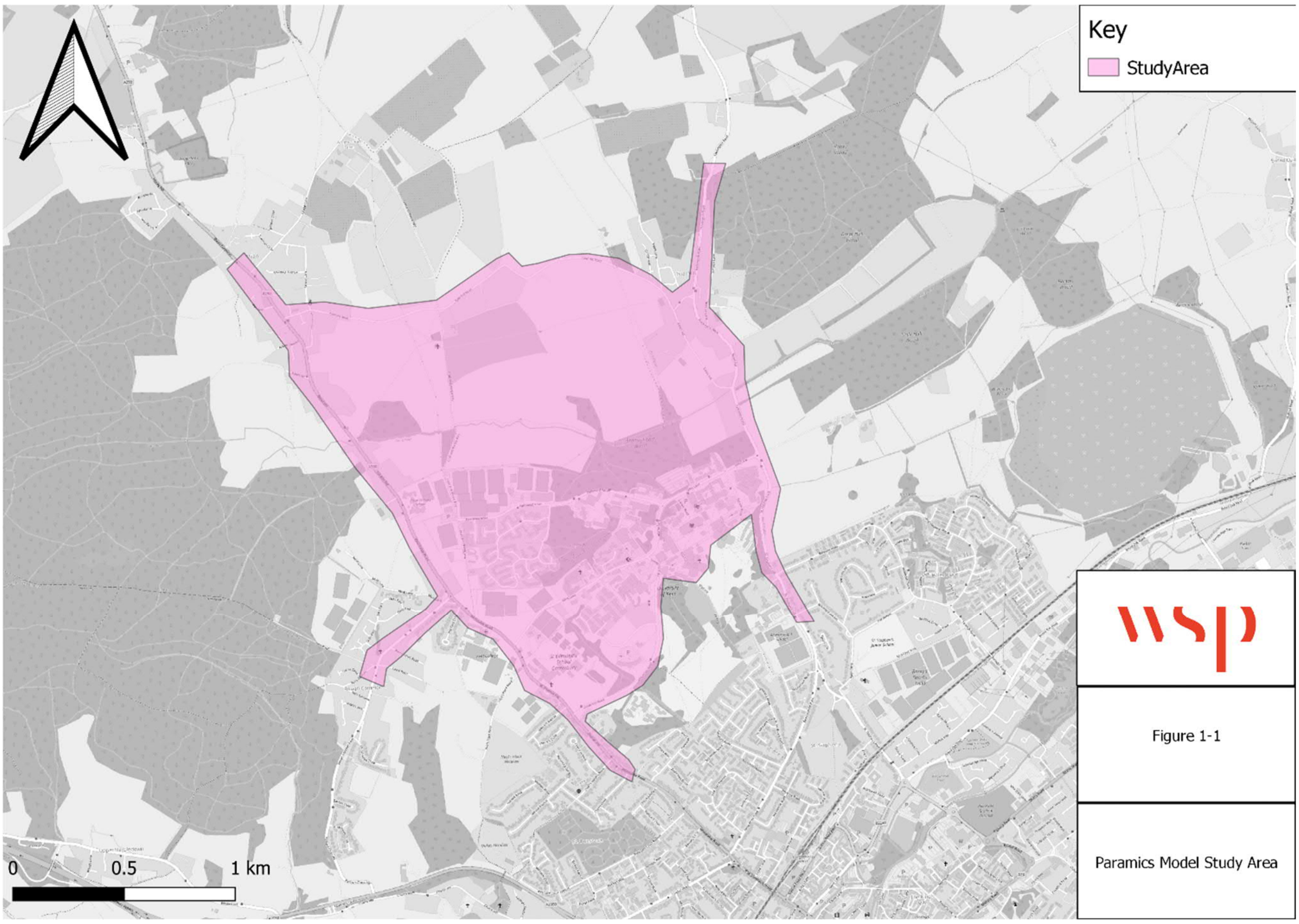
Stage Two – Local Distribution

5.6.6. Stage two of the trip distribution considered the distribution of development trips in the immediate vicinity of the site. It was agreed with KCC that a microsimulation model would provide the most appropriate means of achieving this, due to the ability of the software to dynamically change routing in response to congestion and to consider the potential re-distribution of traffic associated with the introduction of the access road which would connect A290 Whitstable Road with Park Wood Road and Tyler Hill Road.

5.6.7. To assist in building the micro-simulation it was agreed with KCC that traffic flow information including Automatic Number Plate Recognition (ANPR) data that was collected to inform the development of the University's Masterplan in 2018 could be utilised to develop the model's origin-destination matrix.

5.6.8. The study area of the microsimulation model is shown in **Figure 17**.

Figure 17 – Paramics Model Study Area



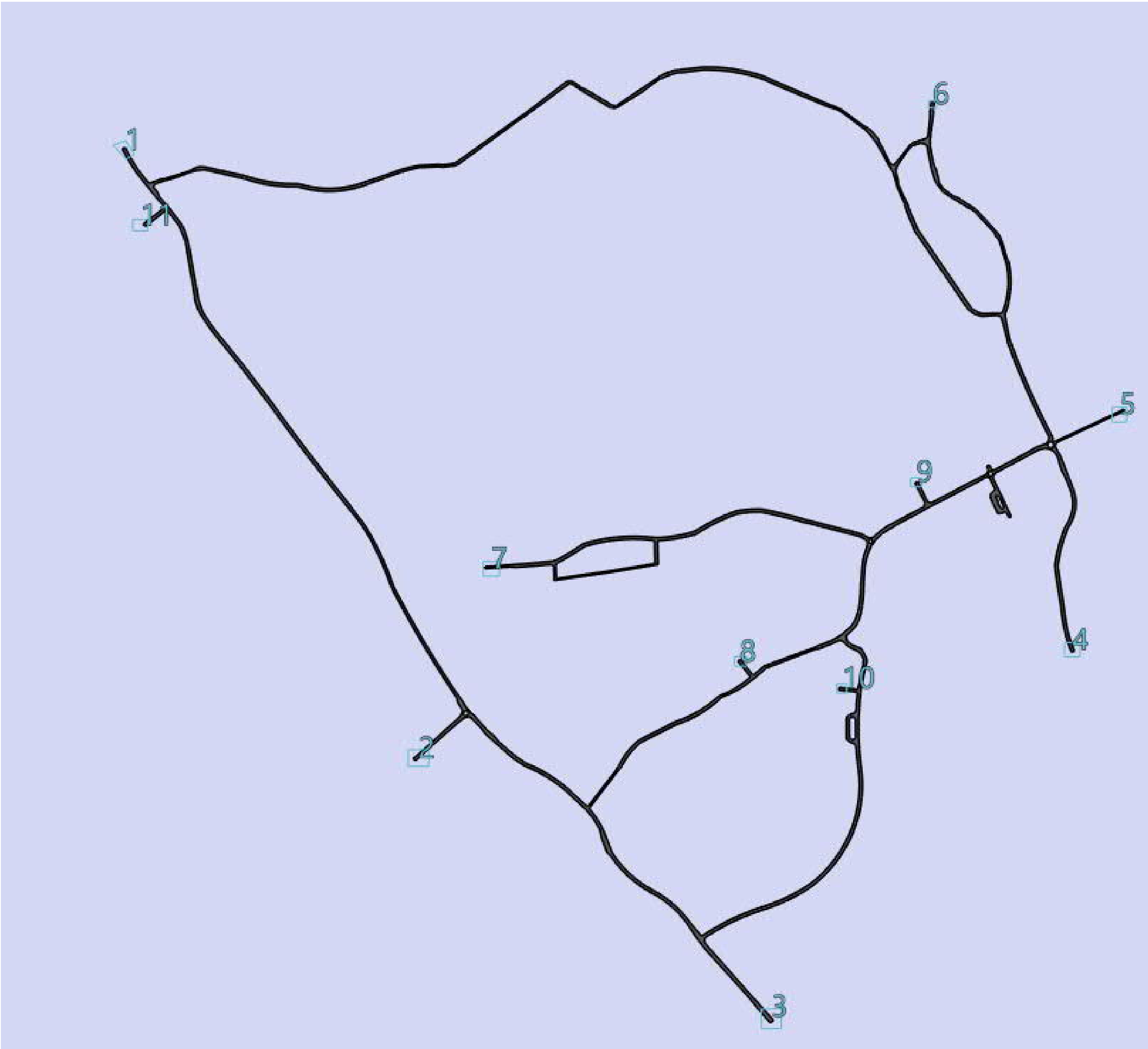
5.6.9. The micro-simulation modelling software Paramics Discovery was used because the software is known to be better for wider area modelling and models containing route choice in comparison to other modelling software packages such as Vissim. In addition, Paramics Discovery has the ability to model priority give way options, and the software has better analysis options when compared to other microsimulation software.

5.6.10. The dynamic feedback interval for the model was set at two minutes. Route choices are therefore determined every two minutes. This is considered to be a short enough interval to prevent waves of fluctuation in queuing.

5.6.11. The base Paramics model was developed using Paramics Discovery (Version 25.0.4) for the peak periods of 0700 – 1000 and 1600 – 1900, with specified network peak hours of 0800 – 0900 and 1630 – 1730 (the network peak hours identified in the traffic surveys), although it should be noted that the development trip generation was applied for 1700 – 1800 to ensure a worst-case assessment.

5.6.12. The base model network developed is shown in **Figure 18**.

Figure 18 – Paramics Base Model Network



5.6.13. Traffic is released onto the network from zones, which are key trip generators / attractors within the survey area. As shown in **Figure 18**, the base model was developed with eleven zones, as follows:

- Zone 1 – A290 Blean Common
- Zone 2 – Rough Common Road
- Zone 3 – A290 St Thomas Hill
- Zone 4 – St Stephen's Hill
- Zone 5 – Unnamed Road (eastern arm of Canterbury Hill / Giles Lane Roundabout)
- Zone 6 – Hackington Road
- Zone 7 – Parkwood Road / University Campus
- Zone 8 – University Campus (Keynes College, Woodland Way, University Medical Centre)
- Zone 9 – University Campus (Giles Lane Car Park)
- Zone 10 – University Campus (Monkwell Car Park, College Car Park)
- Zone 11 – Mount Pleasant

5.6.14. Once the 2018 base year model had been developed a future year micro-simulation model, that would include the new links introduced through the access strategy was developed. To ensure consistency with the draft new local plan (New local Plan 2045) and allow for wider growth on the highway network a future forecast year of 2045 was used.

5.6.15. The Trip End Model Presentation Programme (TEMPro) was used to derive growth factors that would allow the 2018 traffic flows to be growthed through to a future forecast year of 2045. TEMPro is an industry standard tool used to estimate traffic growth.

5.6.16. TEMPro version 8.0 was used to create the 2045 future forecast year. The forecasts 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.

5.6.17. TEMPro version 8.0 was released in June 2022, superseding the previous version of the software (version 7.2). Version 8.0 reflects the latest economic and fiscal forecasts. In addition, TEMPro version 8.0 has been updated to include multiple scenarios, referred to as Common Analytical Scenarios (CAS), which are as follows: Behavioural, Core, High, Low and Regional. For the purpose of this assessment, the 'Core' scenario was selected.

5.6.18. 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 2045.

5.6.19. For the purposes of this assessment, the geographic area of Canterbury was selected and growth factors for car driver trips selected.

5.6.20. TEMPRO was used to derive growth factors for the period 2021 to 2045. Whilst it is acknowledged that the base traffic flows contained within the micro-simulation model are from 2018 the Covid Pandemic has meant that very little growth has occurred between 2018 and 2021. It was therefore not considered appropriate to include any growth between 2018 and 2021. The growth factors used in the assessment are provided in **Table 20**.

Table 20 – Traffic Growth Factors

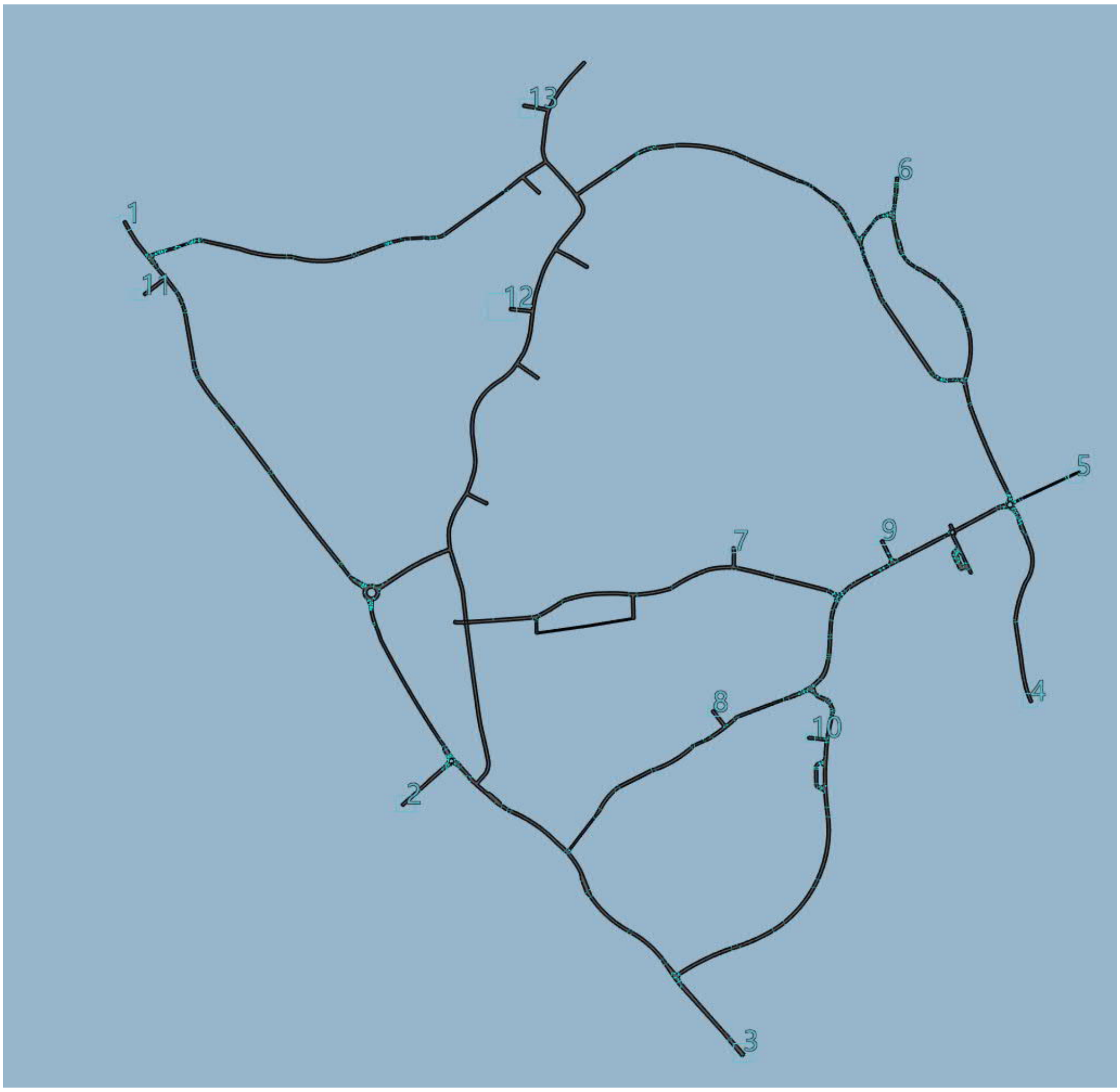
Scenario	AM Peak	PM Peak
2021 – 2045	1.1157	1.1138

5.6.21. The above traffic growth factors were used in the development of the 2045 matrices for the Paramics model.

5.6.22. The Paramics model was then run with 2045 traffic flows, with traffic flows extracted at each junction to be used in the individual junction capacity assessments.

5.6.23. The 2045 forecast year Paramics model network with the access road is shown in **Figure19.**

Figure 19 – Paramics 2045 Forecast Model Network



5.6.24. Some network changes have been made in the 2045 future year development Paramics model to manage traffic flows on Tyler Hill Road and complement the access strategy proposed. The changes included:

- Modelling of speed bumps on Tyler Hill Road and Parkwood Road
- Priority give way working on Tyler Hill Road

5.6.25. The following scenarios were assessed in the above Paramics model:

- 2045 with Core Development Scenario (CD)
- 2045 with Sensitivity Test Scenario (ST) (Canterbury Transport Strategy)

Core Development Scenario

5.6.26. The distribution for the core scenario takes no account of the emerging Canterbury Transport Strategy and therefore represents what would occur if the development proposals were to come forwards as an independent proposal. This core scenario is used as it represents a robust position for the purposes of identifying potential impacts on the transport network. The Core Development Scenario trip distribution for the Proposed Development within the micro-simulation model is illustrated in **Table 21**.

Table 21 – Core Development Scenario, Proposed Development Trip Distribution

Zone / Key Corridor	% of traffic to/from
1 – A290 Blean Common to/from north	17%
2 - Rough Common Road	32%
3 - A290 St Thomas Hill / Whitstable Road to/from south	24%
4 – St Stephens Hill to/from south	16%
5 – Unnamed Road (eastern arm of Canterbury Hill / Giles Lane Roundabout)	0%
6 – Hackington Road to/from north	8%
7 – Parkwood Road / University Campus	1%
8 – University Campus (Keynes College, Woodland Way, University Medical Centre)	1%
9 - University Campus (Giles Lane Car Park)	1%
10 – University Campus (Monkwell Car Park, College Car Park)	1%
11 - Mount Pleasant	0%

Sensitivity Test Scenario

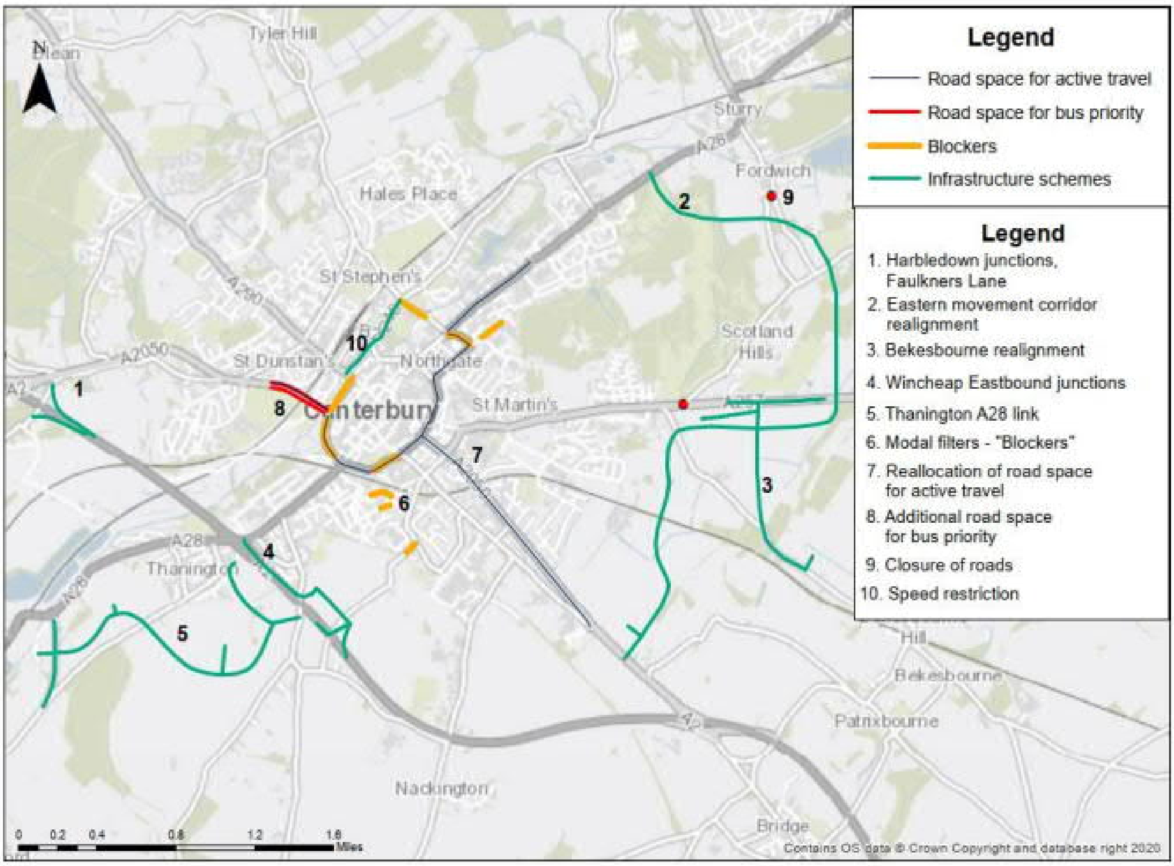
5.6.27. The Sensitivity Test Scenario uses the same methodology as above, however the distribution varies as a result of the measures incorporated within the emerging Canterbury Transport Strategy. The strategic highway modelling undertaken to support the Local Plan indicates that the preferred strategy to accommodate growth would include a number of transport infrastructure measures (identified as ‘City with Ghent and relief roads’ within the

Jacobs forecasting report[8]). Those likely to have the greatest effect on the distribution of trips associated with the Proposed Development are as follows:

- Modal filters on short cuts – 'Blockers' at nine locations within the City Centre preventing access to through traffic (to be monitored by ANPR)
- Harbledown junction - new coast bound on-slip and London bound off-slip
- Wincheap Eastbound Junctions – coastbound on and off-slip
- Thanington A28 link – Link to facilitate through movement between A2 and A28
- Eastern Movement Corridor – a new A class road with 40mph speed limit linking A2050 Roman Road with A28 Mill Road

These infrastructure measures are shown along with the others considered within the strategic modelling in **Figure 20.**

Figure 20 – Canterbury Transport Strategy Measures (Source: Jacobs)



[8] Jacobs Canterbury Local Plan – Preferred Strategic Growth Local Plan Option 13 July 2022

5.6.28. In the absence of utilising the strategic model developed by Jacobs, assumptions have been made about how traffic would likely re-route as a result of these interventions. In order to do this a review of the Census Travel to Work data was undertaken and routing assumptions updated using professional judgement. Whilst it is acknowledged that adopting this approach is quite simplistic (when compared to utilising the strategic model) this is a provisional assessment which does not preclude a run of the strategic model including the Proposed Development in due course.

5.6.29. The resultant distribution as identified from analysis of the micro-simulation model is presented in **Table 22**.

Table 22 – Sensitivity Test Scenario Proposed Development Trip Distribution

Zone / Key Corridor	%
1 – A290 Blean Common to/from north	17%
2 - Rough Common Road	58%
3 - A290 St Thomas Hill / Whitstable Road to/from south	3%
4 – St Stephens Hill to/from south	10%
5 – Unnamed Road (eastern arm of Canterbury Hill / Giles Lane Roundabout)	0%
6 – Hackington Road to/from north	8%
7 – Parkwood Road / University Campus	1%
8 – University Campus (Keynes College, Woodland Way, University Medical Centre)	1%
9 - University Campus (Giles Lane Car Park)	1%
10 – University Campus (Monkwell Car Park, College Car Park)	1%
11 - Mount Pleasant	0%

5.6.30. When comparing **Table 21** and **Table 22** it is evident that the Sensitivity test Scenario routes more traffic to/from Rough Common Road (32% in CD vs 58% in ST). There is then a corresponding decrease in trips to/from the City Centre (approximately a 27% decrease when compared to the CD).

5.6.31. The traffic flows were then extracted from the Paramics model for each peak hour (0800 – 0900, 1630 – 1730) for each vehicle type, to be utilised in the individual junction capacity assessments detailed in **Section 6.**

6 Highway Network Assessment

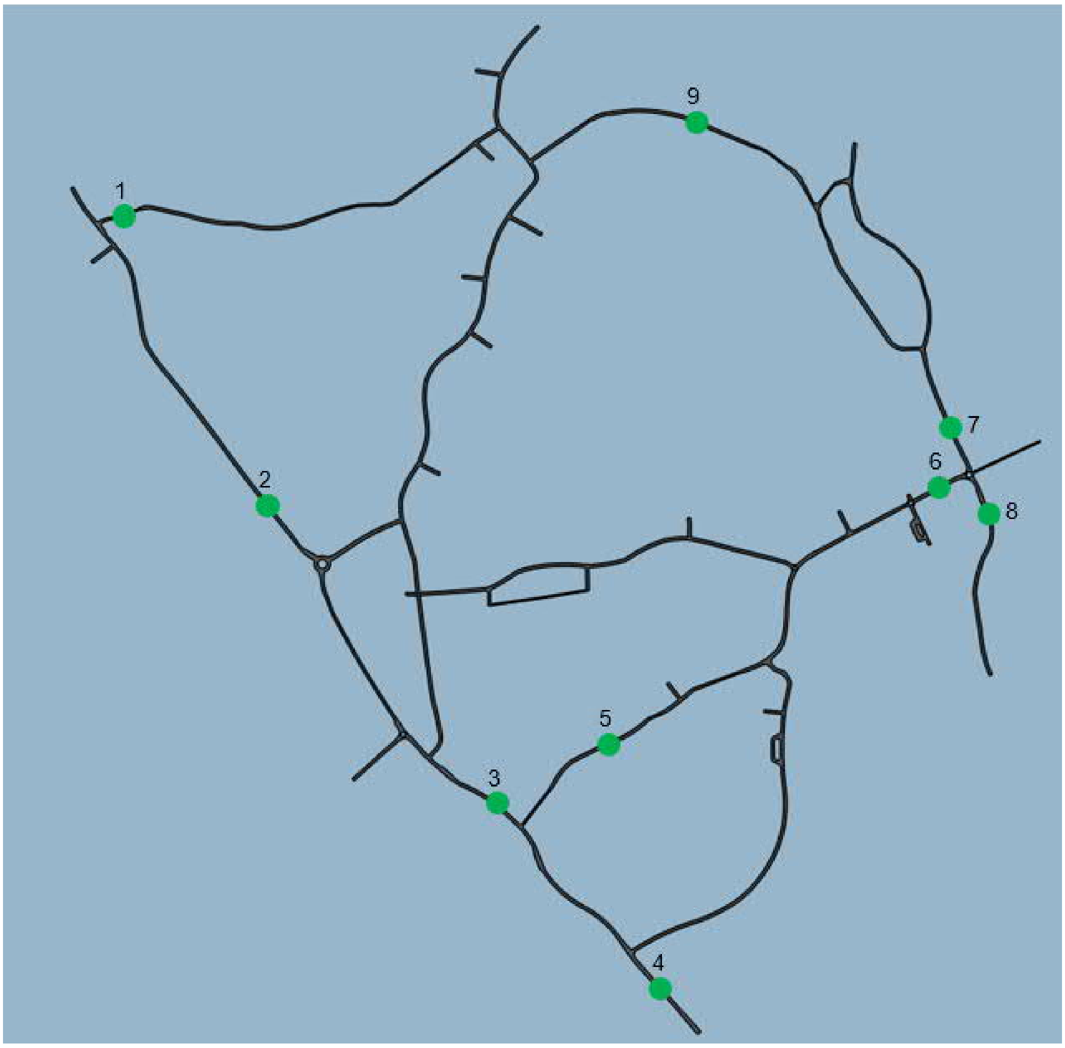
6.1 Introduction

6.1.1. This Section provides an overview of the process followed to develop the highway network assessment along with the results.

6.2 Paramics Discovery

6.2.1. Total vehicle flows have been extracted from the Paramics model for the 2045 base, 2045 + Core Development Scenario (CD) and the 2045 + Sensitivity Test (ST) scenario at nine key points across the model network, as shown in **Figure 21**.

Figure 21 Paramics Discovery - Link Flow Comparison



6.2.2. The link flows have been tabulated for the three scenarios, as shown in **Table 22** and **Table 23**. The % change in traffic flow compared to the 2045 base scenario has been calculated. Green cells indicate where the development scenario results in a reduction in flow compared to the 2045 base. Amber cells indicate where the development scenario results in an increase in flow compared to the 2045 base scenario of up to 20%, and the red cells indicate increases in flow of greater than 20%.

Table 23– AM Peak Hour Scenario Flow Comparison

Ref	Link	Direction	2045 Base AM	2045 + CD AM		2045 + ST AM	
				Traffic Flow (All Vehicles)	% Change from 2045 Base AM	Traffic Flow (All Vehicles)	% Change from 2045 Base AM
1	Tyler Hill Road (western end)	EB	235	42	-82.04%	48	-79.70%
		WB	97	92	-4.72%	87	-10.21%
		Two-way	332	134	-59.52%	134	-59.46%
2	A290 Whitstable Road (north of Blean Primary School)	NB	396	463	16.83%	472	19.10%
		SB	542	720	32.69%	714	31.72%
		Two-way	938	1182	26.00%	1186	26.39%
3	A290 Whitstable Road (between Rough Common Road and Giles Lane)	NB	434	392	-9.70%	359	-17.17%
		SB	851	550	-35.33%	479	-43.64%
		Two-way	1285	942	-26.68%	839	-34.70%
4	A290 St Thomas Hill (south of University Road)	NB	694	728	4.91%	694	0.01%
		SB	576	703	22.06%	599	4.10%
		Two-way	1270	1431	12.69%	1294	1.87%
5	Giles Lane (western end)	EB	463	148	-68.15%	156	-66.36%
		WB	161	80	-49.92%	38	-76.52%
		Two-way	624	228	-63.46%	194	-68.97%
6	Giles Lane (eastern end)	EB	305	510	66.99%	475	55.46%
		WB	854	704	-17.50%	734	-14.03%
		Two-way	1159	1214	4.75%	1209	4.27%
7	Canterbury Hill	NB	374	450	20.32%	434	16.23%
		SB	1123	923	-17.83%	945	-15.88%
		Two-way	1497	1372	-8.30%	1379	-7.86%
8	St Stephens Hill	NB	636	661	3.97%	651	2.40%
		SB	839	943	12.42%	906	7.99%
		Two-way	1475	1604	8.78%	1557	5.58%
9	Tyler Hill Road (eastern end)	EB	238	76	-67.90%	75	-68.49%
		WB	97	195	100.95%	152	57.19%
		Two-way	335	271	-19.00%	227	-32.09%

6.2.3. **Table 23** indicates that 18 out of 36 directional link flows reduce in the 2045 + CD AM scenario and the 2045 + ST AM scenario (combined) compared to the 2045 base scenario.

6.2.4. The greatest reductions in traffic flow take place on Giles Lane (at the western end) (both directions), and Tyler Hill Road (at the western end), in the eastbound direction. The reduction in flows on Giles Lane occurs primarily as a result of the new access road which gives rise to some local level re-routing to and from the University Campus area. The access road also attracts vehicles travelling from the Blean area to the St Stephen's Hill area, diverting them from Tyler Hill Road. This reduction along Tyler Hill Road is seen as a positive given its limited width to the west of the Proposed Development.

6.2.5. The greatest proportional increases in traffic flow take place on the eastern end of Tyler Hill Road (in the westbound direction). Closer interrogation of the flow information shows that there is however a decrease in the number of vehicles travelling eastbound along the same link, resulting in an overall reduction in two-way traffic flows along the eastern section of Tyler Hill Road, a betterment overall.

6.2.6. Reductions in two-way traffic flows occur on Tyler Hill Road (at the Western end), A290 Whitstable Road (between Rough Common Road and Giles Lane), Giles Lane (at the western end), Canterbury Hill and Tyler Hill Road (at the Eastern end) in both the AM peak development scenarios.

Table 24 – PM Peak Hour Scenario Flow Comparison

Ref	Link	Direction	2045 Base PM	2045 + CD PM		2045 + ST PM	
				Traffic Flow (All Vehicles)	% Change from 2045 Base PM	Traffic Flow (All Vehicles)	% Change from 2045 Base PM
1	Tyler Hill Road (western end)	EB	82	72	-12.17%	75	-8.76%
		WB	119	58	-51.34%	52	-56.38%
		Two-way	201	130	-35.34%	127	-36.92%
2	A290 Whitstable Road (north of Blean Primary School)	NB	754	825	9.49%	825	9.55%
		SB	454	532	17.18%	527	16.07%
		Two-way	1208	1357	12.38%	1353	12.00%
3	A290 Whitstable Road (between Rough Common Road and Giles Lane)	NB	694	556	-19.81%	438	-36.82%
		SB	485	390	-19.56%	369	-23.95%
		Two-way	1178	946	-19.71%	807	-31.53%
4	A290 St Thomas Hill (south of University Road)	NB	456	601	31.76%	476	4.44%
		SB	682	722	5.88%	684	0.24%
		Two-way	1138	1323	16.25%	1160	1.92%
5	Giles Lane (western end)	EB	156	40	-74.44%	37	-76.36%
		WB	229	51	-77.79%	33	-85.56%
		Two-way	385	91	-76.43%	70	-81.83%
6	Giles Lane (eastern end)	EB	534	608	13.76%	580	8.57%
		WB	271	459	69.63%	411	51.93%
		Two-way	805	1067	32.55%	991	23.15%
7	Canterbury Hill	NB	824	814	-1.21%	776	-5.80%
		SB	366	414	13.18%	385	5.15%
		Two-way	1190	1228	3.21%	1161	-2.43%
8	St Stephens Hill	NB	803	903	12.35%	829	3.26%
		SB	607	652	7.41%	607	0.06%
		Two-way	1410	1554	10.23%	1437	1.88%
9	Tyler Hill Road (eastern end)	EB	82	76	-6.50%	66	-19.02%
		WB	121	79	-34.63%	67	-44.40%
		Two-way	203	155	-23.31%	133	-34.19%

6.2.7. **Table 24** indicates that 18 out of 36 directional link flows reduce in the 2045 + CD PM scenario and the 2045 + ST PM scenario (combined) compared to the 2045 base scenario.

6.2.8. In both scenarios, the greatest reductions in traffic flow take place on Giles Lane (at the western end) (both directions), on A290 Whitstable Road (between Rough Common Road and Giles Lane) and on Tyler Hill Road (both ends). As per the AM peak hour, these reductions in flow occur primarily as a result of the new access road.

6.2.9. In the 2045 + CD PM scenario, the greatest proportional increases in traffic flow take place on the A290 St Thomas Hill (south of University Road) in the northbound direction, and on Giles Lane (at the eastern end).

6.2.10. In the 2045 + ST PM scenario, the greatest proportional increases in traffic flow takes place at the eastern end of Giles Lane. At the eastern end of Giles Lane, there is an increase in two-way traffic of 23%, which equates to an approximate additional 140 vehicles or two vehicles every minute.

6.2.11. In the 2045 + CD PM scenario, reductions in two-way traffic flows occur on Tyler Hill Road (both ends), A290 Whitstable Road (between Rough Common Road and Giles Lane) and Giles Lane (western end). In the 2045 + ST PM scenario, reductions in two-way traffic flows occur on both ends of Tyler Hill Road, A290 Whitstable Road (between Rough Common Road and Giles Lane), the western end of Giles Lane, and Canterbury Hill.

6.2.12. This analysis should be treated as provisional with further analysis expected as the proposals are developed, including through assessment using the strategic model. This approach can be explored through liaison with KCC in due course.

6.3 Traffic data collection

6.3.1. To enable individual junction capacity assessments to be developed and tested traffic surveys were undertaken at 13 key junctions agreed with KCC across Canterbury in December 2021.

6.3.2. The data collected was analysed to identify the AM and PM peak hours at each location and then the network peaks identified across the 13 junctions. This analysis (presented in **Table 25**) identified that the peak hours on the highway network within the study area were 08:00-09:00 in the AM and 16:30-17:30 in the PM.

6.3.3. It should be noted that the trip generation presented in **Section 5** is for the PM network peak hour of 17:00-18:00. For robustness the 17:00-18:00 PM peak trip generation has been applied to the 16:30-17:30 network flows.

Table 25– Peak Hour Analysis

Time Interval			Total Flow at Each Junction													Total
			Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Site 12	Site 13	
07:00	-	08:00	1422	1611	1791	517	501	990	668	213	259	782	681	1759	1133	12328
07:15	-	08:15	1806	2207	2109	733	668	1149	855	356	418	1015	858	2021	1375	15571
07:30	-	08:30	2110	2766	2300	1016	894	1372	1046	534	619	1250	1016	2242	1559	18725
07:45	-	08:45	2082	3041	2400	1191	1060	1456	1156	692	830	1383	1073	2384	1620	20369
08:00	-	09:00	1988	3147	2368	1259	1142	1474	1174	874	1068	1431	1032	2356	1617	20931
08:15	-	09:15	1818	2876	2226	1159	1104	1485	1157	854	1066	1368	969	2321	1537	19941
08:30	-	09:30	1614	2477	1993	969	960	1403	1054	763	965	1221	860	2315	1460	18055
08:45	-	09:45	1556	2117	1836	798	805	1335	960	644	790	1080	765	2225	1369	16281
09:00	-	10:00	1512	1924	1671	708	707	1264	874	469	562	916	673	2175	1288	14744
16:00	-	17:00	1863	2568	1873	971	944	1476	1056	563	660	1097	749	2371	1319	17509
16:15	-	17:15	1929	2626	1936	992	1000	1489	1034	636	749	1152	779	2400	1368	18089
16:30	-	17:30	1967	2659	1942	1006	994	1484	1039	696	825	1162	761	2469	1429	18432
16:45	-	17:45	1799	2529	1925	964	970	1487	1008	682	823	1124	732	2493	1438	17973
17:00	-	18:00	1755	2393	1951	893	938	1463	1014	684	826	1112	719	2503	1403	17653
17:15	-	18:15	1627	2241	1895	827	841	1444	978	614	751	1024	649	2435	1345	16670
17:30	-	18:30	1461	2001	1843	749	797	1448	927	552	676	936	580	2297	1214	15480
17:45	-	18:45	1369	1725	1755	647	717	1387	857	500	617	835	497	2142	1102	14149
18:00	-	19:00	1214	1529	1613	586	633	1327	757	422	531	727	424	1962	989	12714

6.3.4. Traffic flow diagrams showing the 2021 observed network peak traffic flows are contained in **Appendix B**.

6.4 Scenario testing

6.4.1. In order to test the Proposed Development in the future forecast year of 2045 (the end of the Local Plan period) and to consider the impacts of the emerging Canterbury Transport Strategy a range of scenarios are required as follows:

- 2021 – Base Year developed for the individual junction capacity assessments
- 2045 – Future Forecast Year – 2018 or 2021 observed data growthed to 2045
- 2045 –Core Development Scenario – 2045 Future Forecast Year + Core Development Trip Generation and Distribution (CD)
- 2045 Sensitivity Test Scenario - 2045 Future Forecast Year + Sensitivity Test Development Trip Generation and Trip Distribution (ST)

6.4.2. **Table 26** provides a summary of which scenarios are considered at each junction.

Table 26– Modelled Scenarios by Junction

Junction	2021 Base	2045 Future Forecast Year	2045 Core Scenario (CD)	2045 Sensitivity Test Scenario (ST)
Whitstable Road Site Access	×	×	✓	✓
Blean Primary School Access	×	×	✓	✓
Junction 1 – A290 Whitstable Road / Tyler Hill Road	✓	✓	✓	✓
Junction 2 – A290 Whitstable Road / Rough Common Road	✓	✓	✓	✓
Junction 3 – A2050 / Palmars Cross Hill	✓	✓	✓	✓
Junction 4 – A290 Whitstable Road / Giles Lane	✓	✓	✓	✓
Junction 5 – A290 Whitstable Road / University Road	✓	✓	✓	✓
Junction 6 – A290 Whitstable Road / London Road	✓	✓	✓	✓
Junction 7 – St Stephens Hill / Beaconsfield Road	✓	✓	✓	✓
Junction 8 – Giles Lane / University Road	✓	✓	✓	✓
Junction 9 – Giles Lane / Park Wood Road	✓	✓	✓	✓
Junction 10 – St Stephens Hill / Giles Lane	✓	✓	✓	✓
Junction 11 – Calais Hill / Canterbury Hill	✓	✓	✓	✓
Junction 12 – Kingsmead Road / Broad Oak Road	✓	✓	✓	✓
Junction 13 – Broad Oak Road / Vauxhall Road	✓	✓	✓	✓

6.5 Future year assessment flows

6.5.1. The micro-simulation model study area is constrained to the immediate site and surrounding roads. However, the study area for the PTA is much wider than this. A two-stage approach to deriving future traffic flows to inform the PTA is therefore required:

- For junctions located within the study area of the micro-simulation model traffic flows have been extracted directly from the micro-simulation model and inputted into the junction capacity assessments.
- For junctions outside of the study area of the micro-simulation model traffic flows derived from the spreadsheet-based model have been used.

6.5.2. Traffic flow diagrams showing the traffic flows for the future forecast year of 2045 with and without the Proposed Development are shown in **Appendix B**.

6.6 Highway network assessment approach

6.6.1. Junction capacity assessments have been undertaken using the industry standard software PICADY for priority junctions and ARCADY for roundabouts as part of the 'Junctions 10' software package and 'LinSig' (version 3) for traffic signal junctions.

6.6.2. The output from PICADY and ARCADY provides a number of measurements to provide information on junction operation. These relate to the 'Ratio of Flow to Capacity' (RFC), maximum queue length, and delay in seconds per vehicle. The main indication of a junction's performance is provided by the RFC for each arm. The capacity of a junction is realised when the demand flow at the entry is great enough to cause a continuous queue of vehicles to wait on the approach. This is reached when the RFC attains a value of 1 or more. A junction with an RFC of 1 or above is still able to operate but would be more sensitive to changes in queueing and delay.

6.6.3. To account for daily fluctuations in traffic flow which are generally regarded to be as much as +/- 10%, a junction operating with an RFC of 0.85 or below is considered to be performing satisfactorily[9].

6.6.4. LinSig provides a number of measurements to ascertain information of a junction's operation. These relate to the 'Degree of Saturation' (DoS), mean maximum queue length, Practical Reserve Capacity (PRC) and delay in minutes per arriving vehicle. The main indication of a junction's performance is provided by the DoS for each arm.

6.6.5. The peak capacity is realised when the demand flow at the entry is such that not all vehicles queueing at the beginning of the green phase are able to clear the junction by the end of the green phase. This is reached when the DoS attains a value of 100% or more. However, to

[9] Page 109 Section 10.3. Junctions 10 User Guide (Application Guide 74), TRL, 2021

account for daily fluctuations in traffic flow a DoS of 90% is generally used to represent when a junction begins to operate at capacity and the PRC is zero.

6.6.6. RFC and DoS are indicators by which congestion levels at a junction can be considered and are the initial means by which junction capacity is interpreted. However, interpretation of the indicators such as queueing and delay are also required to understand junction performance and to understand the likely impact of changes in traffic flow. Where a junction is congested, interpretation of a range of metrics (RFC, DoS, queueing and delay) is required and professional judgement has to be applied to determine the severity of the impact at a junction.

6.7 Baseline model development

6.7.1. The existing conditions on the highway network were determined and assessed using observed data. A series of traffic surveys were commissioned in December 2021, including Automatic Traffic Counts (ATCs), junction turning counts, and queue length surveys. The ATC data covered a two-week period, and the turning counts and queue length surveys were carried out on a mid-week day. Analysis of the ATC data that was collected over 14 days demonstrated that traffic conditions on the days the turning counts and queue length surveys were carried out were 'typical', i.e. no major incidents on the network were identified.

6.7.2. Junction capacity assessment models were developed for each of the 13 locations within the agreed study area by following the below approach:

- Geometries were measured by overlaying OS mastermap (1:1250 scale) mapping with aerial photography.
- The geometries were then validated through a site visit undertaken in December 2021 to observe any significant difference between the layouts identified from the desktop geometric calculations and the layouts on-site.
- Adjustments were made to the models using the on-site measurements as these were considered to be the most accurate representation of existing conditions.
- Junction capacity assessment models were then run for the AM and PM peak hours using the actual turning movements at each junction.
- Modelled queue lengths were then compared to the average maximum queue length identified from the queue length surveys on each arm of each of the junctions to identify where the modelled junction differed from that identified from the observed data collected.
- Where the observed queue varied considerably, further consideration was given to the calibration of the model.

6.7.3. Following review of the observed and modelled base junction queueing the following adjustments were made:

- *Junction 6 (A290 Whitstable Road / London Road)* - At this location the level of queuing observed was significantly greater than the modelled queue lengths. The likely reason for this is the presence of the level crossing to the south of the junction on St Dunstan's Street. The junction capacity assessment is unable to replicate these conditions accurately as the pattern of level crossing closures can be subject to change on a daily basis owing to the variability of train operating conditions. The model was therefore not adjusted and the implications on the junction capacity assessment results are considered in more detail later in this section

- *Junction 10 (St Stephen's Hill/Giles Lane)* – an intercept adjustment of +100 was made on Arm A – St Stephen's Hill North to reduce the modelled queue to reflect the observed queue
- *Junction 13 (Broad Oak Road/Vauxhall Road)* – an intercept adjustment of +250 was made on Arm B – Broad Oak Road East to reduce the modelled queue to reflect the observed queue.

6.8 Junction Impact Assessment

6.8.1. This section provides a summary of the results of the modelling undertaken at each of the key junctions identified within the study area.

Whitstable Road Primary Access

6.8.2. The Transport Strategy (August 2021) identified the potential for a traffic signal junction to be provided on Whitstable Road to act as a new access point to the development and University. Initial testing of this option using LinSig indicated that the traffic signal junction layout identified would struggle to accommodate the volume of traffic anticipated. Alternative junction layouts were therefore considered. A staggered priority junction was investigated. An illustrative concept design for this staggered junction is shown on drawing 70080896-XX-XX-TP-016-A contained in **Appendix D**.

6.8.3. The site access right-left staggered priority junction has been assessed using Junctions 10 (PICADY). The capacity assessment results for the AM and PM peaks are provided in **Table 27.** Full results are contained in **Appendix C.**

Table 27 – Access Junction – Right Left Staggered

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
			2045 + CD			
B-C – Site Access (left)	0.4	11.90	0.31	0.3	13.40	0.21
B-AD – Site Access (right ahead)	1.0	24.13	0.51	2.2	35.47	0.70
A-BCD – Whitstable Road North (right left ahead)	0	7.02	0.02	0	7.73	0.01
D-ABC – Highfield Close (right left ahead)	0.1	11.25	0.06	0	10.90	0.04
C-ABD - Whitstable Road South (right left ahead)	0.2	9.68	0.19	0.4	9.42	0.28
			2045 + ST			
B-C – Site Access (left)	0.4	21.93	0.29	0.1	10.93	0.07
B-AD – Site Access (right ahead)	3.6	49.34	0.80	1.7	25.36	0.63
A-BCD – Whitstable Road North (right left ahead)	0	7.51	0.02	0	7.67	0.01
D-ABC – Highfield Close (right left ahead)	0.1	12.52	0.06	0	10.85	0.04
C-ABD - Whitstable Road South (right left ahead)	0.1	8.90	0.13	0.1	7.51	0.09

6.8.4. As can be seen from the junction capacity results illustrated above in **Table 27**, the junction is anticipated to operate satisfactorily in both development scenarios with all arms operating below capacity (RFC of 1).

Blean Primary School Access

6.8.5. During previous discussions with KCC, and from initial outputs from the Jacobs strategic modelling it had been highlighted that the introduction of the proposed access road linking Whitstable Road with Tyler Hill Road would be attractive to existing traffic on the highway network and likely see additional traffic routing through the site, impacting upon the performance of the Whitstable Road access. As such, to supplement the primary access, a number of options are being considered to provide a secondary access onto Whitstable Road, one of which could be a new secondary access onto Whitstable Road using the existing Blean Primary School. To facilitate this the existing school would be reconfigured on land within the Primary School and other land surrounding owned by the University.

6.8.6. WSP have considered two potential illustrative options for the new access onto Whitstable Road through the Blean Primary School land, one being a new 28m ICD roundabout (**WSP**

Drawing 70080896-XX-XX-TP-024) or a new signal controlled T-Junction (**WSP Drawing 70080896-XX-XX-TP-025**). Both options (shown in **Appendix D**) are considered viable from a highway design perspective and would be considered further through discussions with KCC in due course.

6.8.7. Both options have been tested assuming that the Whitstable Road priority junction is also implemented providing two points of access to the Proposed Development from the south.

Option 1 - Roundabout

6.8.8. The new proposed priority roundabout has been assessed using Junctions 10 (ARCADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 28.** Full results are contained in **Appendix C.**

Table 28 - Blean Primary School Access Option 1 (Roundabout) Junction Capacity Results

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 + CD						
A – Blean Primary School	0.3	3.62	0.23	0.3	3.77	0.24
B – Whitstable Road (South)	0.6	4.45	0.37	2.6	10.50	0.73
C – Whitstable Road (North)	1.0	5.52	0.51	0.9	5.45	0.48
2045 +ST						
A – Blean Primary School	0.4	3.89	0.26	0.4	4.02	0.28
B – Whitstable Road (South)	0.6	4.60	0.39	4.4	15.77	0.82
C – Whitstable Road (North)	1.5	6.89	0.60	1.0	6.00	0.50

6.8.9. As illustrated above in **Table 28**, the results show that a roundabout in this location can operate with satisfactory performance (RFC below 0.85) in all scenarios assessed.

Option 2 – Traffic Signals

6.8.10. In order to provide KCC the flexibility in how they see a new junction being delivered via Blean Primary School, a second option of a signalised T-Junction has also been assessed. The signalised junction has been assessed using Linsig3. The capacity assessment results for the AM and PM peaks are summarised in **Table 29.** Full results are contained in **Appendix C.**

Table 29 - Blean Primary School Access Option 2 (Signals) Junction Capacity Results

Arm Description	AM			PM		
	Queue (Veh)	Delay (s/pcu)	Deg Sat (%)	Queue (Veh)	Delay (s/pcu)	Deg Sat (%)
2045 + CD						
Whitstable Road North	17.3	29.1	80.3%	10.6	24.3	66.6%
Whitstable Road South	4.9	13.9	36.8%	12.6	19.9	71.8%
Blean Primary Arm	5.9	60.0	78.5%	5.0	49.5	73.1%
2045 + ST						
Whitstable Road North	17.5	25.1	81.4%	10.1	22.7	63.6%
Whitstable Road South	5.2	11.7	81.4%	14.5	22.3	77.7%
Blean Primary Arm	7.1	58.0	83.0%	5.2	51.8	76.9%

6.8.11. The results of either illustrative option show satisfactory performance and therefore should this option be pursued further, there is flexibility regarding its design and the junction form taken forwards would be agreed with KCC as the masterplan is progressed.

Junction 1 – A290 Whitstable Road / Tyler Hill Road

6.8.12. The A290 Whitstable Road / Tyler Hill Road priority junction has been assessed using Junctions 10 (PICADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 30.** Full results are contained in **Appendix C.**

Table 30 - Junction 1 – A290 Whitstable Road / Tyler Hill Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base						
B-Tyler Hill Road	0.4	12.07	0.26	0.6	17.67	0.39
C-A290 South	0.1	4.87	0.05	0.7	20.69	0.43
2045 + CD						
B-Tyler Hill Road	0.5	17.32	0.33	0.3	16.08	0.22
C-A290 South	0.0	4.41	0.01	0.1	3.45	0.04
2045 + ST						
B-Tyler Hill Road	0.3	11.85	0.24	0.2	15.65	0.2
C-A290 South	0.0	4.13	0.01	0.1	3.49	0.05

6.8.13. The results presented in **Table 30** show that the junction operates with satisfactory performance (RFC below 0.85) in all scenarios assessed.

6.8.14. The impacts of the Proposed Development are not considered to be significant at this junction and mitigation is therefore not necessary as the junction can accommodate traffic associated with the Proposed Development.

Junction 2 ‐ A290 Whitstable Road / Rough Common Road

6.8.15. The A290 Whitstable Road / Rough Common Road priority junction has been assessed using Junctions 10 (ARCADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 31**. Full results are contained in **Appendix C**.

Table 31 - Junction 2 – A290 Whitstable Road / Rough Common Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base						
A – A290 North	2.6	15.89	0.73	0.9	6.92	0.48
B – A290 South	2.2	15.48	0.69	13	64.72	0.96
C – Rough Common Road	79.3	390.08	1.2	41.7	205.42	1.11
2045 + CD						
A – A290 North	2.6	15.77	0.73	1.1	7.54	0.53
B – A290 South	3.9	27.18	0.81	17.6	88.03	0.99
C – Rough Common Road	110.8	558.41	1.27	175.5	894.71	1.41
2045 + ST						
A – A290 North	2.6	15.83	0.73	1.4	8.5	0.59
B – A290 South	19.6	107.39	1.01	22.8	111.91	1.02
C – Rough Common Road	145.1	707.14	1.32	307.6	1512.66	1.61

6.8.16. The results presented in **Table 31** show that in the 2045 Base scenario, Arm C - Rough Common Road operates at/above capacity (RFC of 1) in the AM and PM peak. Arm B – A290 South is approaching capacity (RFC of 1) in the PM.

6.8.17. Arm C - Rough Common Road in the AM peak in the 2045+CD scenario operates at/above capacity (RFC of 1). In the PM Peak Arm C – Rough Common Road operate at/above capacity (RFC of 1)

6.8.18. Maximum queueing and delay are 111 vehicles and 558 seconds in the AM peak on Arm C – Rough Common Road and in the PM peak maximum queuing and delay are 176 vehicles and 895 seconds on Arm C – Rough Common Road.

6.8.19. In the 2045 + ST scenario Arm B – A290 South and Arm C – Rough Common Road operate at/above capacity (RFC of 1) in both the AM and PM peaks.

6.8.20. Maximum queueing and delay are 145 vehicles and 707 seconds in the AM peak on Arm C – Rough Common Road and in the PM peak maximum queuing and delay are 308 vehicles and 1513 seconds on Arm C – Rough Common Road.

6.8.21. Mitigation is therefore considered for this junction and is discussed in **Section 7** of this report.

Junction 3 – A2050 / Palmars Cross Hill

6.8.22. The A2050/Palmars Cross Hill junction is a three-arm traffic signal junction. To develop a suitable base model signal specification information was obtained from KCC. This information was used to develop the staging for the junction. The junction is controlled using Microprocessor Optimised Vehicle Actuation (MOVA) which optimises the signal timings based upon demand. To calculate the cycle time the average cycle time as recorded from the CCTV data collected as part of the traffic surveys was utilised.

6.8.23. The A2050 / Palmars Cross Hill traffic signal junction has been assessed using LinSig3. The capacity assessment results for the AM and PM peaks are summarised in **Table 32**. Full results are contained in **Appendix C**.

Table 32 - Junction 3 – A2050/Palmars Cross Hill

Arm Description	AM			PM		
	Mean Max Queue (PCU)	Delay (s/PCU)	Deg Sat (%)	Mean Max Queue (PCU)	Delay (s/PCU)	Deg Sat (%)
2045 Base						
A2050 (West) Left Turn	3.3	6.0	34.4	0.9	7.2	14.3
A2050 (West) Ahead	7.7	15.3	65.5	4.2	17.6	60.0
Palmars Cross Hill Left and Right Turn	4.7	24.0	62.9	3.8	18.6	62.3
A2050 (East) Ahead Right	4.4	12.0	66.2	6.1	11.6	64.8
2045 + CD						
A2050 (West) Left Turn	3.8	6.6	36.9	1.8	9.2	25.8
A2050 (West) Ahead	9.0	20.7	73.5	5.1	22.7	73.4
Palmars Cross Hill Left and Right Turn	6.2	22.0	71.5	4.9	20.2	72.9
A2050 (East) Ahead Right	5.1	14.0	65.6	6.1	11.8	69.4
2045 + ST						
A2050 (West) Left Turn	4.2	6.4	39.7	3.5	9.3	44.0
A2050 (West) Ahead	11.1	28.3	84.2	5.1	22.7	73.4
Palmars Cross Hill Left and Right Turn	12.1	28.7	87.4	6.8	23.6	80.7
A2050 (East) Ahead Right	6.3	17.2	69.8	7.9	14.5	74.6

6.8.24. The junction capacity results show that the junction operates within capacity (with a DoS of less than 100%) in all scenarios considered.

Junction 4 – A290 Whitstable Road / Giles Lane

6.8.25. The A290 Whitstable Road / Giles Lane priority junction has been assessed using Junctions 10 (PICADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 33**. Full results are contained in **Appendix C**.

Table 33 - Junction 4 – A290 Whitstable Road / Giles Lane

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base						
B - Giles Lane	1.8	38.19	0.65	3.7	57.06	0.81
C – Whitstable Road South	0.6	6.97	0.26	0.2	4.55	0.09
2045 + CD						
B - Giles Lane	0.3	13.94	0.26	0.2	10.44	0.14
C – Whitstable Road South	0.5	5.58	0.20	0.1	4.1	0.07
2045 + ST						
B - Giles Lane	0.2	13.54	0.13	0.1	10.47	0.1
C – Whitstable Road South	0.4	5.53	0.19	0.1	4.42	0.06

6.8.26. The results presented in **Table 33** show that in the junction performs satisfactory in all scenarios assessed (RFC below 0.85). The introduction of the Proposed Development sees traffic routing away from this junction and therefore capacity improves significantly through its introduction. Mitigation is therefore not considered for this junction.

Junction 5 ‑ A290 Whitstable Road / University Road

6.8.27. The A290 Whitstable Road / University Road priority junction has been assessed using Junctions 10 (PICADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 34**. Full results are contained in **Appendix C**.

Table 34 - Junction 5 – A290 Whitstable Road / University Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base						
B - University Road (left)	1.4	17.82	0.59	12.7	113.48	1
B – University Road (right)	0.7	34.04	0.42	7.3	157.36	0.96
C- – Whitstable Road South	3.3	20.18	0.73	0.2	7.95	0.2
2045 + CD						
B - University Road (left)	1.2	15.06	0.54	3.8	36.04	0.81
B – University Road (right)	0.3	26.67	0.22	1.1	44.43	0.55
C- – Whitstable Road South	1.8	14.68	0.61	0.2	7.95	0.19
2045 + ST						
B - University Road (left)	1.2	14.73	0.55	2.9	28.77	0.76
B – University Road (right)	0.4	24.72	0.27	0.9	32.23	0.48
C- – Whitstable Road South	1.8	14.48	0.61	0.2	7.73	0.18

6.8.28. The results presented in **Table 34** show that in the 2045 Base scenario Stream B-C University Road (Left) is operating at capacity (RFC of 1) in the PM Peak. Stream B-A University Road (Right) is approaching capacity (RFC of 1) in the PM peak.

6.8.29. With the addition of the Proposed Development in the Core Development Scenario and Sensitivity Test Scenario, the junction operates satisfactory in both the AM and PM peaks. The introduction of the Proposed Development sees traffic routing away from this junction and therefore performance improves significantly through its introduction.

Junction 6 – A290 Whitstable Road / London Road

6.8.30. The A290 Whitstable Road / London Road mini roundabout junction has been assessed using Junctions 10 (ARCADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 35.** Full results are contained in **Appendix C.**

Table 35 - Junction 6 – A290 Whitstable Road / University Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base						
A – A290 North	27.6	108.41	1.03	38.3	143.66	1.06
B – A290 South	1.3	11.22	0.57	2.4	17.06	0.71
C – London Road	36.2	170	1.08	9.1	56.93	0.93
2045 + CD						
A – A290 North	122.2	505.2	1.24	84.7	343.1	1.17
B – A290 South	1.8	15.44	0.65	4	26.95	0.81
C – London Road	56.9	261.55	1.14	79.9	411.68	1.22
2045 + ST						
A – A290 North	33	124.99	1.04	41.8	154.43	1.07
B – A290 South	1.3	11.24	0.57	2.7	18.28	0.73
C – London Road	37.1	174.14	1.08	10.1	62.99	0.94

6.8.31. The results presented in **Table 35** show that in the 2045 Base Scenario, Arm A A290 North and Arm C London Road is forecast to operate at/above capacity (RFC of 1) in the AM peak. Arm A A290 North also operates at/above capacity (RFC of 1) in the PM Peak

6.8.32. With the addition of the Proposed Development in the Core Development Scenario, the A290 North and London Road both operate further above capacity (RFC of 1) in the AM and PM Peak showing an impact associated with the development.

6.8.33. However, following the inclusion of the wider local plan mitigation, the Sensitivity Test Scenario shows performance similar to the 2045 Base.

6.8.34. This junction is considered for potential mitigation which is discussed further in **Section 7**.

Junction 7 – St Stephens Hill / Beaconsfield Road

6.8.35. The St Stephens Hill / Beaconsfield Road mini roundabout junction has been assessed using Junctions 10 (ARCADY). Stephenson's Road at this junction is exit only. The mini-roundabout module of ARCADY is not able to include an exit only arm. Therefore, the mini-roundabout has been modelled as three arms instead of four with the traffic flow for Stephen's Road added to the adjacent corresponding movement. The capacity assessment results for the AM and PM peaks are summarised in **Table 36.** Full results are contained in **Appendix C.**

Table 36 - Junction 7 – St Stephens Hill / Beaconsfield Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base						
A – St Stephens Hill North	4.1	18.6	0.81	1.2	7.79	0.55
B – St Stephens Hill South	1.7	13.58	0.64	1.8	11.5	0.65
C – Beaconsfield Road	2.1	18.41	0.68	3.4	27.35	0.78
2045 + CD						
A – St Stephens Hill North	7.2	30.47	0.89	1.5	8.68	0.6
B – St Stephens Hill South	2	14.87	0.67	2.8	15.81	0.74
C – Beaconsfield Road	2.2	19.77	0.7	5.8	47.18	0.88
2045 +ST						
A – St Stephens Hill North	6.3	26.93	0.88	1.5	8.68	0.6
B – St Stephens Hill South	2	14.88	0.67	2.8	15.81	0.74
C – Beaconsfield Road	2.2	19.6	0.7	5.8	47.18	0.88

6.8.36. The results presented in **Table 36** show that in all scenarios the junction operates within capacity (RFC of 1), with only small increases in queuing and delay as a result of the Proposed Development.

Junction 8 ‑ Giles Lane / University Road

6.8.37. The Giles Lane / University Road priority junction has been assessed using Junctions 10 (ARCADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 37.** Full results are contained in **Appendix C.**

Table 37 - Junction 8 – Giles Lane / University Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base						
B-C University Road (right)	1.3	12.64	0.56	0.4	6.69	0.26
B-A University Road (left)	0.1	15.04	0.13	0	10.57	0.01
C-AB – Giles Lane East	4.7	29.13	0.81	6.1	33.5	0.85
2045 + CD						
B-C University Road (right)	0.4	6.58	0.28	0.3	6.11	0.23
B-A University Road (left)	0.0	9.27	0.05	0.0	8.69	0.02
C-AB – Giles Lane East	2.7	18.49	0.71	1.9	17.17	0.66
2045 +ST						
B-C University Road (right)	0.4	6.60	0.28	0.3	5.95	0.21
B-A University Road (left)	0.0	9.00	0.04	0.0	0.0	0.0
C-AB – Giles Lane East	2.2	17.55	0.68	1.4	14.56	0.59

6.8.38. The results presented in **Table 37** show that in all scenarios the junction operates within capacity (RFC of 1). The introduction of the Proposed Development sees traffic routing away from this junction and therefore capacity improves significantly.

Junction 9 ‑ Giles Lane / Park Wood Road

6.8.39. The Giles Lane / Park Wood Road mini roundabout junction has been assessed using Junctions 10 (ARCADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 38.** Full results are contained in **Appendix C.**

Table 38 - Junction 9 – Giles Lane / Park Wood Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base						
A – Park Wood Road	26.8	134.40	1.04	1	9.58	0.50
B – Giles Lane (East)	0.4	7.06	0.29	0.7	7.73	0.42
C – Giles Lane (West)	3.0	16.57	0.76	1.5	10.75	0.60
2045 + CD						
A – Park Wood Road	89.4	463.86	1.23	1.9	15.44	0.67
B – Giles Lane (East)	1.6	10.88	0.62	3.9	20.61	0.80
C – Giles Lane (West)	0.4	6.05	0.28	0.5	7.41	0.33
2045 +ST						
A – Park Wood Road	32.5	154.76	1.06	1.3	12.15	0.58
B – Giles Lane (East)	1.8	11.48	0.64	2.5	14.34	0.72
C – Giles Lane (West)	0.4	6.30	0.30	0.4	6.91	0.30

6.8.40. The results presented in **Table 38** show that in the 2045 Base scenario, Arm A – Park Wood Road operates above capacity (RFC of 1) in the AM peak.

6.8.41. Arm A – Park Wood Road in the AM peak in the 2045+CD scenario operates at/above capacity (RFC of 1). Maximum queueing and delay are 89 vehicles and 464 seconds respectively.

6.8.42. In the 2045 + ST scenario Arm A – Park Wood Road operates above capacity (RFC of 1) in the AM peak. Maximum queueing and delay are 33 vehicles and 155 seconds respectively. A mitigation solution has been considered for this junction and is discussed in **Section 7** of this report.

Junction 10 - St Stephens Hill / Giles Lane

6.8.43. The St Stephens Hill / Giles Lane mini roundabout junction has been assessed using Junctions 10 (ARCADY). The capacity assessment results for the AM and PM peaks are provided in **Table 39.** Full results are contained in **Appendix C.**

Table 39 - Junction 10 – St Stephens Hill / Giles Lane

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base						
A – St Stephens Hill North	245.6	926.31	1.41	1	8.66	0.49
B – Giles Lane (Private Road)	0	19.73	0.03	0	0	0
C – St Stephens Hill South	22.4	114.94	1.02	33.7	130.97	1.05
D – Giles Lane	0.6	6.68	0.38	4.2	28.1	0.82
2045 + CD						
A – St Stephens Hill North	118.5	507.8	1.26	1.4	10.86	0.58
B – Giles Lane (Private Road)	0	25.86	0.05	0	10.81	0.02
C – St Stephens Hill South	15.2	78.37	0.98	101.7	437.7	1.22
D – Giles Lane	1.8	11.66	0.65	6.6	38.08	0.89
2045 + ST						
A – St Stephens Hill North	124.4	526.28	1.27	1.1	9.6	0.53
B – Giles Lane (Private Road)	0.1	24.39	0.06	0	9.84	0.02
C – St Stephens Hill South	15.9	82.86	0.98	57.2	213.44	1.11
D – Giles Lane	1.5	10.2	0.6	5.3	31.48	0.85

6.8.44. The results presented in **Table 39** show that in the 2045 Base scenario in the AM Peak Arm A – St Stephens Hill North and Arm C – St Stephens Hill South exceed capacity (RFC of 1). In the PM Peak St Stephens Hill South arm exceeds capacity (RFC of 1)

6.8.45. The junction continues to operate at/above capacity (RFC of 1) in the 2045 CD and ST scenarios, however the junction works better in the AM peak hour following the inclusion of the Proposed Development. Given this junction is experiencing significant delay and on some arms is made worse by the Proposed Development a mitigation solution has been considered for this junction and is discussed in **Section 7**.

Junction 11 ‐ Calais Hill / Canterbury Hill

6.8.46. The Calais Hill / Canterbury Hill priority junction has been assessed using Junctions 10 (PICADY). The capacity assessment results for the AM and PM peaks are summarised in **Table 40.** Full results are contained in **Appendix C.**

Table 40 - Junction 11 – Calais Hill / Canterbury Hill

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base						
B-C – Calais Hill (left)	0	6.9	0.01	0	0	0
B-A – Calais Hill (right)	0.5	22.9	0.35	0.1	16.07	0.08
C - Wood Hill	0	0	0	0	0	0
2045 + CD						
B-C – Calais Hill (left)	0	0	0	0	0	0
B-A – Calais Hill (right)	0.1	16.3	0.09	0.3	0.0	0.0
C - Wood Hill	0	3.35	0.01	0	0	0
2045 + ST						
B-C – Calais Hill (left)	0	0	0	0	0	0
B-A – Calais Hill (right)	0	15.4	0.03	0.0	0.0	0.0
C - Wood Hill	0	3.25	0.01	0	0	0

6.8.47. The results presented in **Table 40** show that in all scenarios the junction operates within capacity (RFC less than 0.85) in all scenarios. The introduction of the Proposed Development sees traffic routing away from this junction in the AM peak and therefore capacity improves significantly through its introduction. In the PM peak the introduction of the Proposed Development has a negligible impact on the capacity of the junction.

Junction 12 ‑ Kingsmead Road / Broad Oak Road

6.8.49. The Kingsmead Road / Broad Oak Road roundabout junction has been assessed using Junctions 10 (ARCADY). The capacity assessment results for the AM and PM peaks are provided in **Table 41.** Full results are contained in **Appendix C.**

Table 41 - Junction 12 – Kingsmead Road / Broad Oak Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base						
A – St Stephens Hill North	5.5	32.38	0.86	7.3	45.48	0.9
B – Broad Oak Road	22.8	103.56	1.02	6.8	38.26	0.89
C – Kingsmead Road	4	19.19	0.81	9.2	34.21	0.92
D – St Stephens Hill South	2.2	9.4	0.69	3.7	15.15	0.79
2045 + CD						
A – St Stephens Hill North	15.8	78.33	0.98	13	72.91	0.97
B – Broad Oak Road	33.5	143.27	1.06	11.7	61.32	0.95
C – Kingsmead Road	4.3	20.48	0.82	18	61.87	0.98
D – St Stephens Hill South	2.2	9.7	0.7	4.6	19.22	0.83
2045 + ST						
A – St Stephens Hill North	8.9	48.74	0.92	9.8	57.86	0.94
B – Broad Oak Road	26.6	116.54	1.03	11.1	57.93	0.95
C – Kingsmead Road	4.1	19.79	0.81	11.2	41.72	0.94
D – St Stephens Hill South	2.2	9.56	0.69	4.1	17.1	0.81

6.8.50. The results presented in **Table 41** show the junction operates at/above capacity (RFC of 1) in the 2045 Base scenario in the AM Peak, and that there is a small increase in queueing and delay as a result of the Proposed Development in the Core and Sensitivity Test Scenarios. However, the increases in queues and delay are considered to be negligible. In the sensitivity test scenario, the results are similar to the baseline in the 2045 Base

6.8.51. Whilst it not considered necessary for this Site, mitigation is considered for this junction and is discussed in **Section 7**.

Junction 13 ‐ Broad Oak Road / Vauxhall Road

6.8.52. The Broad Oak Road / Vauxhall Road mini roundabout junction has been assessed using Junctions 10 (PICADY). The capacity assessment results for the AM and PM peaks are provided in **Table 42.** Full results are contained in **Appendix C.**

Table 42 - Junction 13 – Broad Oak Road / Vauxhall Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base						
A – Broad Oak Road West	2	9.92	0.67	6.1	24.78	0.87
B – Broad Oak Road East	64.4	264.19	1.16	0.5	7.19	0.32
C – Vauxhall Road	3.9	36.9	0.81	6.1	38.6	0.88
2045 + CD						
A – Broad Oak Road West	2.2	10.49	0.69	6.6	26.56	0.88
B – Broad Oak Road East	68.9	283.66	1.18	0.5	7.36	0.33
C – Vauxhall Road	6.2	53.95	0.89	7.5	46.16	0.9
2045 + ST						
A – Broad Oak Road West	0.7	5.54	0.41	7.2	28.73	0.89
B – Broad Oak Road East	9.2	43.38	0.92	0.5	7.49	0.34
C – Vauxhall Road	13.6	111.34	0.99	10	59.17	0.94

6.8.53. The results presented in **Table 42** show that in the 2045 Base scenario in the AM Peak Arm B – Broad Oak Road East operates at/above capacity (RFC of 1). In the PM peak Arm A – Broad Oak Road West and Arm C – Vauxhall Road are approaching capacity (RFC of 1)

6.8.54. The junction operates at/above capacity (RFC of 1) in the 2045 + CD and queueing and delay increase as a result of the Proposed Development. However, the relative impact of the proposed development in the Core Scenario is considered to be negligible. In the Sensitivity Test scenario, the junction performs within capacity (RFC of 1).

6.8.55. Therefore mitigation has not been considered for this junction.

7 Mitigation

7.1 Introduction

7.1.1. This section discusses potential highway mitigation that could be delivered to reduce any impacts associated with the Proposed Development. At this stage the mitigation measures are not fixed proposals but provide a concept for the type of mitigation that could be delivered. In due course, further modelling would be required as part of any planning application and the requirement for mitigation revisited.

7.1.2. The Paramics Discovery model is based on the existing junction layouts, and none of the mitigation options have been tested within the Paramics model.

7.2 Junction Mitigation

Junction 2 – A290 Whitstable Road / Rough Common Road

7.2.1. The junction capacity assessment results outlined in **Section 6** indicated that Junction 2 would operate at/ above capacity (RFC of 1) in the future year of 2045 with queueing and delay increased by the Proposed Development.

7.2.2. A mitigation scheme has been developed to provide widened entries on both Rough Common Road and A290 Whitstable Road.

7.2.3. 70080896-XX-XX-TP-016A in **Appendix D** illustrates the mitigation scheme for Junction 2. **Table 43** provides a summary of the modelling results both pre and post mitigation with full results contained in **Appendix C.**

Table 43 - Junction 2 – A290 Whitstable Road / Rough Common Mitigation Scheme Results

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base (Pre-mitigation)						
A – A290 North	2.6	15.89	0.73	0.9	6.92	0.48
B – A290 South	2.2	15.48	0.69	13	64.72	0.96
C – Rough Common Road	79.3	390.08	1.2	41.7	205.42	1.11
2045 + CD (Post-mitigation)						
A – A290 North	2.5	15.26	0.72	1.1	7.23	0.52
B – A290 South	1.8	12.41	0.65	4	20.51	0.81
C – Rough Common Road	6.4	27.57	0.88	13.1	55.48	0.96
2045 + ST (Post-mitigation)						
A – A290 North	2.7	16.16	0.74	1.3	8.16	0.58
B – A290 South	4	23.05	0.81	4.5	23.32	0.83
C – Rough Common Road	9.0	37.45	0.92	58.2	182.71	1.10

7.2.4. **Table 43** illustrates that the mitigation measures address the majority of the capacity issues identified in **Section 6**. With the addition of the Proposed Development in the Core Development Scenario the junction operates within capacity (RFC of 1).

7.2.5. The Sensitivity Test scenario with the implementation of mitigation operates with a similar level of performance to the 2045 Base pre-mitigation with only Arm C – Rough Common Road operating beyond capacity (RFC of 1), however overall performance is improved when compared to the 2045 Base.

7.2.6. Therefore, the impact of the Proposed Development is considered to be effectively mitigated in both scenarios tested.

Junction 6 ‑ A290 Whitstable Road / London Road

7.2.7. The results presented in **Section 6** indicate that the existing junction is already expected to operate over capacity in the future base without the Proposed Development. The inclusion of the Proposed Development further increases the queuing and delay at this junction. A review of the junction layout identified limited opportunities for improvement within the highway boundary. As such, a review of Junction 6 is ongoing, however further testing of this junction and wider highway network within the strategic model is likely to identify that there will be opportunities for re-routing which may reduce the impacts in this location. The assignment of traffic in this location is fixed within the assessment undertaken. However, further testing using the strategic model is likely to demonstrate re-routing of traffic as a result of this congestion.

7.2.8. Given this junction is expected to be over capacity in the baseline, it is evident that this is a location that should be addressed as part of the local plan and wider transport strategy for the area. The constraint in this location is not considered to be insurmountable and that a strategic solution can be found and agreed with KCC through the use of the strategic model, with the Proposed Development assisting in any delivery as required.

Junction 9 – Giles Lane / Park Wood Road Mitigation

7.2.9. The results presented in Section 6 in and below in **Table 45** indicate that the existing junction is already expected to operate over capacity in the future base without the Proposed Development.

7.2.10. The inclusion of the Proposed Development further increases the queuing and delay at this location.

7.2.11. 70080896-XX-XX-TP-026 in **Appendix D** illustrates a mitigation scheme for Junction 9. **Table 45** provides a summary of the modelling results both pre and post mitigation with full results contained in **Appendix C.**

Table 45 - Junction 9 – Giles Lane / Park Wood Road

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base (Pre-mitigation)						
A – Park Wood Road	26.8	134.40	1.04	1.0	9.58	0.50
B – Giles Lane (East)	0.4	7.06	0.39	0.7	7.73	0.42
C – Giles Lane (West)	3.0	16.57	0.76	1.5	10.75	0.60
2045 + CD (Post mitigation)						
A – Park Wood Road	23.2	100.91	1.01	1.2	9.46	0.55
B – Giles Lane (East)	1.7	11.48	0.63	3.9	20.62	0.80
C – Giles Lane (West)	0.4	6.05	0.28	0.5	7.41	0.33
2045 + ST (Post mitigation)						
A – Park Wood Road	6.1	32.19	0.87	0.9	8.11	0.47
B – Giles Lane (East)	1.8	11.67	0.65	2.5	14.34	0.72
C – Giles Lane (West)	0.4	6.30	0.30	0.4	6.91	0.30

7.2.12. The results for the 2045 + CD show that the level of queuing and delay on Arm A (Park Wood Road) are reduced as a result of the proposed mitigation when compared to the 2045 Base. Whilst the performance on other arms deteriorates, they all operate within capacity (RFC of 1).

7.2.13. In the ST scenario the junction operates within capacity on all arms (RFC of 1). It is therefore considered that with the mitigation in place the impacts of the Proposed Development are reduced to show no impact.

Junction 10 ‑ St Stephens Hill / Giles Lane Mitigation

7.2.14. The junction capacity assessment results outlined in **Section 6** indicated that Junction 10 would operate at capacity in the future year of 2045 although it is expected to work better with the Proposed Development.

7.2.15. Whilst not strictly necessary in planning terms, to provide a suitable transport corridor from the Proposed Development and ensure that traffic travelling to and from the City Centre is not delayed (which may in turn attract more traffic to use Tyler Hill Road) a mitigation scheme is proposed.

7.2.16. 70080896-XX-XX-TP-017A in **Appendix D** illustrates the mitigation scheme for Junction 10. **Table 46** provides a summary of the modelling results both pre and post mitigation with full results contained in **Appendix C.**

Table 46 - Junction 10 – St Stephens Hill / Giles Lane Mitigation Scheme Results

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base (Pre-mitigation)						
A – St Stephens Hill North	245.6	926.31	1.41	1	8.66	0.49
B – Giles Lane (Private Road)	0	19.73	0.03	0	0	0
C – St Stephens Hill South	22.4	114.94	1.02	33.7	130.97	1.05
D – Giles Lane	0.6	6.68	0.38	4.2	28.1	0.82
2045 + CD (Post-mitigation)						
A – St Stephens Hill North	11	41.8	0.94	0.7	5.9	0.43
B – Giles Lane (Private Road)	0	0	0	0	23.12	0.04
C – St Stephens Hill South	4.2	21.92	0.82	20.8	76.55	0.99
D – Giles Lane	1.8	11.86	0.65	11.5	65.14	0.95
2045 + ST (Post-mitigation)						
A – St Stephens Hill North	13.9	49.31	0.96	0.6	5.33	0.37
B – Giles Lane (Private Road)	0	0	0	0	18.31	0.03
C – St Stephens Hill South	4.5	23.56	0.83	9.0	36.69	0.92
D – Giles Lane	0.8	7.68	0.46	4.6	30.97	0.84

7.2.17. The results of the mitigation modelling indicate that the junction performance can be improved overall through the implementation of the mitigation measures.

Junction 12 - Kingsmead Road / Broad Oak Road

7.2.18. The junction capacity assessment results outlined in **Section 6** indicated that Junction 12 would operate at/ above capacity (RFC of 1) in the future year of 2045 with queueing and delay increased by the Proposed Development, although the Proposed Development would only have a negligible impact on the junction.

7.2.19. A mitigation scheme has been developed to provide widened entries on both St Stephen's Road, Kingsmead Road and Broad Oak Road.

7.2.20. 70080896-XX-XX-TP-018A in **Appendix D** illustrates the mitigation scheme for Junction 10. **Table 47** provides a summary of the modelling results both pre and post mitigation with full results contained in **Appendix C.**

Table 47 - Junction 12 – Kingsmead Road / Broad Oak Road Mitigation Scheme Results

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2045 Base (Pre-mitigation)						
A – St Stephens Hill North	5.5	32.38	0.86	7.3	45.48	0.9
B – Broad Oak Road	22.8	103.56	1.02	6.8	38.26	0.89
C – Kingsmead Road	4	19.19	0.81	9.2	34.21	0.92
D – St Stephens Hill South	2.2	9.4	0.69	3.7	15.15	0.79
2045 + CD (Post-mitigation)						
A – St Stephens Hill North	16.2	79.98	0.98	12.7	71.02	0.97
B – Broad Oak Road	8.3	40.78	0.91	4.3	22.16	0.82
C – Kingsmead Road	1.6	7.49	0.62	2.9	9.84	0.75
D – St Stephens Hill South	3.5	15.21	0.78	12.1	51.25	0.95
2045 + ST (Post-mitigation)						
A – St Stephens Hill North	9	49.72	0.92	9.6	56.85	0.94
B – Broad Oak Road	7	34.23	0.89	4.2	21.49	0.82
C – Kingsmead Road	1.6	7.31	0.61	2.5	8.76	0.72
D – St Stephens Hill South	3.4	14.84	0.78	9.3	39.78	0.92

7.2.21. The results of the mitigation modelling indicate that the junction is expected to operate below capacity (RFC of 1). The mitigation is therefore considered to be appropriate.

7.3 Corridor Mitigation

7.3.1. At the request of KCC a study has been undertaken that considers the potential measures necessary to safeguard the free flow of traffic on Rough Common Road. This study is presented in **Appendix E** and demonstrates that through the implementation of a series of parking control measures coupled with additional parking bay capacity the on-street parking that currently occurs can be better managed and alleviate some of the issues identified. If the Proposed Development is included as an allocation site, it is suggested that this mitigation is included within the emerging Canterbury Transport Strategy.

8 Phasing of Access Proposals

8.1.1. The inclusion of an illustrative secondary access option into the Proposed Development via the Blean Primary school, if taken forward, may require consideration of phasing as a new school would need to be in place and operational before the new access is constructed and open to residents.

8.1.2. The Proposed Development is intended to be accessed at the outset via the new primary access onto Whitstable Road (located in the far south of the University Campus) as a single point of access until a time where the secondary Blean Primary school access can be delivered. It is not anticipated that a connection onto Tyler Hill Road will be provided until post 1,200 homes is delivered on site.

8.1.3. KCC[10] sets out the number of dwellings that can generally be served by a single point of access, which is between 50-300 dwellings, however it is understood that a number of developments throughout Kent have delivered in excess of this.

8.1.4. In regard to the primary access, whilst policy identifies 300 dwellings, in the knowledge that a secondary access will be delivered in due course via the illustrative secondary access option (or alternative location), it is anticipated that through further consultation and as the scheme masterplan develops, the final quantum can be agreed with KCC.

8.1.5. To support the potential quantum that could be delivered via a single point of access, WSP have undertaken a sensitivity test of the proposed primary access assuming this is the sole access point. This has utilised the 2018 baseline traffic flows. This has shown that circa 1000 homes could be delivered before an additional access is required. Whilst the below test has not taken account of wider growth within the area, the assessment demonstrates that the access has significant spare capacity that it is not considered to be a constraint on the delivery of this level of development. The results are shown in **Table 48** below with the model outputs contained in **Appendix C.**

[10] Kent County Council – Kent Design Guide

Table 48 – Primary Access Results – Single Point of Access (1000 dwellings)

Arm Description	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
			2018 + Dev (Pre-mitigation)			
B-C Site Access (Left)	1.3	21.66	0.57	0.4	9.93	0.27
B-AD Site Access (Ahead Right)	1.2	41.18	0.55	0.6	31.63	0.37
A-BCD Whitstable Road North	0	6.99	0.02	0	7.91	0.01
D-ABC Highfield Close	0.1	11.85	0.06	0	11.98	0.04
C-ABD Whitstable Road South	0.2	10.49	0.19	1	13.11	0.47

8.1.6. Whist it is not envisaged that the primary access junction will provide access for 1000 residential units prior to the Blean Primary School access coming forward, it shows that a significant proportion can be delivered off the primary access and that from a phasing perspective the access in the far south of the University Campus could deliver at least 300 homes plus the re-aligned Blean Primary School prior to the secondary access on Whitstable Road opening to traffic.

9 Summary, Conclusion and Next Steps

9.1 Summary and Conclusion

9.1.1. 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.

9.1.2. This Preliminary Transport Appraisal (PTA) has been prepared to supplement the information presented in the Transport Strategy and has been developed in accordance with a scope agreed with Kent County Council (KCC) as highway authority.

9.1.3. The Proposed Development site benefits from access by a range of modes of transport and provisional strategies have been developed to ensure that access by sustainable modes is prioritised.

9.1.4. The trip generation for the Proposed Development has been developed using person trip rates and split down by land use and journey purpose allowing for consideration of internalisation.

9.1.5. A highway network assessment has been developed based around a two-stage approach with manual spreadsheet-based assessment for wider trip assignment and a micro-simulation model for localised distribution. The impact of the Proposed Development on the highway network has then been tested at 13 locations surrounding the site that were agreed with KCC.

9.1.6. The highway network assessment identified a number of locations where the existing highway network is anticipated to operate at/above capacity in the future year of 2045 and the Proposed Development was likely to increase queueing and delay.

9.1.7. Mitigation measures were developed at four locations which effectively reduced the impacts of the Proposed Development and improved the performance of the highway network when compared to the 2045 Base year scenario. Junction 12 showed only small impacts as a result of the Proposed Development, however mitigation has been provided to improve the overall performance of the junction.

9.1.8. At Junction 6 – Whitstable Road/London Road a review of the junction layouts identified limited opportunities for improvements within the highway boundary. As such, whilst no cost-effective solution within the highway boundary has been identified for this location at this time, it is expected that driver journey choices may be impacted as this junction starts to operate close to capacity, with opportunities for re-routing which may reduce the impacts in this location. Given this junction is expected to be over capacity in the baseline, it is evident that this is a location that will need to be addressed as part of the local plan.

9.1.9. Notwithstanding the above, following the introduction of the emerging Canterbury Strategy (as part of the Local Plan), the junction is expected to operate similar to the 2045 Base performance. Therefore, the impact of the Proposed Development can be seen as having nil detriment at this junction with the inclusion of the Proposed Local Plan Mitigation.

9.1.10. This note has also set out how a significant proportion of the development (in excess of 300 units) can be accessed via the primary access operating as a single access arrangement prior to the delivery of a secondary point of access onto A290 Whitstable Road for which an illustrated access via the Blean Primary school has been considered.

9.1.11. It was therefore concluded that the Proposed Development can be accommodated on the highway network and from a transport perspective following development and consideration of the proposals using the micro-simulation model and a number of mitigation measures together with sustainable travel planning measures, there are no reasons why the site should not be allocated within the forthcoming Local Plan.

9.2 Next steps

9.2.1. It is recommended that moving forwards as the development proposals are refined that further testing within the strategic model (in combination with the micro-simulation model) is undertaken to better account for the potential re-routing of existing traffic on the wider highway network as a result of the access strategy and further consideration is given to the proposed mitigation options, together with impacts at Junction 6.

Appendix A

TRICS Data

Filtering Summary

Land Use	03/A	RESIDENTIAL/HOUSES PRIVATELY OWNED
Selected Trip Rate Calculation Parameter Range	250-2500 DWELLS	
Actual Trip Rate Calculation Parameter Range	266-918 DWELLS	
Date Range	Minimum: 01/01/11	Maximum: 23/09/21
Parking Spaces Range	All Surveys Included	
Parking Spaces Per Dwelling Range:	Selected: 1 to 3	Actual: 0.23 to 8.75
Bedrooms Per Dwelling Range:	All Surveys Included	
Percentage of dwellings privately owned:	All Surveys Included	
Days of the week selected	Monday	1
	Tuesday	1
	Wednesday	2
	Thursday	1
Main Location Types selected	Suburban Area (PPS6 Out of Centre)	1
	Edge of Town	4
Population within 500m	All Surveys Included	
Population <1 Mile ranges selected	5,001 to 10,000	2
	10,001 to 15,000	2
	20,001 to 25,000	1
Population <5 Mile ranges selected	5,001 to 25,000	1
	25,001 to 50,000	1
	50,001 to 75,000	2
	75,001 to 100,000	1
Car Ownership <5 Mile ranges selected	0.6 to 1.0	1
	1.1 to 1.5	4
PTAL Rating	No PTAL Present	5

Calculation Reference: AUDIT-100321-211222-1258

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	KC	KENT	1 days
	WS	WEST SUSSEX	1 days
04	EAST ANGLIA		
	NF	NORFOLK	2 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NE	NORTH EAST LINCOLNSHIRE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
Actual Range: 266 to 918 (units:)
Range Selected by User: 250 to 2500 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: Selected: 1 to 3 Actual: 0.23 to 8.75

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/11 to 23/09/21

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Tuesday	1 days
Wednesday	2 days
Thursday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	5 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	1
Edge of Town	4

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	3
Out of Town	1
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3	5 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Population within 1 mile:

5,001 to 10,000	2 days
10,001 to 15,000	2 days
20,001 to 25,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	1 days
25,001 to 50,000	1 days
50,001 to 75,000	2 days
75,001 to 100,000	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	1 days
1.1 to 1.5	4 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	3 days
No	2 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	5 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

Site(1):	KC-03-A-06	Site area:	8.00 hect
Development Name:	MIXED HOUSES & FLATS	No of Dwellings:	363
Location:	HERNE BAY	Housing density:	73
Postcode:	CT6 6DF	Total Bedrooms:	1007
Main Location Type:	Suburban Area (PPS6 Out of Centre)	Survey Date:	27/09/17
Sub-Location Type:	Residential Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	789
Site(2):	NE-03-A-02	Site area:	12.00 hect
Development Name:	SEMI DETACHED & DETACHED	No of Dwellings:	432
Location:	SCUNTHORPE	Housing density:	133
Postcode:	DN15 8GS	Total Bedrooms:	1174
Main Location Type:	Edge of Town	Survey Date:	12/05/14
Sub-Location Type:	No Sub Category	Survey Day:	Monday
PTAL:	n/a	Parking Spaces:	432
Site(3):	NF-03-A-23	Site area:	26.43 hect
Development Name:	MIXED HOUSES & FLATS	No of Dwellings:	514
Location:	WYMONDHAM	Housing density:	27
Postcode:	NR18 9FP	Total Bedrooms:	1606
Main Location Type:	Edge of Town	Survey Date:	22/09/21
Sub-Location Type:	Out of Town	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	1274
Site(4):	NF-03-A-30	Site area:	11.77 hect
Development Name:	MIXED HOUSES	No of Dwellings:	266
Location:	SWAFFHAM	Housing density:	27
Postcode:	PE37 8JE	Total Bedrooms:	709
Main Location Type:	Edge of Town	Survey Date:	23/09/21
Sub-Location Type:	Residential Zone	Survey Day:	Thursday
PTAL:	n/a	Parking Spaces:	795
Site(5):	WS-03-A-11	Site area:	50.00 hect
Development Name:	MIXED HOUSES	No of Dwellings:	918
Location:	WEST HORSHAM	Housing density:	50
Postcode:	RH12 3LN	Total Bedrooms:	2865
Main Location Type:	Edge of Town	Survey Date:	02/04/19
Sub-Location Type:	Residential Zone	Survey Day:	Tuesday
PTAL:	n/a	Parking Spaces:	1894

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 1.62

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.068	5	499	0.298	5	499	0.366
08:00 - 09:00	5	499	0.125	5	**499**	**0.387**	5	499	0.512
09:00 - 10:00	5	499	0.134	5	499	0.145	5	499	0.279
10:00 - 11:00	5	499	0.106	5	499	0.135	5	499	0.241
11:00 - 12:00	5	499	0.119	5	499	0.133	5	499	0.252
12:00 - 13:00	5	499	0.136	5	499	0.126	5	499	0.262
13:00 - 14:00	5	499	0.141	5	499	0.139	5	499	0.280
14:00 - 15:00	5	499	0.143	5	499	0.177	5	499	0.320
15:00 - 16:00	5	499	0.256	5	499	0.172	5	499	0.428
16:00 - 17:00	5	499	0.294	5	499	0.167	5	499	0.461
17:00 - 18:00	5	**499**	**0.363**	5	499	0.172	5	**499**	**0.535**
18:00 - 19:00	5	499	0.313	5	499	0.185	5	499	0.498
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.198			2.236			4.434

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	266 - 918 (units:)
Survey date date range:	01/01/11 - 23/09/21
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	2
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TAXIS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.002	5	499	0.002	5	499	0.004
08:00 - 09:00	5	**499**	**0.004**	5	**499**	**0.004**	5	**499**	**0.008**
09:00 - 10:00	5	499	0.003	5	499	0.001	5	499	0.004
10:00 - 11:00	5	499	0.000	5	499	0.001	5	499	0.001
11:00 - 12:00	5	499	0.001	5	499	0.001	5	499	0.002
12:00 - 13:00	5	499	0.000	5	499	0.000	5	499	0.000
13:00 - 14:00	5	499	0.000	5	499	0.000	5	499	0.000
14:00 - 15:00	5	499	0.002	5	499	0.002	5	499	0.004
15:00 - 16:00	5	499	0.004	5	499	0.002	5	499	0.006
16:00 - 17:00	5	499	0.002	5	499	0.002	5	499	0.004
17:00 - 18:00	5	499	0.000	5	499	0.000	5	499	0.000
18:00 - 19:00	5	499	0.001	5	499	0.001	5	499	0.002
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.019			0.016			0.035

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL OGVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.000	5	499	0.000	5	499	0.000
08:00 - 09:00	5	499	0.000	5	499	0.001	5	499	0.001
09:00 - 10:00	5	499	0.001	5	499	0.001	5	499	0.002
10:00 - 11:00	**5**	**499**	**0.002**	**5**	**499**	**0.003**	**5**	**499**	**0.005**
11:00 - 12:00	5	499	0.002	5	499	0.002	5	499	0.004
12:00 - 13:00	5	499	0.001	5	499	0.002	5	499	0.003
13:00 - 14:00	5	499	0.000	5	499	0.000	5	499	0.000
14:00 - 15:00	5	499	0.001	5	499	0.000	5	499	0.001
15:00 - 16:00	5	499	0.001	5	499	0.000	5	499	0.001
16:00 - 17:00	5	499	0.002	5	499	0.000	5	499	0.002
17:00 - 18:00	5	499	0.000	5	499	0.001	5	499	0.001
18:00 - 19:00	5	499	0.000	5	499	0.000	5	499	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.010			0.010			0.020

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PSVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.000	5	499	0.000	5	499	0.000
08:00 - 09:00	**5**	**499**	**0.001**	**5**	**499**	**0.001**	**5**	**499**	**0.002**
09:00 - 10:00	5	499	0.000	5	499	0.000	5	499	0.000
10:00 - 11:00	5	499	0.000	5	499	0.000	5	499	0.000
11:00 - 12:00	5	499	0.000	5	499	0.000	5	499	0.000
12:00 - 13:00	5	499	0.000	5	499	0.000	5	499	0.000
13:00 - 14:00	5	499	0.000	5	499	0.000	5	499	0.000
14:00 - 15:00	5	499	0.000	5	499	0.000	5	499	0.000
15:00 - 16:00	5	499	0.000	5	499	0.000	5	499	0.000
16:00 - 17:00	5	499	0.000	5	499	0.000	5	499	0.000
17:00 - 18:00	5	499	0.000	5	499	0.000	5	499	0.000
18:00 - 19:00	5	499	0.000	5	499	0.000	5	499	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.001			0.001			0.002

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL CYCLISTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.002	5	499	0.007	5	499	0.009
08:00 - 09:00	5	499	0.002	5	**499**	**0.014**	5	**499**	**0.016**
09:00 - 10:00	5	499	0.002	5	499	0.002	5	499	0.004
10:00 - 11:00	5	499	0.002	5	499	0.002	5	499	0.004
11:00 - 12:00	5	499	0.002	5	499	0.002	5	499	0.004
12:00 - 13:00	5	499	0.003	5	499	0.002	5	499	0.005
13:00 - 14:00	5	499	0.002	5	499	0.001	5	499	0.003
14:00 - 15:00	5	499	0.003	5	499	0.002	5	499	0.005
15:00 - 16:00	5	499	0.007	5	499	0.002	5	499	0.009
16:00 - 17:00	5	499	0.006	5	499	0.004	5	499	0.010
17:00 - 18:00	5	**499**	**0.010**	5	499	0.006	5	499	0.016
18:00 - 19:00	5	499	0.009	5	499	0.007	5	499	0.016
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.050			0.051			0.101

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.081	5	499	0.395	5	499	0.476
08:00 - 09:00	5	499	0.141	5	**499**	**0.621**	5	499	0.762
09:00 - 10:00	5	499	0.158	5	499	0.188	5	499	0.346
10:00 - 11:00	5	499	0.137	5	499	0.176	5	499	0.313
11:00 - 12:00	5	499	0.153	5	499	0.176	5	499	0.329
12:00 - 13:00	5	499	0.171	5	499	0.160	5	499	0.331
13:00 - 14:00	5	499	0.181	5	499	0.177	5	499	0.358
14:00 - 15:00	5	499	0.185	5	499	0.225	5	499	0.410
15:00 - 16:00	5	499	0.427	5	499	0.222	5	499	0.649
16:00 - 17:00	5	499	0.451	5	499	0.231	5	499	0.682
17:00 - 18:00	5	**499**	**0.521**	5	499	0.245	5	**499**	**0.766**
18:00 - 19:00	5	499	0.443	5	499	0.275	5	499	0.718
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.049			3.091			6.140

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PEDESTRIANS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.015	5	499	0.041	5	499	0.056
08:00 - 09:00	5	499	0.030	5	**499**	**0.111**	5	**499**	**0.141**
09:00 - 10:00	5	499	0.021	5	499	0.018	5	499	0.039
10:00 - 11:00	5	499	0.019	5	499	0.021	5	499	0.040
11:00 - 12:00	5	499	0.015	5	499	0.013	5	499	0.028
12:00 - 13:00	5	499	0.018	5	499	0.016	5	499	0.034
13:00 - 14:00	5	499	0.018	5	499	0.022	5	499	0.040
14:00 - 15:00	5	499	0.031	5	499	0.030	5	499	0.061
15:00 - 16:00	5	**499**	**0.101**	5	499	0.032	5	499	0.133
16:00 - 17:00	5	499	0.039	5	499	0.019	5	499	0.058
17:00 - 18:00	5	499	0.048	5	499	0.048	5	499	0.096
18:00 - 19:00	5	499	0.048	5	499	0.050	5	499	0.098
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.403			0.421			0.824

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL BUS/TRAM PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.002	5	**499**	**0.018**	5	**499**	**0.020**
08:00 - 09:00	5	499	0.000	5	499	0.004	5	499	0.004
09:00 - 10:00	5	499	0.001	5	499	0.006	5	499	0.007
10:00 - 11:00	5	499	0.001	5	499	0.002	5	499	0.003
11:00 - 12:00	5	499	0.002	5	499	0.004	5	499	0.006
12:00 - 13:00	5	499	0.002	5	499	0.002	5	499	0.004
13:00 - 14:00	5	499	0.002	5	499	0.001	5	499	0.003
14:00 - 15:00	5	499	0.003	5	499	0.003	5	499	0.006
15:00 - 16:00	5	**499**	**0.011**	5	499	0.002	5	499	0.013
16:00 - 17:00	5	499	0.010	5	499	0.001	5	499	0.011
17:00 - 18:00	5	499	0.006	5	499	0.001	5	499	0.007
18:00 - 19:00	5	499	0.006	5	499	0.000	5	499	0.006
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.046			0.044			0.090

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL RAIL PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.000	5	**499**	**0.004**	5	**499**	**0.004**
08:00 - 09:00	5	499	0.000	5	499	0.002	5	499	0.002
09:00 - 10:00	5	499	0.000	5	499	0.002	5	499	0.002
10:00 - 11:00	5	499	0.000	5	499	0.000	5	499	0.000
11:00 - 12:00	5	499	0.000	5	499	0.000	5	499	0.000
12:00 - 13:00	5	499	0.000	5	499	0.000	5	499	0.000
13:00 - 14:00	5	499	0.000	5	499	0.000	5	499	0.000
14:00 - 15:00	5	499	0.000	5	499	0.000	5	499	0.000
15:00 - 16:00	5	499	0.000	5	499	0.000	5	499	0.000
16:00 - 17:00	5	499	0.001	5	499	0.000	5	499	0.001
17:00 - 18:00	5	**499**	**0.004**	5	499	0.000	5	499	0.004
18:00 - 19:00	5	499	0.002	5	499	0.000	5	499	0.002
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.007			0.008			0.015

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL COACH PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.000	5	499	0.000	5	499	0.000
08:00 - 09:00	5	499	0.000	5	**499**	**0.001**	5	**499**	**0.001**
09:00 - 10:00	5	499	0.000	5	499	0.000	5	499	0.000
10:00 - 11:00	5	499	0.000	5	499	0.000	5	499	0.000
11:00 - 12:00	5	499	0.000	5	499	0.000	5	499	0.000
12:00 - 13:00	5	499	0.000	5	499	0.000	5	499	0.000
13:00 - 14:00	5	499	0.000	5	499	0.000	5	499	0.000
14:00 - 15:00	5	499	0.000	5	499	0.000	5	499	0.000
15:00 - 16:00	5	**499**	**0.000**	5	499	0.000	5	499	0.000
16:00 - 17:00	5	499	0.000	5	499	0.000	5	499	0.000
17:00 - 18:00	5	499	0.000	5	499	0.000	5	499	0.000
18:00 - 19:00	5	499	0.000	5	499	0.000	5	499	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.001			0.001

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PUBLIC TRANSPORT USERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.002	5	**499**	**0.021**	5	**499**	**0.023**
08:00 - 09:00	5	499	0.000	5	499	0.008	5	499	0.008
09:00 - 10:00	5	499	0.001	5	499	0.008	5	499	0.009
10:00 - 11:00	5	499	0.001	5	499	0.002	5	499	0.003
11:00 - 12:00	5	499	0.002	5	499	0.004	5	499	0.006
12:00 - 13:00	5	499	0.002	5	499	0.002	5	499	0.004
13:00 - 14:00	5	499	0.003	5	499	0.001	5	499	0.004
14:00 - 15:00	5	499	0.004	5	499	0.003	5	499	0.007
15:00 - 16:00	5	**499**	**0.012**	5	499	0.002	5	499	0.014
16:00 - 17:00	5	499	0.011	5	499	0.001	5	499	0.012
17:00 - 18:00	5	499	0.010	5	499	0.002	5	499	0.012
18:00 - 19:00	5	499	0.007	5	499	0.000	5	499	0.007
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.055			0.054			0.109

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 1.62

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.100	5	499	0.464	5	499	0.564
08:00 - 09:00	5	499	0.173	5	**499**	**0.754**	5	**499**	**0.927**
09:00 - 10:00	5	499	0.181	5	499	0.216	5	499	0.397
10:00 - 11:00	5	499	0.159	5	499	0.202	5	499	0.361
11:00 - 12:00	5	499	0.172	5	499	0.195	5	499	0.367
12:00 - 13:00	5	499	0.194	5	499	0.181	5	499	0.375
13:00 - 14:00	5	499	0.205	5	499	0.202	5	499	0.407
14:00 - 15:00	5	499	0.223	5	499	0.260	5	499	0.483
15:00 - 16:00	5	499	0.546	5	499	0.259	5	499	0.805
16:00 - 17:00	5	499	0.507	5	499	0.255	5	499	0.762
17:00 - 18:00	5	**499**	**0.590**	5	499	0.300	5	499	0.890
18:00 - 19:00	5	499	0.507	5	499	0.333	5	499	0.840
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.557			3.621			7.178

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL CARS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.058	5	499	0.265	5	499	0.323
08:00 - 09:00	5	499	0.106	5	**499**	**0.360**	5	499	0.466
09:00 - 10:00	5	499	0.115	5	499	0.130	5	499	0.245
10:00 - 11:00	5	499	0.087	5	499	0.112	5	499	0.199
11:00 - 12:00	5	499	0.098	5	499	0.111	5	499	0.209
12:00 - 13:00	5	499	0.121	5	499	0.112	5	499	0.233
13:00 - 14:00	5	499	0.126	5	499	0.119	5	499	0.245
14:00 - 15:00	5	499	0.125	5	499	0.160	5	499	0.285
15:00 - 16:00	5	499	0.232	5	499	0.154	5	499	0.386
16:00 - 17:00	5	499	0.263	5	499	0.150	5	499	0.413
17:00 - 18:00	5	**499**	**0.336**	5	499	0.157	5	**499**	**0.493**
18:00 - 19:00	5	499	0.289	5	499	0.168	5	499	0.457
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.956			1.998			3.954

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL LGVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.008	5	**499**	**0.030**	5	499	0.038
08:00 - 09:00	5	499	0.012	5	499	0.018	5	499	0.030
09:00 - 10:00	5	499	0.015	5	499	0.012	5	499	0.027
10:00 - 11:00	5	499	0.016	5	499	0.018	5	499	0.034
11:00 - 12:00	5	499	0.018	5	499	0.018	5	499	0.036
12:00 - 13:00	5	499	0.014	5	499	0.012	5	499	0.026
13:00 - 14:00	5	499	0.014	5	499	0.020	5	499	0.034
14:00 - 15:00	5	499	0.015	5	499	0.014	5	499	0.029
15:00 - 16:00	5	499	0.016	5	499	0.014	5	499	0.030
16:00 - 17:00	5	**499**	**0.025**	5	499	0.014	5	**499**	**0.039**
17:00 - 18:00	5	499	0.025	5	499	0.013	5	499	0.038
18:00 - 19:00	5	499	0.019	5	499	0.013	5	499	0.032
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.197			0.196			0.393

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL MOTOR CYCLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

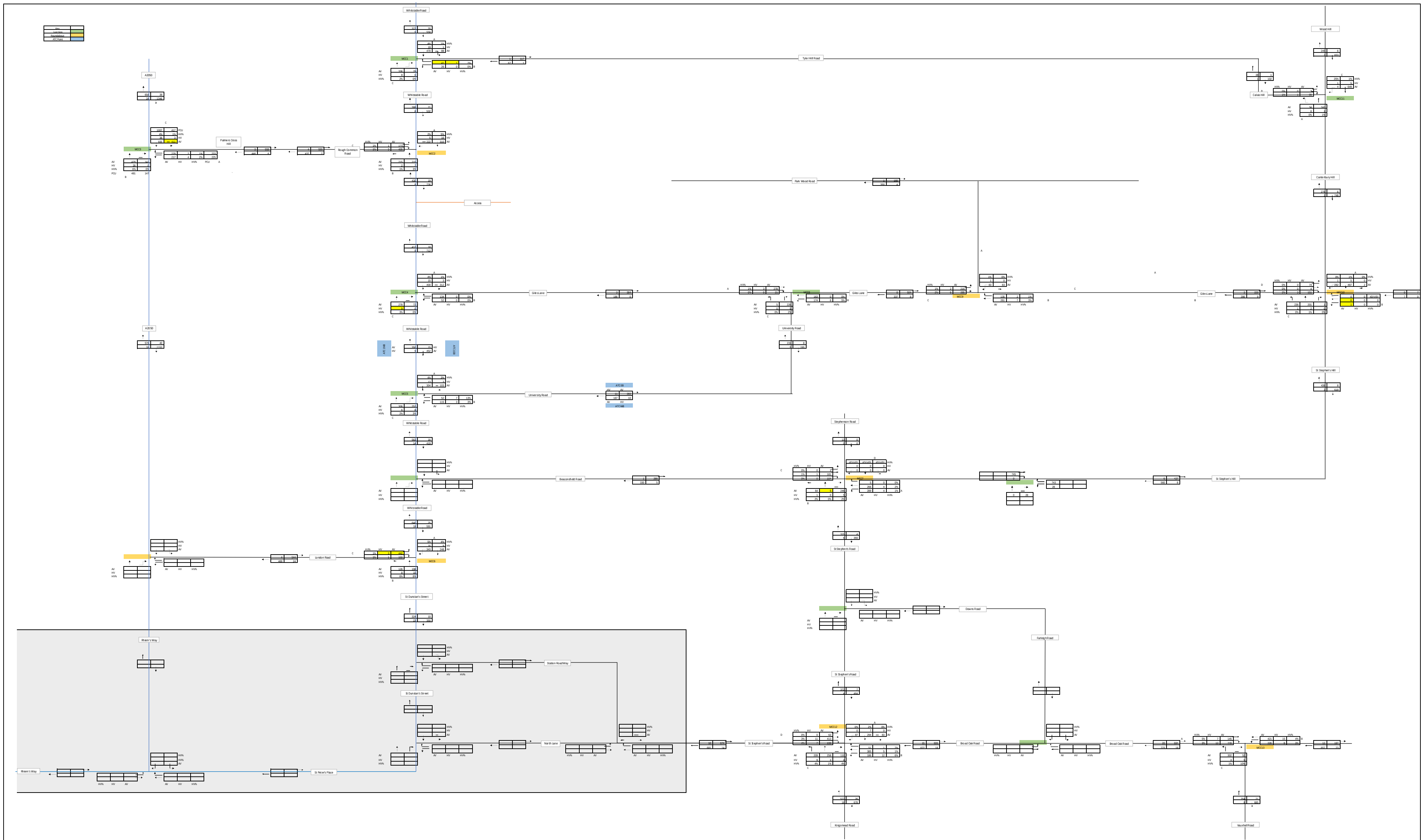
	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	499	0.000	5	499	0.001	5	499	0.001
08:00 - 09:00	5	499	0.000	5	**499**	**0.003**	5	499	0.003
09:00 - 10:00	5	499	0.000	5	499	0.000	5	499	0.000
10:00 - 11:00	5	499	0.000	5	499	0.001	5	499	0.001
11:00 - 12:00	5	499	0.000	5	499	0.001	5	499	0.001
12:00 - 13:00	5	499	0.000	5	499	0.001	5	499	0.001
13:00 - 14:00	5	499	0.000	5	499	0.000	5	499	0.000
14:00 - 15:00	5	499	0.000	5	499	0.000	5	499	0.000
15:00 - 16:00	5	499	0.002	5	499	0.001	5	499	0.003
16:00 - 17:00	5	499	0.002	5	499	0.001	5	499	0.003
17:00 - 18:00	5	499	0.002	5	499	0.001	5	499	0.003
18:00 - 19:00	5	**499**	**0.004**	5	499	0.003	5	**499**	**0.007**
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.010			0.013			0.023

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

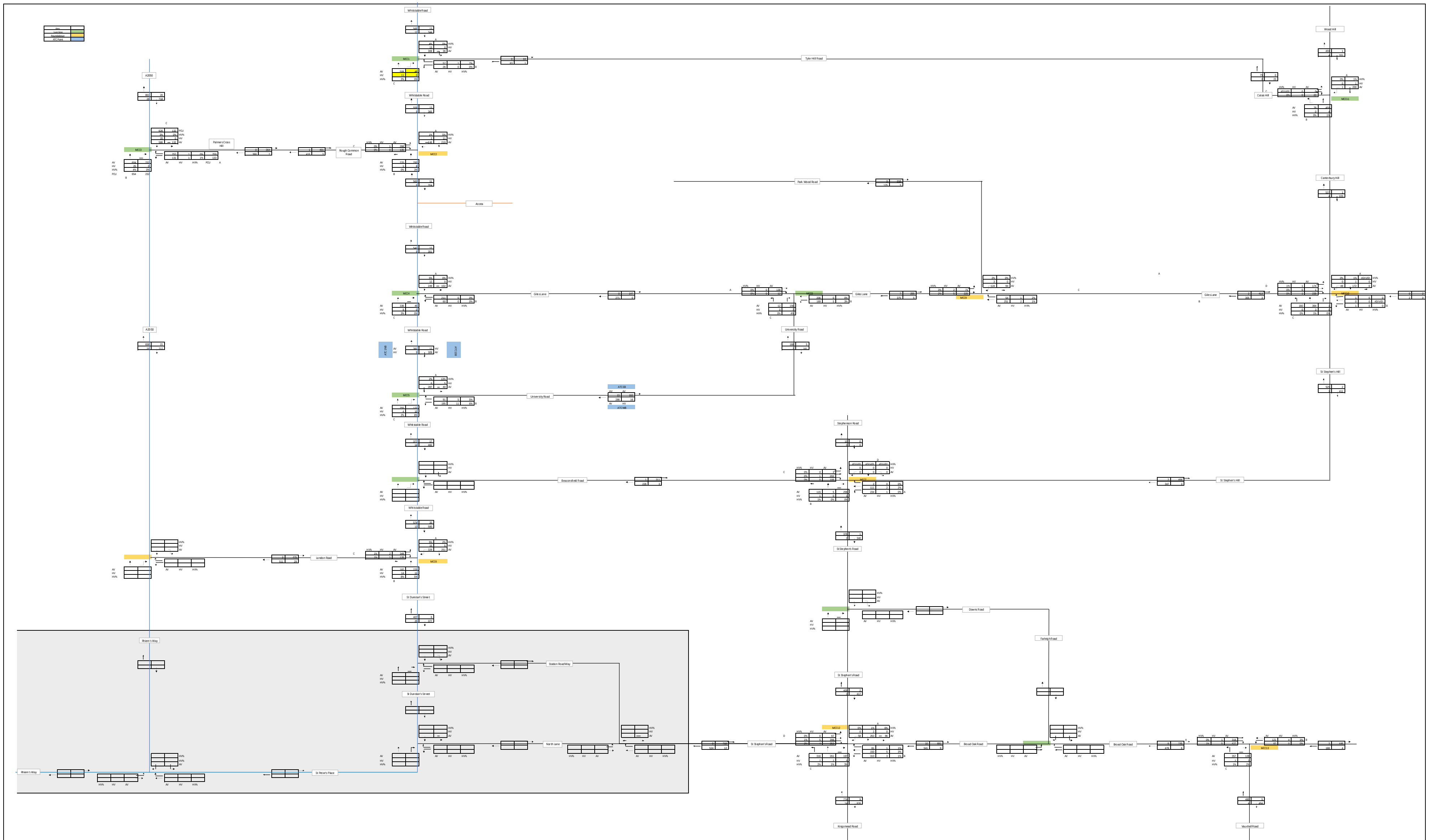
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Appendix B

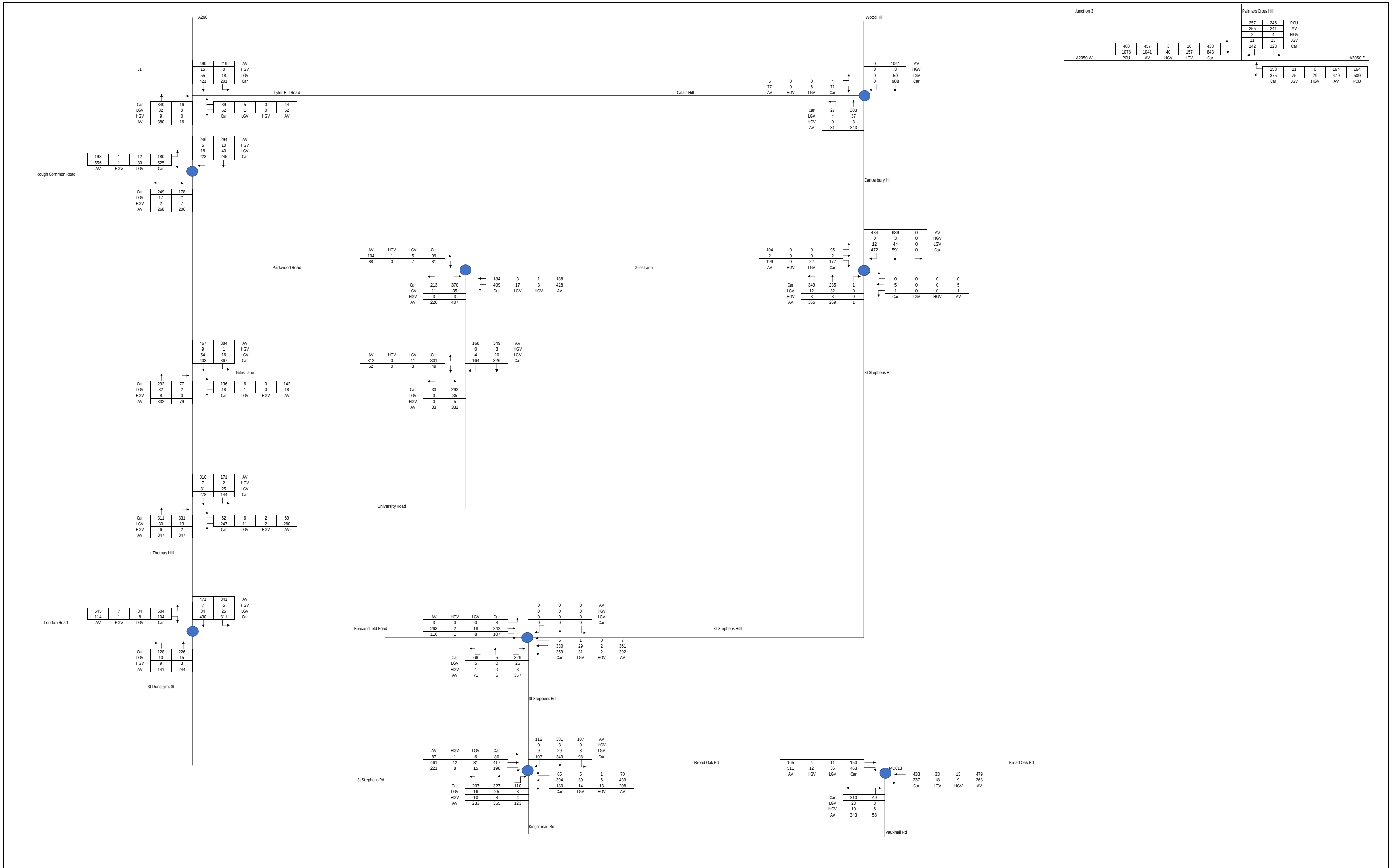
Traffic Flow Diagrams



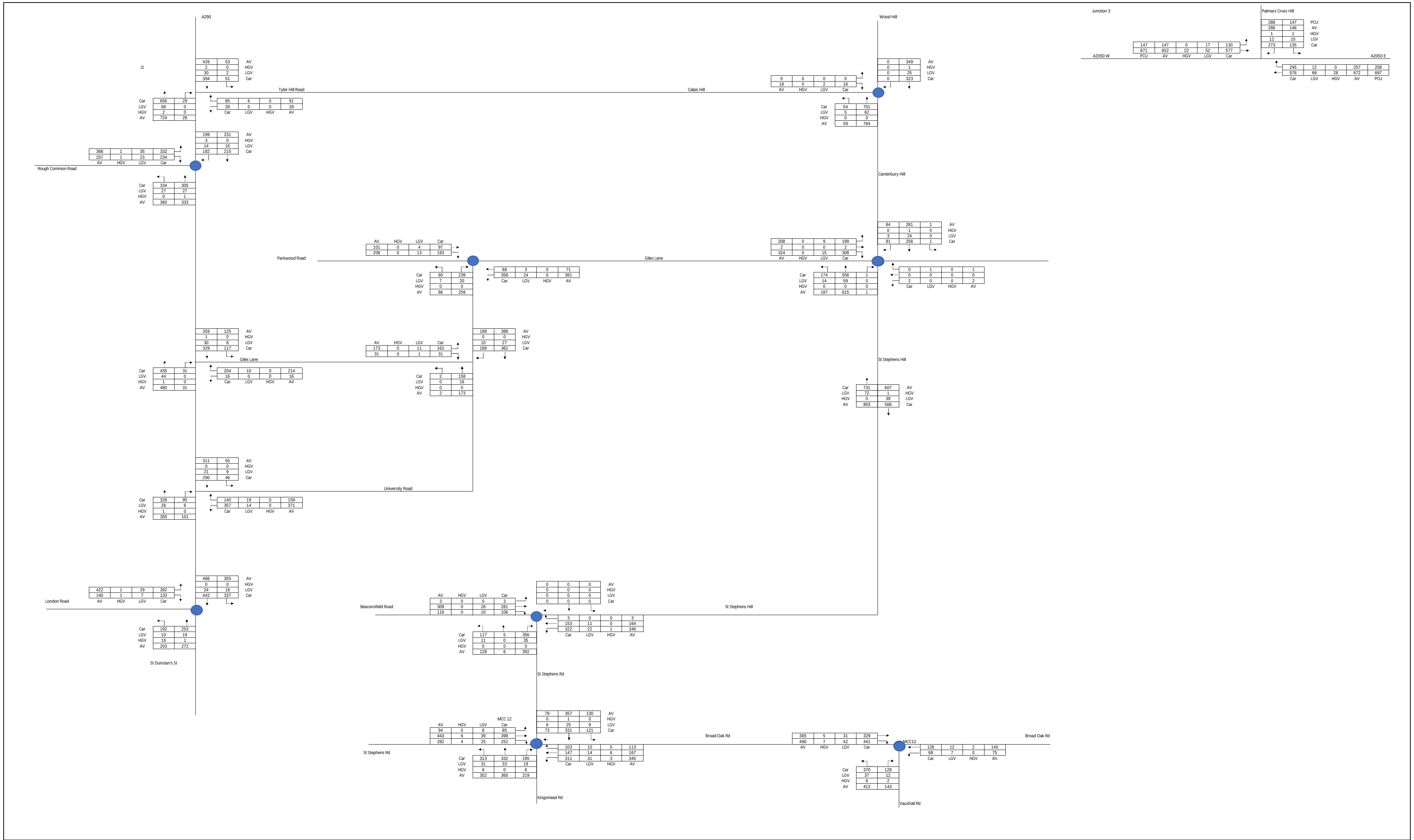
University of Kent, Canterbury
Traffic Flow Diagrams
2021 Base
AM Peak Hour (08:00 - 09:00)



University of Kent, Canterbury
Traffic Flow Diagrams
2021 Base
PM Peak Hour (17:00 - 18:00)

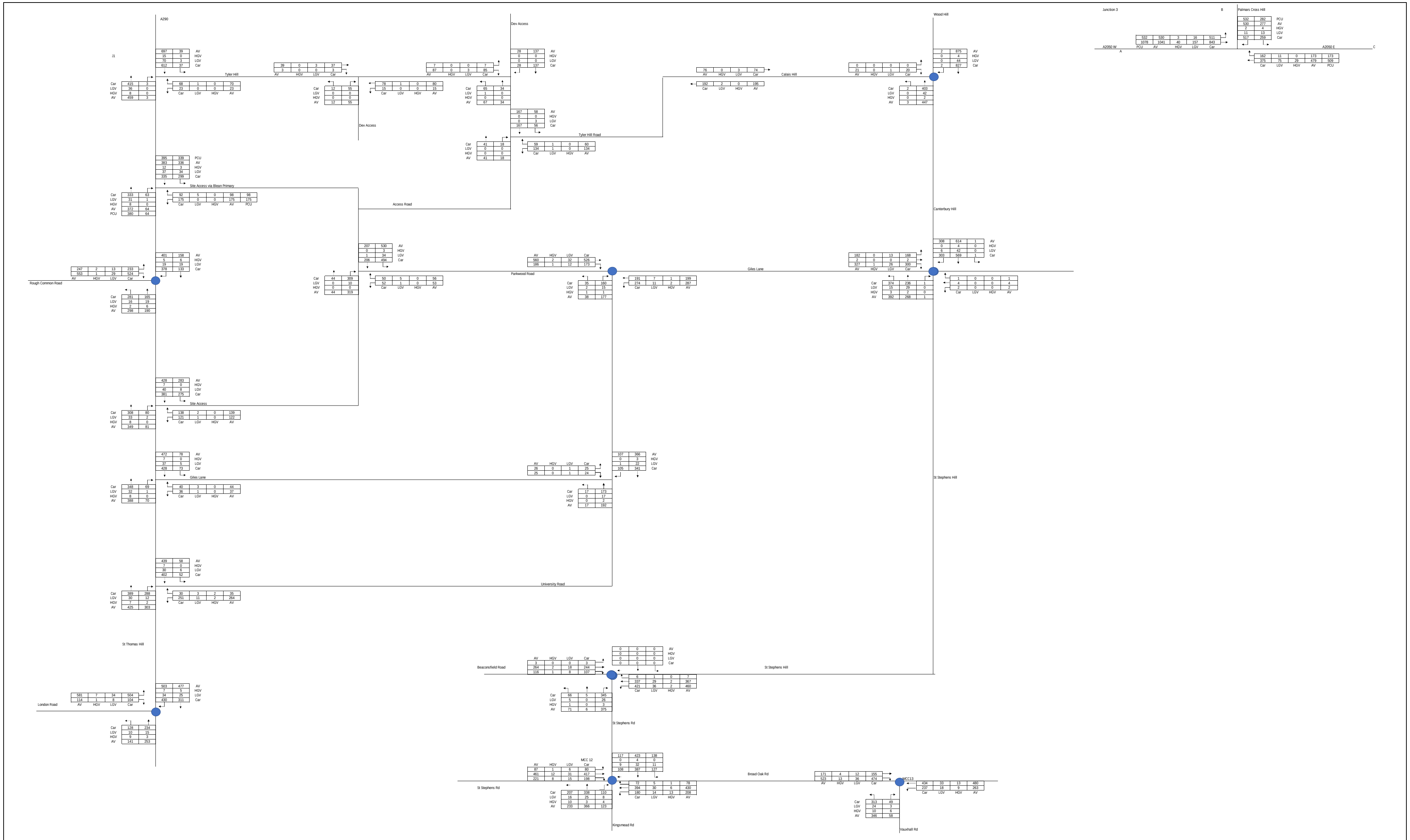


2045 Base
AM Peak Hour
Modelled Traffic Flows
University of Kent, Canterbury
70080896

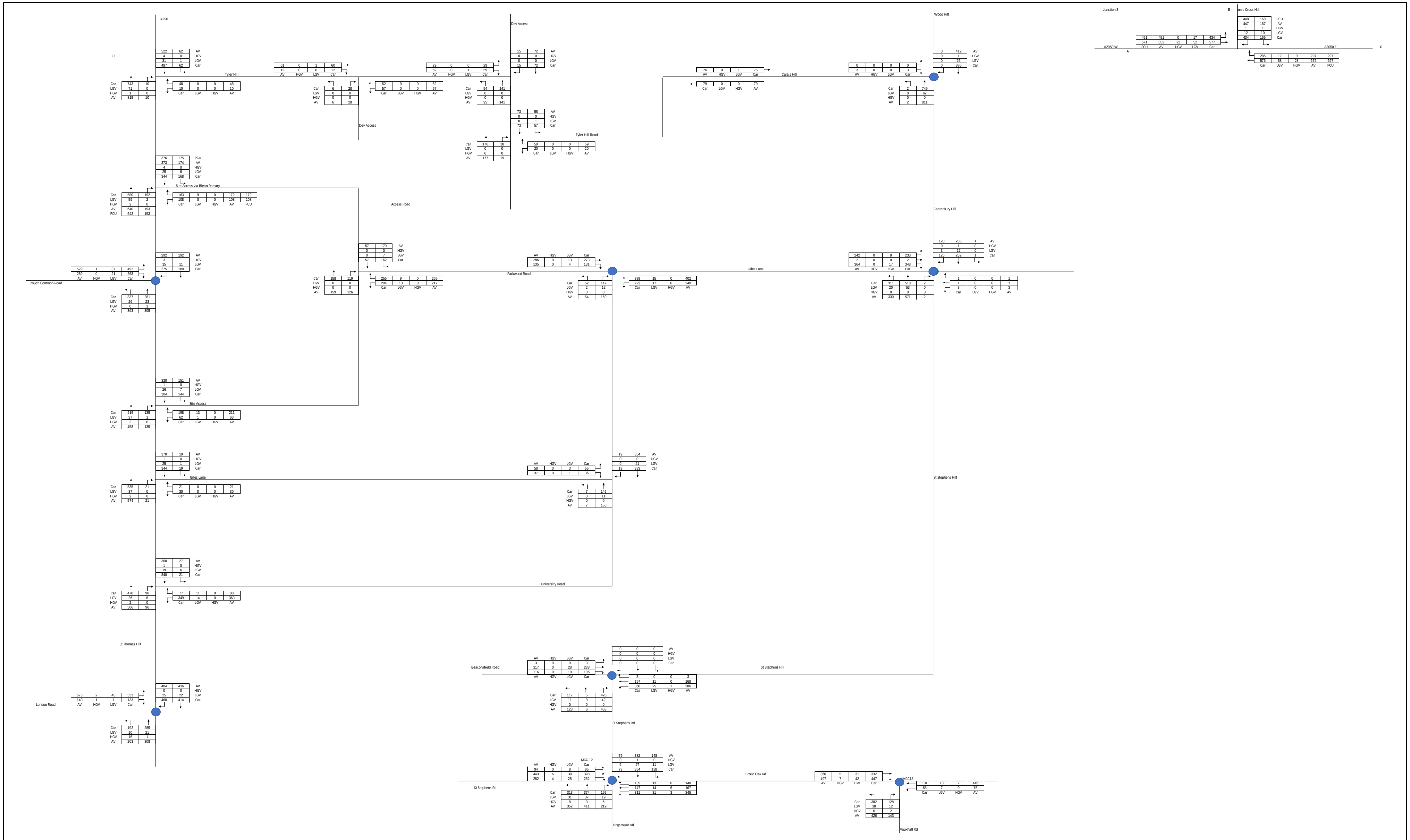


wsp

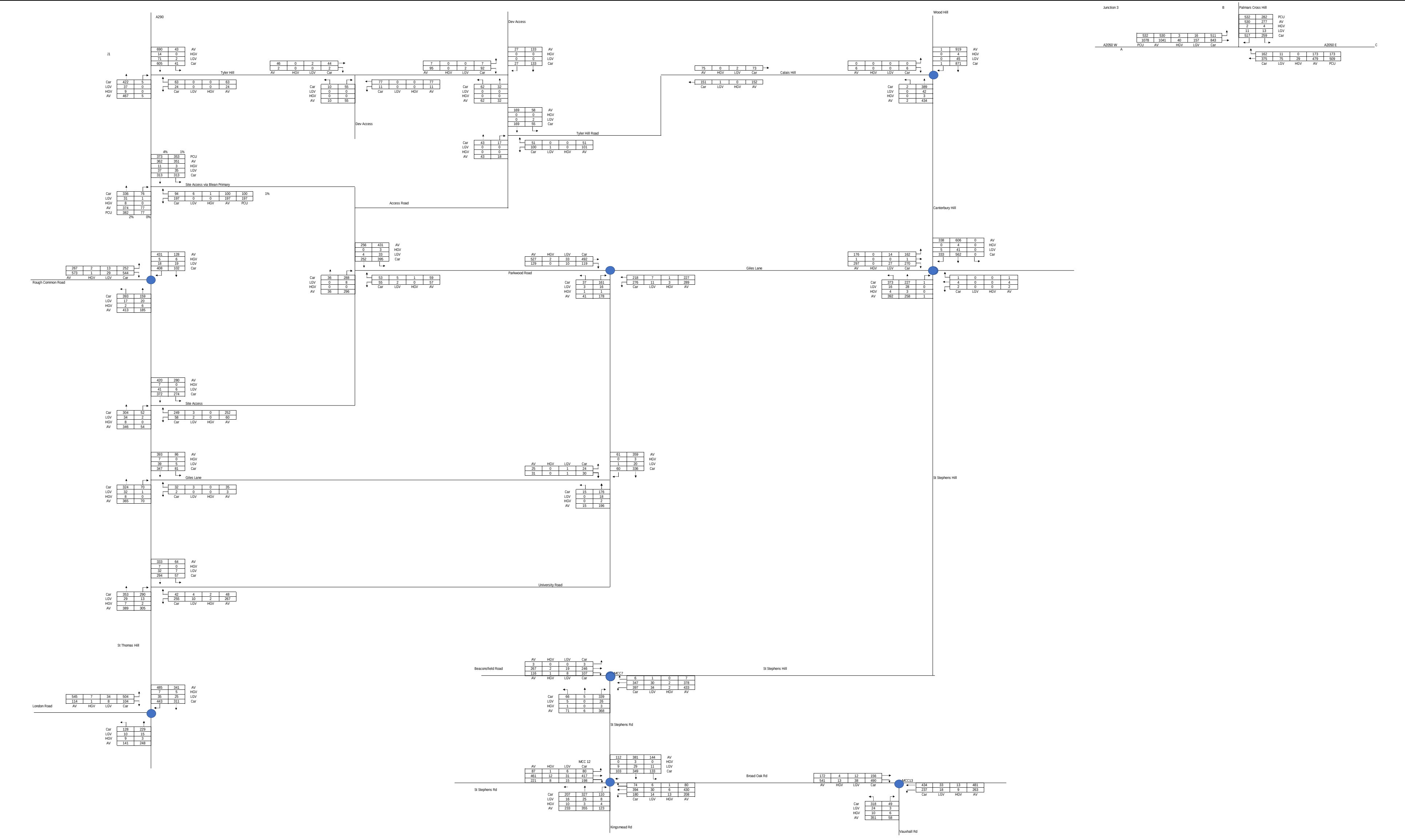
2045 Base
PM Peak Hour
Modelled Traffic Flows
University of Kent, Canterbury
70080896



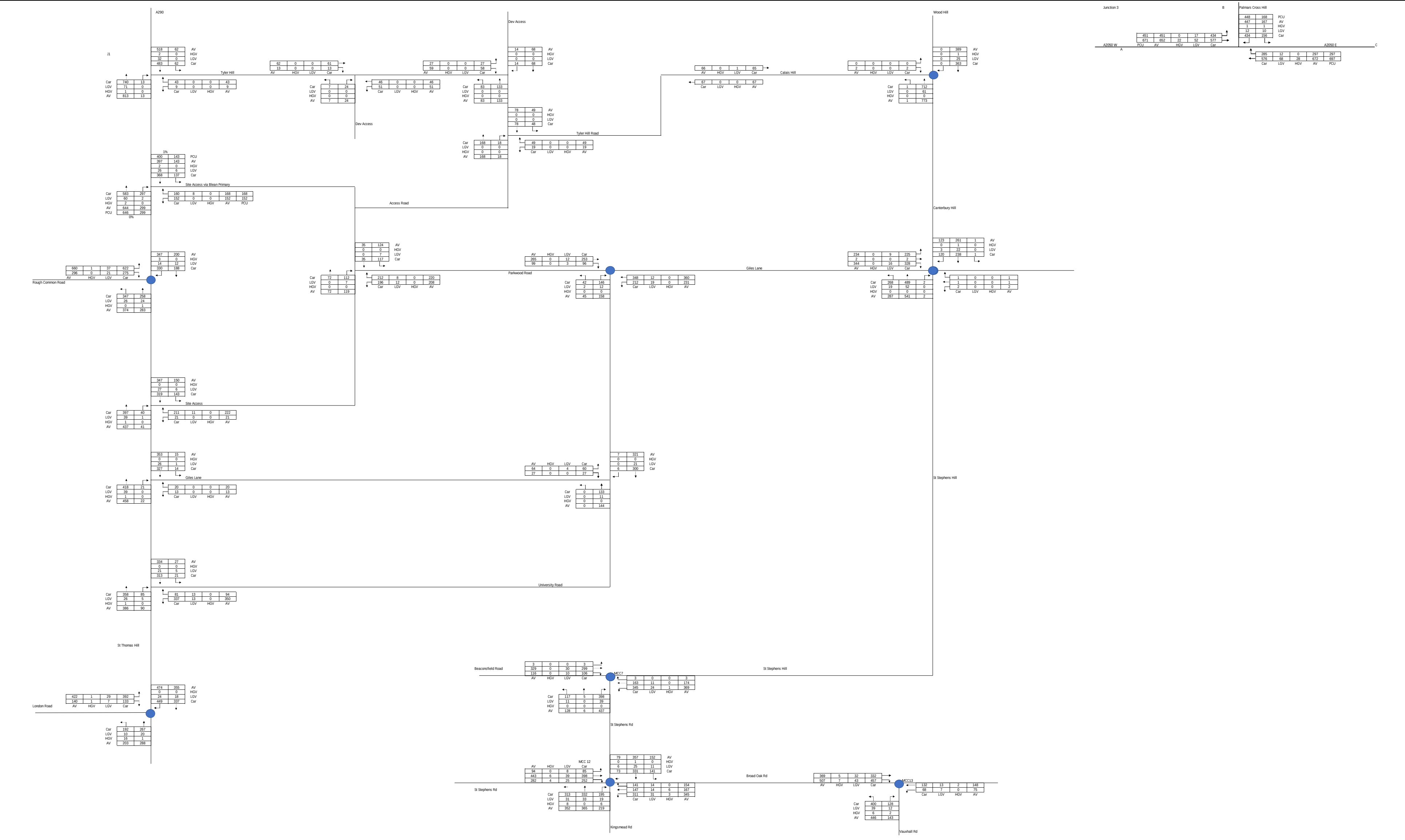
2045 + Core Development
AM Peak Hour
Modelled Traffic Flows
University of Kent, Canterbury
70080896



2045 + Core Development
PM Peak Hour
Modelled Traffic Flows
University of Kent, Canterbury
70080896



2045 + Sensitivity Test
AM Peak Hour
Modelled Traffic Flows
University of Kent, Canterbury
70080896



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2045 + Sensitivity Test
PM Peak Hour
Modelled Traffic Flows
University of Kent, Canterbury
70080896

Appendix C

Junction Capacity Assessments

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: Site Access - Right-Left Staggered New Access v3.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2
Report generation date: 16/01/2023 11:47:40

»2045 + CD, AM
»2045 + CD, PM
»2045 + ST, AM
»2045 + ST, PM

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 + CD													
Stream B-C	D1	0.4	11.90	0.31	B	4.05	11 % [Stream B-AD]	D2	0.3	13.40	0.21	B	7.12	0 % [Stream B-AD]
Stream B-AD		1.0	24.13	0.51	C				2.2	35.47	0.70	E		
Stream A-BCD		0.0	7.02	0.02	A				0.0	7.73	0.01	A		
Stream D-ABC		0.1	11.25	0.06	B				0.0	10.90	0.04	B		
Stream C-ABD		0.2	9.68	0.19	A				0.4	9.42	0.28	A		
	2045 + ST													
Stream B-C	D3	0.4	21.93	0.29	C	9.98	-6 % [Stream B-AD]	D4	0.1	10.93	0.07	B	5.10	8 % [Stream B-AD]
Stream B-AD		3.6	49.34	0.80	E				1.7	25.36	0.63	D		
Stream A-BCD		0.0	7.51	0.02	A				0.0	7.67	0.01	A		
Stream D-ABC		0.1	12.52	0.06	B				0.0	10.85	0.04	B		
Stream C-ABD		0.1	8.90	0.13	A				0.1	7.51	0.09	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	18/01/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓
D2	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓
D3	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓
D4	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D1 - 2045 + CD, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		4.05	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	11	Stream B-AD	4.05	A

Arms

Arms

Arm	Name	Description	Arm type
A	Whistable Road (North)		Major
B	Site Access		Minor
C	Whistable Road (South)		Major
D	Highfield Close		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	6.00		✓	2.50	120.4	✓	3.00
C	6.00		✓	3.00	69.2	✓	4.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare		10.00	5.86	4.49	4.14	3.80		2.00	48	78
D	One lane	3.16								58	15

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
A-D	665	-	-	-	0.258	0.258	0.258	-	0.258	-	-
B-AD	559	0.102	0.257	-	-	-	0.162	0.367	0.162	0.102	0.257
B-C	692	0.106	0.268	-	-	-	-	-	-	0.106	0.268
C-B	668	0.259	0.259	-	-	-	-	-	-	0.259	0.259
D-A	643	-	-	-	0.249	0.099	0.249	-	0.099	-	-

D-BC	512	0.148	0.148	0.337	0.236	0.093	0.236	-	0.093	-	-

The slopes and intercepts shown above include custom intercept adjustments only.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D1	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	720	100.000
B		ONE HOUR	✓	261	100.000
C		ONE HOUR	✓	432	100.000
D		ONE HOUR	✓	17	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	283	428	9
	B	139	0	122	0
	C	349	81	0	2
	D	8	0	9	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	0
	B	0	0	0	0
	C	2	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.31	11.90	0.4	1.8	B	122	122
B-AD	0.51	24.13	1.0	4.7	C	139	139
A-BCD	0.02	7.02	0.0	0.5	A	9	9
A-B						283	283
A-C						428	428
D-ABC	0.06	11.25	0.1	0.5	B	17	17
C-ABD	0.19	9.68	0.2	1.1	A	81	81
C-D						2	2
C-A						349	349

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	110	27	502	0.219	109	0.2	0.3	9.172	A
B-AD	125	31	350	0.357	124	0.4	0.5	15.872	C
A-BCD	8	2	549	0.015	8	0.0	0.0	6.650	A
A-B	254	64			254				
A-C	385	96			385				
D-ABC	15	4	384	0.040	15	0.0	0.0	9.757	A
C-ABD	73	18	499	0.146	73	0.1	0.2	8.449	A
C-D	2	0.45			2				
C-A	314	78			314				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	134	34	439	0.306	134	0.3	0.4	11.777	B
B-AD	153	38	302	0.507	151	0.5	1.0	23.626	C
A-BCD	10	2	523	0.019	10	0.0	0.0	7.011	A
A-B	312	78			312				
A-C	471	118			471				
D-ABC	19	5	339	0.055	19	0.0	0.1	11.226	B
C-ABD	89	22	461	0.194	89	0.2	0.2	9.669	A
C-D	2	0.55			2				
C-A	384	96			384				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	134	34	437	0.308	134	0.4	0.4	11.899	B
B-AD	153	38	302	0.507	153	1.0	1.0	24.135	C
A-BCD	10	2	523	0.019	10	0.0	0.0	7.017	A
A-B	312	78			312				
A-C	471	118			471				
D-ABC	19	5	339	0.055	19	0.1	0.1	11.247	B
C-ABD	89	22	461	0.194	89	0.2	0.2	9.682	A
C-D	2	0.55			2				
C-A	384	96			384				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	110	27	500	0.220	110	0.4	0.3	9.260	A
B-AD	125	31	350	0.357	127	1.0	0.6	16.210	C
A-BCD	8	2	549	0.015	8	0.0	0.0	6.659	A
A-B	254	64			254				
A-C	385	96			385				
D-ABC	15	4	383	0.040	15	0.1	0.0	9.780	A
C-ABD	73	18	499	0.146	73	0.2	0.2	8.466	A
C-D	2	0.45			2				
C-A	314	78			314				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.28	0.00	0.00	0.28	0.28			N/A	N/A
B-AD	0.54	0.54	1.00	1.40	1.45			N/A	N/A
A-BCD	0.01	0.01	0.25	0.45	0.48			N/A	N/A
D-ABC	0.04	0.03	0.25	0.45	0.48			N/A	N/A
C-ABD	0.17	0.00	0.00	0.17	0.17			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.43	0.03	0.26	0.46	0.49			N/A	N/A
B-AD	0.98	0.03	0.27	0.98	2.43			N/A	N/A
A-BCD	0.02	0.00	0.00	0.02	0.02			N/A	N/A
D-ABC	0.06	0.03	0.26	0.46	0.49			N/A	N/A
C-ABD	0.24	0.03	0.26	0.46	0.49			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.44	0.03	0.31	1.37	1.80			N/A	N/A
B-AD	1.00	0.03	0.30	1.19	4.71			N/A	N/A
A-BCD	0.02	0.00	0.00	0.02	0.02			N/A	N/A
D-ABC	0.06	0.00	0.00	0.06	0.06			N/A	N/A
C-ABD	0.24	0.03	0.29	0.72	1.12			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.28	0.00	0.00	0.28	0.28			N/A	N/A
B-AD	0.57	0.05	0.49	1.34	1.44			N/A	N/A
A-BCD	0.02	0.00	0.00	0.02	0.02			N/A	N/A
D-ABC	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-ABD	0.17	0.00	0.00	0.17	0.17			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D2 - 2045 + CD, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		7.12	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	0	Stream B-AD	7.12	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D2	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	486	100.000
B		ONE HOUR	✓	274	100.000
C		ONE HOUR	✓	598	100.000
D		ONE HOUR	✓	12	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	151	330	5
	B	211	0	63	0
	C	458	135	0	5
	D	7	0	5	0

Vehicle Mix

Heavy Vehicle Percentages

	To

		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.21	13.40	0.3	1.1	B	63	63
B-AD	0.70	35.47	2.2	11.0	E	211	211
A-BCD	0.01	7.73	0.0	0.5	A	5	5
A-B						151	151
A-C						330	330
D-ABC	0.04	10.90	0.0	0.5	B	12	12
C-ABD	0.28	9.42	0.4	1.5	A	136	136
C-D						5	5
C-A						457	457

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	57	14	455	0.124	56	0.1	0.1	9.022	A
B-AD	190	47	382	0.496	188	0.6	0.9	18.425	C
A-BCD	4	1	508	0.009	4	0.0	0.0	7.150	A
A-B	136	34			136				
A-C	297	74			297				
D-ABC	11	3	391	0.028	11	0.0	0.0	9.476	A
C-ABD	122	30	555	0.219	121	0.2	0.3	8.293	A
C-D	4	1			4				
C-A	412	103			412				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	69	17	347	0.200	69	0.1	0.2	12.941	B
B-AD	232	58	332	0.699	228	0.9	2.1	33.089	D
A-BCD	6	1	472	0.012	5	0.0	0.0	7.710	A
A-B	166	42			166				
A-C	363	91			363				
D-ABC	13	3	345	0.038	13	0.0	0.0	10.857	B
C-ABD	150	37	532	0.281	149	0.3	0.4	9.395	A
C-D	5	1			5				
C-A	503	126			503				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	69	17	338	0.205	69	0.2	0.3	13.399	B
B-AD	232	58	332	0.699	232	2.1	2.2	35.465	E
A-BCD	6	1	471	0.012	6	0.0	0.0	7.729	A
A-B	166	42			166				

A-C	363	91			363				
D-ABC	13	3	344	0.038	13	0.0	0.0	10.898	B
C-ABD	150	37	532	0.281	150	0.4	0.4	9.415	A
C-D	5	1			5				
C-A	503	126			503				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	57	14	449	0.126	57	0.3	0.1	9.190	A
B-AD	190	47	382	0.496	194	2.2	1.0	19.588	C
A-BCD	4	1	506	0.009	5	0.0	0.0	7.174	A
A-B	136	34			136				
A-C	297	74			297				
D-ABC	11	3	389	0.028	11	0.0	0.0	9.519	A
C-ABD	122	30	555	0.219	122	0.4	0.3	8.320	A
C-D	4	1			4				
C-A	412	103			412				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.14	0.00	0.00	0.14	0.14			N/A	N/A
B-AD	0.95	0.12	0.95	1.35	1.73			N/A	N/A
A-BCD	0.01	0.01	0.25	0.45	0.48			N/A	N/A
D-ABC	0.03	0.03	0.25	0.45	0.48			N/A	N/A
C-ABD	0.28	0.00	0.00	0.28	0.28			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.25	0.03	0.26	0.47	0.49			N/A	N/A
B-AD	2.08	0.03	0.34	4.57	11.00			N/A	N/A
A-BCD	0.01	0.00	0.00	0.01	0.01			N/A	N/A
D-ABC	0.04	0.03	0.25	0.45	0.48			N/A	N/A
C-ABD	0.39	0.03	0.26	0.46	0.49			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.25	0.03	0.29	0.72	1.12			N/A	N/A
B-AD	2.19	0.03	0.31	3.25	10.95			N/A	N/A
A-BCD	0.01	0.00	0.00	0.01	0.01			N/A	N/A
D-ABC	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-ABD	0.39	0.03	0.31	1.28	1.54			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.15	0.00	0.00	0.15	0.15			N/A	N/A
B-AD	1.02	0.05	0.45	2.42	3.72			N/A	N/A
A-BCD	0.01	0.00	0.00	0.01	0.01			N/A	N/A
D-ABC	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-ABD	0.28	0.00	0.00	0.28	0.28			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D3 - 2045 + ST, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		9.98	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-6	Stream B-AD	9.98	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D3	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	709	100.000
B		ONE HOUR	✓	312	100.000
C		ONE HOUR	✓	402	100.000
D		ONE HOUR	✓	17	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	**B**	**C**	**D**
From	**A**	0	280	420	9
	B	252	0	60	0
	C	346	54	0	2
	D	8	0	9	0

Vehicle Mix

Heavy Vehicle Percentages

	To				

		A	B	C	D
From	A	0	0	2	0
	B	0	0	0	0
	C	2	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.29	21.93	0.4	1.4	C	60	60
B-AD	0.80	49.34	3.6	19.2	E	252	252
A-BCD	0.02	7.51	0.0	0.5	A	9	9
A-B						280	280
A-C						420	420
D-ABC	0.06	12.52	0.1	0.5	B	17	17
C-ABD	0.13	8.90	0.1	0.5	A	54	54
C-D						2	2
C-A						346	346

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	54	13	394	0.137	54	0.1	0.2	10.559	B
B-AD	227	57	395	0.573	224	0.8	1.3	20.823	C
A-BCD	8	2	523	0.015	8	0.0	0.0	6.984	A
A-B	252	63			252				
A-C	378	94			378				
D-ABC	15	4	360	0.042	15	0.0	0.0	10.450	B
C-ABD	49	12	501	0.097	48	0.1	0.1	7.951	A
C-D	2	0.45			2				
C-A	311	78			311				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	66	17	248	0.267	65	0.2	0.4	19.669	C
B-AD	277	69	346	0.801	270	1.3	3.3	42.940	E
A-BCD	10	2	491	0.020	10	0.0	0.0	7.476	A
A-B	308	77			308				
A-C	462	116			462				
D-ABC	19	5	308	0.061	19	0.0	0.1	12.426	B
C-ABD	59	15	464	0.128	59	0.1	0.1	8.893	A
C-D	2	0.55			2				
C-A	381	95			381				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	66	17	230	0.287	66	0.4	0.4	21.927	C
B-AD	277	69	347	0.801	276	3.3	3.6	49.341	E
A-BCD	10	2	489	0.020	10	0.0	0.0	7.508	A
A-B	308	77			308				

A-C	462	116			462				
D-ABC	19	5	306	0.061	19	0.1	0.1	12.522	B
C-ABD	59	15	464	0.128	59	0.1	0.1	8.903	A
C-D	2	0.55			2				
C-A	381	95			381				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	54	13	382	0.141	55	0.4	0.2	11.017	B
B-AD	227	57	396	0.573	235	3.6	1.4	23.497	C
A-BCD	8	2	521	0.016	8	0.0	0.0	7.027	A
A-B	252	63			252				
A-C	378	94			378				
D-ABC	15	4	357	0.043	15	0.1	0.0	10.547	B
C-ABD	49	12	501	0.097	49	0.1	0.1	7.961	A
C-D	2	0.45			2				
C-A	311	78			311				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.16	0.00	0.00	0.16	0.16			N/A	N/A
B-AD	1.28	0.10	1.06	2.32	2.97			N/A	N/A
A-BCD	0.02	0.02	0.25	0.45	0.48			N/A	N/A
D-ABC	0.04	0.03	0.25	0.45	0.48			N/A	N/A
C-ABD	0.11	0.00	0.00	0.11	0.11			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.35	0.03	0.26	0.47	0.50			N/A	N/A
B-AD	3.26	0.04	0.44	9.10	16.26			N/A	N/A
A-BCD	0.02	0.00	0.00	0.02	0.02			N/A	N/A
D-ABC	0.06	0.03	0.26	0.47	0.49			N/A	N/A
C-ABD	0.15	0.03	0.26	0.47	0.49			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.39	0.03	0.34	1.23	1.44			N/A	N/A
B-AD	3.56	0.04	0.35	8.19	19.25			N/A	N/A
A-BCD	0.02	0.00	0.00	0.02	0.02			N/A	N/A
D-ABC	0.06	0.00	0.00	0.06	0.06			N/A	N/A
C-ABD	0.15	0.03	0.25	0.45	0.48			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.17	0.00	0.00	0.17	0.17			N/A	N/A
B-AD	1.41	0.04	0.41	3.70	6.37			N/A	N/A
A-BCD	0.02	0.00	0.00	0.02	0.02			N/A	N/A
D-ABC	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-ABD	0.11	0.00	0.00	0.11	0.11			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D4 - 2045 + ST, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		5.10	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	8	Stream B-AD	5.10	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D4	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	502	100.000
B		ONE HOUR	✓	243	100.000
C		ONE HOUR	✓	483	100.000
D		ONE HOUR	✓	12	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	150	347	5
	B	222	0	21	0
	C	437	41	0	5
	D	7	0	5	0

Vehicle Mix

Heavy Vehicle Percentages

	To

		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.07	10.93	0.1	0.5	B	21	21
B-AD	0.63	25.36	1.7	7.6	D	222	222
A-BCD	0.01	7.67	0.0	0.5	A	5	5
A-B						150	150
A-C						347	347
D-ABC	0.04	10.85	0.0	0.5	B	12	12
C-ABD	0.09	7.51	0.1	0.5	A	41	41
C-D						5	5
C-A						437	437

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	19	5	441	0.043	19	0.0	0.0	8.524	A
B-AD	200	50	429	0.465	198	0.6	0.8	15.528	C
A-BCD	4	1	510	0.009	4	0.0	0.0	7.117	A
A-B	135	34			135				
A-C	312	78			312				
D-ABC	11	3	392	0.028	11	0.0	0.0	9.454	A
C-ABD	37	9	550	0.067	37	0.1	0.1	7.008	A
C-D	4	1			4				
C-A	393	98			393				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	23	6	357	0.065	23	0.0	0.1	10.790	B
B-AD	244	61	386	0.634	241	0.8	1.6	24.430	C
A-BCD	6	1	475	0.012	5	0.0	0.0	7.660	A
A-B	165	41			165				
A-C	382	96			382				
D-ABC	13	3	346	0.038	13	0.0	0.0	10.824	B
C-ABD	45	11	524	0.086	45	0.1	0.1	7.514	A
C-D	6	1			6				
C-A	481	120			481				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	23	6	352	0.066	23	0.1	0.1	10.935	B
B-AD	244	61	386	0.634	244	1.6	1.7	25.358	D
A-BCD	6	1	475	0.012	6	0.0	0.0	7.673	A
A-B	165	41			165				

A-C	382	96			382				
D-ABC	13	3	345	0.038	13	0.0	0.0	10.852	B
C-ABD	45	11	524	0.086	45	0.1	0.1	7.515	A
C-D	6	1			6				
C-A	481	120			481				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	19	5	438	0.043	19	0.1	0.0	8.598	A
B-AD	200	50	429	0.465	203	1.7	0.9	16.108	C
A-BCD	4	1	509	0.009	5	0.0	0.0	7.133	A
A-B	135	34			135				
A-C	312	78			312				
D-ABC	11	3	390	0.028	11	0.0	0.0	9.487	A
C-ABD	37	9	550	0.067	37	0.1	0.1	7.011	A
C-D	4	1			4				
C-A	393	98			393				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.04	0.03	0.25	0.45	0.48			N/A	N/A
B-AD	0.84	0.15	0.93	1.10	1.10			N/A	N/A
A-BCD	0.01	0.01	0.25	0.45	0.48			N/A	N/A
D-ABC	0.03	0.03	0.25	0.45	0.48			N/A	N/A
C-ABD	0.07	0.03	0.25	0.45	0.48			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.07	0.03	0.26	0.47	0.49			N/A	N/A
B-AD	1.62	0.03	0.30	1.85	7.56			N/A	N/A
A-BCD	0.01	0.00	0.00	0.01	0.01			N/A	N/A
D-ABC	0.04	0.03	0.25	0.45	0.48			N/A	N/A
C-ABD	0.09	0.03	0.26	0.47	0.49			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.07	0.00	0.00	0.07	0.07			N/A	N/A
B-AD	1.67	0.03	0.29	1.67	7.22			N/A	N/A
A-BCD	0.01	0.00	0.00	0.01	0.01			N/A	N/A
D-ABC	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-ABD	0.09	0.03	0.25	0.45	0.48			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.05	0.00	0.00	0.05	0.05			N/A	N/A
B-AD	0.90	0.05	0.56	1.81	2.61			N/A	N/A
A-BCD	0.01	0.00	0.00	0.01	0.01			N/A	N/A
D-ABC	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-ABD	0.07	0.00	0.00	0.07	0.07			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.0.2.1574

For sales and distribution information, program advice and maintenance, contact TRL Software:
+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

Filename: Access Strategy v0.1 28m ICD_v2.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2
Report generation date: 16/01/2023 11:44:25

»2045 + CD, AM
»2045 + CD, PM
»2045 + ST, AM
»2045 + ST, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
	2045 + CD									
Arm 1	D1	0.3	3.62	0.23	A	D2	0.3	3.77	0.24	A
Arm 2		0.6	4.45	0.37	A		2.6	10.50	0.73	B
Arm 3		1.0	5.52	0.51	A		0.9	5.45	0.48	A
	2045 + ST									
Arm 1	D3	0.4	3.89	0.26	A	D4	0.4	4.02	0.28	A
Arm 2		0.6	4.60	0.39	A		4.4	15.77	0.82	C
Arm 3		1.5	6.89	0.60	A		1.0	6.00	0.50	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	14/12/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKCRD001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)

		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2045 + CD	AM	ONE HOUR	08:00	09:30	15
D2	2045 + CD	PM	ONE HOUR	17:00	18:30	15
D3	2045 + ST	AM	ONE HOUR	08:00	09:30	15
D4	2045 + ST	PM	ONE HOUR	17:00	18:30	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2045 + CD, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3	4.78	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.78	A

Arms

Arms

Arm	Name	Description	No give-way line
1	Blean Primary School		
2	Whitstable Road (S)		
3	Whitsable Road (N)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1	3.50	6.10	6.6	40.6	28.0	11.2		
2	2.90	5.20	10.7	23.8	28.0	13.1		
3	2.80	6.10	9.2	40.0	28.0	16.5		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.654	1536
2	0.614	1378
3	0.622	1408

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2045 + CD	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	273	100.000

2		✓	437	100.000
3		✓	621	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	**2**	**3**
From	**1**	0	175	98
	2	64	0	373
	3	296	325	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	**2**	**3**
From	**1**	0	0	0
	2	0	0	2
	3	1	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.23	3.62	0.3	A
2	0.37	4.45	0.6	A
3	0.51	5.52	1.0	A

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	206	244	1372	0.150	205	0.2	3.084	A
2	329	74	1310	0.251	327	0.3	3.658	A
3	468	48	1350	0.346	466	0.5	4.059	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	245	292	1339	0.183	245	0.2	3.290	A
2	392	88	1301	0.302	392	0.4	3.957	A
3	559	57	1345	0.415	558	0.7	4.572	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	301	357	1295	0.232	300	0.3	3.618	A
2	481	108	1289	0.373	480	0.6	4.443	A
3	684	70	1337	0.512	683	1.0	5.493	A

08:45 - 09:00

Arm	Total Demand	Circulating	Capacity	RFC	Throughput	End queue	Delay (s)	Unsignalised

	(Veh/hr)	flow (Veh/hr)	(Veh/hr)		(Veh/hr)	(Veh)		level of service
1	301	358	1295	0.232	301	0.3	3.620	A
2	481	108	1289	0.373	481	0.6	4.451	A
3	684	70	1337	0.512	684	1.0	5.515	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	245	293	1338	0.183	246	0.2	3.294	A
2	392	88	1301	0.302	393	0.4	3.966	A
3	559	58	1344	0.415	560	0.7	4.597	A

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	206	245	1371	0.150	206	0.2	3.092	A
2	329	74	1310	0.251	329	0.3	3.673	A
3	468	48	1350	0.346	468	0.5	4.087	A

2045 + CD, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3	7.70	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.70	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2045 + CD	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	280	100.000
2		✓	835	100.000
3		✓	551	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	108	172
	2	193	0	642
	3	175	376	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.24	3.77	0.3	A
2	0.73	10.50	2.6	B
3	0.48	5.45	0.9	A

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	211	282	1350	0.156	210	0.2	3.157	A
2	629	129	1298	0.484	625	0.9	5.317	A
3	415	144	1309	0.317	413	0.5	4.009	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	252	338	1313	0.192	252	0.2	3.391	A
2	751	154	1283	0.585	749	1.4	6.720	A
3	495	173	1291	0.384	495	0.6	4.514	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	308	413	1263	0.244	308	0.3	3.770	A
2	919	189	1261	0.729	915	2.6	10.237	B
3	607	211	1268	0.479	606	0.9	5.426	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	308	414	1262	0.244	308	0.3	3.772	A
2	919	189	1261	0.729	919	2.6	10.504	B
3	607	212	1267	0.479	607	0.9	5.450	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	252	339	1312	0.192	252	0.2	3.396	A
2	751	155	1283	0.585	755	1.4	6.889	A
3	495	175	1290	0.384	496	0.6	4.542	A

18:15 - 18:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	211	284	1349	0.156	211	0.2	3.166	A
2	629	130	1298	0.484	631	0.9	5.411	A
3	415	146	1308	0.317	415	0.5	4.034	A

2045 + ST, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3	5.59	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.59	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2045 + ST	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	297	100.000
2		✓	459	100.000
3		✓	726	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	197	100
	2	77	0	382
	3	353	373	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	1
	2	0	0	2
	3	1	4	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.26	3.89	0.4	A
2	0.39	4.60	0.6	A
3	0.60	6.89	1.5	A

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	224	279	1341	0.167	223	0.2	3.217	A
2	346	75	1309	0.264	344	0.4	3.725	A
3	547	58	1338	0.409	544	0.7	4.518	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	267	335	1304	0.205	267	0.3	3.471	A
2	413	90	1300	0.317	412	0.5	4.052	A
3	653	69	1331	0.490	652	1.0	5.289	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	327	410	1253	0.261	327	0.4	3.884	A
2	505	110	1288	0.392	505	0.6	4.592	A
3	799	85	1322	0.605	797	1.5	6.835	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	327	411	1252	0.261	327	0.4	3.890	A
2	505	110	1288	0.392	505	0.6	4.600	A
3	799	85	1322	0.605	799	1.5	6.890	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	267	336	1303	0.205	267	0.3	3.480	A
2	413	90	1300	0.317	413	0.5	4.062	A
3	653	69	1331	0.490	655	1.0	5.343	A

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	224	281	1340	0.167	224	0.2	3.225	A
2	346	75	1309	0.264	346	0.4	3.738	A
3	547	58	1338	0.409	548	0.7	4.564	A

2045 + ST, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3	10.75	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	10.75	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2045 + ST	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	320	100.000
2		✓	943	100.000
3		✓	540	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1	2	3
From	1	0	152	168
	2	299	0	644
	3	143	397	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.28	4.02	0.4	A
2	0.82	15.77	4.4	C
3	0.50	6.00	1.0	A

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	241	297	1339	0.180	240	0.2	3.271	A
2	710	126	1300	0.546	705	1.2	6.005	A
3	407	224	1260	0.323	405	0.5	4.202	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	288	356	1300	0.221	287	0.3	3.553	A
2	848	151	1285	0.660	845	1.9	8.127	A
3	485	268	1232	0.394	485	0.6	4.813	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	352	436	1248	0.282	352	0.4	4.016	A
2	1038	185	1264	0.821	1029	4.2	14.742	B
3	595	326	1196	0.497	593	1.0	5.957	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	352	437	1247	0.283	352	0.4	4.022	A
2	1038	185	1264	0.821	1038	4.4	15.770	C
3	595	329	1194	0.498	595	1.0	6.000	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	288	358	1299	0.221	288	0.3	3.560	A
2	848	151	1285	0.660	857	2.0	8.603	A
3	485	272	1230	0.395	487	0.7	4.855	A

18:15 - 18:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	241	299	1338	0.180	241	0.2	3.281	A
2	710	127	1300	0.546	713	1.2	6.165	A
3	407	226	1258	0.323	407	0.5	4.236	A

LinSig V1 style report

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	Site Access - Blean School_v2.lsg3x
Author:	
Company:	
Address:	

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Pedestrian		7	7
E	Pedestrian		7	7
F	Ind. Arrow	B	4	4

Phase Intergreens Matrix

		Starting Phase					
Terminating Phase		A	B	C	D	E	F
	A		-	6	6	7	6
	B	-		6	7	5	-
	C	6	6		5	6	6
	D	7	7	7		-	-
	E	7	7	7	-		-
	F	6	-	6	-	-	

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage				
From Stage		1	2	3	4
	1		6	6	7
	2	6		6	7
	3	6	6		6
	4	7	X	7	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	B F
3	C
4	D E

Give-Way Lane Input Data

Junction: Unnamed Junction											
Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
2/2 (Whitstable Road South)	6/1 (Right)	1439	0	1/1	1.09	All	2.00	-	0.50	2	2.00

Lane Input Data

Junction: Unnamed Junction												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Whitstable Road North)	U	A	2	3	60.0	Geom	-	3.20	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Left	20.00
2/1 (Whitstable Road South)	U	B	2	3	60.0	Geom	-	3.20	0.00	Y	Arm 4 Ahead	Inf
2/2 (Whitstable Road South)	O	B F	2	3	4.7	Geom	-	3.20	0.00	Y	Arm 6 Right	20.00
3/1 (Blean Primary Arm)	U	C	2	3	4.4	Geom	-	3.25	0.00	Y	Arm 5 Left	15.00
3/2 (Blean Primary Arm)	U	C	2	3	60.0	Geom	-	3.20	0.00	Y	Arm 4 Right	20.00
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Lane Saturation Flows

Scenario 1: '2045 + CD AM' (FG1: '2045 CD AM', Plan 1: 'Network Control Plan 1')

Junction: Unnamed Junction								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Whitstable Road North)	3.20	0.00	Y	Arm 5 Ahead	Inf	53.8 %	1870	1870
				Arm 6 Left	20.00	46.2 %		
2/1 (Whitstable Road South)	3.20	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1935	1935
2/2 (Whitstable Road South)	3.20	0.00	Y	Arm 6 Right	20.00	100.0 %	1800	1800
3/1 (Blean Primary Arm)	3.25	0.00	Y	Arm 5 Left	15.00	100.0 %	1764	1764
3/2 (Blean Primary Arm)	3.20	0.00	Y	Arm 4 Right	20.00	100.0 %	1800	1800
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2045 +CD PM' (FG2: '2045 CD PM', Plan 1: 'Network Control Plan 1')

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Whitstable Road North)	3.20	0.00	Y	Arm 5 Ahead	Inf	68.2 %	1890	1890
				Arm 6 Left	20.00	31.8 %		
2/1 (Whitstable Road South)	3.20	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1935	1935
2/2 (Whitstable Road South)	3.20	0.00	Y	Arm 6 Right	20.00	100.0 %	1800	1800
3/1 (Blean Primary Arm)	3.25	0.00	Y	Arm 5 Left	15.00	100.0 %	1764	1764
3/2 (Blean Primary Arm)	3.20	0.00	Y	Arm 4 Right	20.00	100.0 %	1800	1800
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2045 + ST AM' (FG3: '2045 ST AM', Plan 1: 'Network Control Plan 1')

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Whitstable Road North)	3.20	0.00	Y	Arm 5 Ahead	Inf	51.4 %	1867	1867
				Arm 6 Left	20.00	48.6 %		
2/1 (Whitstable Road South)	3.20	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1935	1935
2/2 (Whitstable Road South)	3.20	0.00	Y	Arm 6 Right	20.00	100.0 %	1800	1800
3/1 (Blean Primary Arm)	3.25	0.00	Y	Arm 5 Left	15.00	100.0 %	1764	1764
3/2 (Blean Primary Arm)	3.20	0.00	Y	Arm 4 Right	20.00	100.0 %	1800	1800
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2045 + ST PM' (FG4: '2045 ST PM', Plan 1: 'Network Control Plan 1')

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Whitstable Road North)	3.20	0.00	Y	Arm 5 Ahead	Inf	73.7 %	1898	1898
				Arm 6 Left	20.00	26.3 %		
2/1 (Whitstable Road South)	3.20	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1935	1935
2/2 (Whitstable Road South)	3.20	0.00	Y	Arm 6 Right	20.00	100.0 %	1800	1800
3/1 (Blean Primary Arm)	3.25	0.00	Y	Arm 5 Left	15.00	100.0 %	1764	1764
3/2 (Blean Primary Arm)	3.20	0.00	Y	Arm 4 Right	20.00	100.0 %	1800	1800
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2045 CD AM'	08:00	09:00	01:00	
2: '2045 CD PM'	16:30	17:30	01:00	
3: '2045 ST AM'	08:00	09:00	01:00	
4: '2045 ST PM'	16:30	17:30	01:00	

Traffic Flows, Desired

FG1: '2045 CD AM'

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	339	395	734
	B	98	0	175	273
	C	380	64	0	444
	Tot.	478	403	570	1451

FG2: '2045 CD PM'
Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	175	376	551
	B	172	0	108	280
	C	642	193	0	835
	Tot.	814	368	484	1666

FG3: '2045 ST AM'
Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	353	373	726
	B	100	0	197	297
	C	382	77	0	459
	Tot.	482	430	570	1482

FG4: '2045 ST PM'
Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	143	400	543
	B	168	0	152	320
	C	646	299	0	945
	Tot.	814	442	552	1808

Stage Timings

Scenario 1: '2045 + CD AM' (FG1: '2045 CD AM', Plan 1: 'Network Control Plan 1')

Stage	1	2	3	4
Duration	43	4	11	7
Change Point	0	50	60	77

LinSig V1 style report

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.3%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.3%**
1/1	Whitstable Road North Ahead Left	U	N/A	N/A	A		1	43	-	734	1870	914	80.3%
2/1+2/2	Whitstable Road South Ahead Right	U+O	N/A	N/A	B	F	1	53	4	444	1935:1800	1032+174	36.8 : 36.8%
3/2+3/1	Blean Primary Arm Right Left	U	N/A	N/A	C		1	11	-	273	1800:1764	125+223	78.5 : 78.5%
4/1		U	N/A	N/A	-		-	-	-	478	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	570	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	403	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**57**	**6**	**1**	**7.8**	**4.0**	**0.3**	**12.2**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**57**	**6**	**1**	**7.8**	**4.0**	**0.3**	**12.2**	**-**	**-**	**-**	**-**
1/1	734	734	-	-	-	3.9	2.0	-	5.9	29.1	15.3	2.0	17.3
2/1+2/2	444	444	57	6	1	1.1	0.3	0.3	1.7	13.9	4.6	0.3	4.9
3/2+3/1	273	273	-	-	-	2.8	1.7	-	4.5	60.0	4.2	1.7	5.9
4/1	478	478	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	570	570	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	403	403	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 12.1 Total Delay for Signalled Lanes (pcuHr): 12.20 Cycle Time (s): 90
PRC Over All Lanes (%): 12.1 Total Delay Over All Lanes(pcuHr): 12.20

Stage Timings

Scenario 2: '2045 +CD PM' (FG2: '2045 CD PM', Plan 1: 'Network Control Plan 1')

Stage	1	2	3	4
Duration	34	4	10	7
Change Point	0	41	51	67

LinSig V1 style report

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.1%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.1%**
1/1	Whitstable Road North Ahead Left	U	N/A	N/A	A		1	34	-	551	1890	827	66.6%
2/1+2/2	Whitstable Road South Ahead Right	U+O	N/A	N/A	B	F	1	44	4	835	1935:1800	894+269	71.8 : 71.8%
3/2+3/1	Blean Primary Arm Right Left	U	N/A	N/A	C		1	10	-	280	1800:1764	235+148	73.1 : 73.1%
4/1		U	N/A	N/A	-		-	-	-	814	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	484	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	368	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**169**	**19**	**5**	**8.0**	**3.6**	**0.6**	**12.2**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**169**	**19**	**5**	**8.0**	**3.6**	**0.6**	**12.2**	**-**	**-**	**-**	**-**
1/1	551	551	-	-	-	2.7	1.0	-	3.7	24.3	9.6	1.0	10.6
2/1+2/2	835	835	169	19	5	2.7	1.3	0.6	4.6	19.9	11.3	1.3	12.6
3/2+3/1	280	280	-	-	-	2.5	1.3	-	3.9	49.5	3.6	1.3	5.0
4/1	814	814	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	484	484	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	368	368	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 23.1 Total Delay for Signalled Lanes (pcuHr): 12.18 Cycle Time (s): 80
PRC Over All Lanes (%): 23.1 Total Delay Over All Lanes(pcuHr): 12.18

Stage Timings

Scenario 3: '2045 + ST AM' (FG3: '2045 ST AM', Plan 1: 'Network Control Plan 1')

Stage	1	2	3	4
Duration	42	4	12	7
Change Point	0	49	59	77

LinSig V1 style report
Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.0%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.0%**
1/1	Whitstable Road North Ahead Left	U	N/A	N/A	A		1	42	-	726	1867	892	81.4%
2/1+2/2	Whitstable Road South Ahead Right	U+O	N/A	N/A	B	F	1	52	4	459	1935:1800	989+199	38.6 : 38.6%
3/2+3/1	Blean Primary Arm Right Left	U	N/A	N/A	C		1	12	-	297	1800:1764	121+237	83.0 : 83.0%
4/1		U	N/A	N/A	-		-	-	-	482	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	570	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	430	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**68**	**7**	**2**	**8.2**	**4.7**	**0.4**	**13.4**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**68**	**7**	**2**	**8.2**	**4.7**	**0.4**	**13.4**	**-**	**-**	**-**	**-**
1/1	726	726	-	-	-	4.0	2.1	-	6.2	30.7	15.3	2.1	17.5
2/1+2/2	459	459	68	7	2	1.2	0.3	0.4	1.9	15.1	4.9	0.3	5.2
3/2+3/1	297	297	-	-	-	3.0	2.3	-	5.3	63.9	4.9	2.3	7.1
4/1	482	482	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	570	570	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	430	430	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 8.5 Total Delay for Signalled Lanes (pcuHr): 13.38 Cycle Time (s): 90
PRC Over All Lanes (%): 8.5 Total Delay Over All Lanes(pcuHr): 13.38

LinSig V1 style report

Stage Timings

Scenario 4: '2045 + ST PM' (FG4: '2045 ST PM', Plan 1: 'Network Control Plan 1')

Stage	1	2	3	4
Duration	35	4	9	7
Change Point	0	42	52	67

LinSig V1 style report

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.7%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.7%**
1/1	Whitstable Road North Ahead Left	U	N/A	N/A	A		1	35	-	543	1898	854	63.6%
2/1+2/2	Whitstable Road South Ahead Right	U+O	N/A	N/A	B	F	1	45	4	945	1935:1800	832+385	77.7 : 77.7%
3/2+3/1	Blean Primary Arm Right Left	U	N/A	N/A	C		1	9	-	320	1800:1764	218+198	76.9 : 76.9%
4/1		U	N/A	N/A	-		-	-	-	814	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	552	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	442	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**191**	**101**	**7**	**8.9**	**4.2**	**0.8**	**13.9**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**191**	**101**	**7**	**8.9**	**4.2**	**0.8**	**13.9**	**-**	**-**	**-**	**-**
1/1	543	543	-	-	-	2.6	0.9	-	3.4	22.7	9.2	0.9	10.1
2/1+2/2	945	945	191	101	7	3.4	1.7	0.8	5.9	22.3	12.8	1.7	14.5
3/2+3/1	320	320	-	-	-	3.0	1.6	-	4.6	51.8	3.6	1.6	5.2
4/1	814	814	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	552	552	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	442	442	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 15.9 Total Delay for Signalled Lanes (pcuHr): 13.88 Cycle Time (s): 80
PRC Over All Lanes (%): 15.9 Total Delay Over All Lanes(pcuHr): 13.88

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.0.2.1574

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Report generation date: 16/01/2023 08:07:45

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 Base Modelled													
Arm B	D7	2.2	15.48	0.69	C	172.86	-25 % [Arm C]	D8	13.0	64.72	0.96	F	100.75	-19 % [Arm C]
Arm C		79.3	390.08	1.20	F				41.7	205.42	1.11	F		
Arm A		2.6	15.89	0.73	C				0.9	6.92	0.48	A		
	2045 + CD													
Arm B	D9	3.9	27.18	0.81	D	252.12	-29 % [Arm C]	D10	17.6	88.03	0.99	F	402.50	-34 % [Arm C]
Arm C		110.8	558.41	1.27	F				175.5	894.71	1.41	F		
Arm A		2.6	15.77	0.73	C				1.1	7.54	0.53	A		
	2045 + ST													
Arm B	D11	19.6	107.39	1.01	F	332.03	-32 % [Arm C]	D12	22.8	111.91	1.02	F	704.13	-41 % [Arm C]
Arm C		145.1	707.14	1.32	F				307.6	1512.66	1.61	F		
Arm A		2.6	15.83	0.73	C				1.4	8.50	0.59	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A290/Rough Common Road
Location	Rough Common
Site number	
Date	23/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 Base Modelled	AM	ONE HOUR	07:45	09:15	15	✓	✓
D8	2045 Base Modelled	PM	ONE HOUR	16:15	17:45	15	✓	✓
D9	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓
D10	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓
D11	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓
D12	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 Base Modelled, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D7 - 2045 Base Modelled, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	172.86	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-25	Arm C	172.86	F

Arms

Arms

Arm	Name	Description
B	A290 Whitstable Road South	
C	Rough Common Road	
A	A290 Whitstable Road North	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
B	3.70	3.35	4.10	3.1	12.00	9.50	0.0	✓
C	3.45	3.20	4.00	1.0	14.00	10.40	0.0	✓
A	3.30	3.25	4.00	9.8	16.35	17.70	0.0	✓

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
B	0.522	912
C	0.510	809
A	0.620	1159

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 Base Modelled	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	474	100.000
C		ONE HOUR	✓	749	100.000
A		ONE HOUR	✓	540	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	268	206
	C	556	0	193
	A	294	246	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	1	3
	C	0	0	1
	A	3	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.69	15.48	2.2	8.9	C	474	474
C	1.20	390.08	79.3	128.1	F	749	749
A	0.73	15.89	2.6	11.3	C	540	540

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	426	107	220	780	0.546	425	745	0.8	1.2	10.088	B
C	673	168	185	709	0.949	649	460	3.2	9.2	46.897	E
A	485	121	482	837	0.580	483	352	0.8	1.3	10.137	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	522	130	269	754	0.692	518	828	1.2	2.1	14.981	B
C	825	206	225	688	1.198	683	562	9.2	44.7	157.556	F
A	595	149	507	822	0.724	590	401	1.3	2.5	15.246	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	522	130	271	753	0.693	522	833	2.1	2.2	15.485	C
C	825	206	227	687	1.200	686	566	44.7	79.3	333.967	F
A	595	149	509	820	0.725	594	404	2.5	2.6	15.892	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	426	107	223	778	0.547	430	786	2.2	1.2	10.442	B
C	673	168	187	708	0.951	699	466	79.3	72.8	390.079	F
A	485	121	519	814	0.596	490	367	2.6	1.5	11.232	B

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.18	0.09	1.00	2.00	2.75			N/A	N/A
C	9.18	0.28	5.21	21.95	29.55			N/A	N/A
A	1.35	0.08	1.03	2.69	3.63			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	2.13	0.03	0.29	2.13	8.92			N/A	N/A
C	44.72	18.24	41.59	69.58	79.28			N/A	N/A
A	2.47	0.03	0.30	2.53	11.29			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	2.19	0.03	0.28	2.19	5.68			N/A	N/A
C	79.31	40.16	75.77	114.85	127.92			N/A	N/A
A	2.55	0.03	0.28	2.55	6.75			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.24	0.06	0.76	2.73	3.88			N/A	N/A
C	72.79	30.69	68.17	112.70	128.07			N/A	N/A
A	1.52	0.06	0.80	3.62	5.27			N/A	N/A

2045 Base Modelled, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D8 - 2045 Base Modelled, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	100.75	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-19	Arm C	100.75	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D8	2045 Base Modelled	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	693	100.000
C		ONE HOUR	✓	625	100.000
A		ONE HOUR	✓	430	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	360	333
	C	257	0	368
	A	231	199	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	0	0
	C	0	0	0
	A	0	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)

B	0.96	64.72	13.0	58.1	F	693	693
C	1.11	205.42	41.7	85.1	F	625	625
A	0.48	6.92	0.9	2.2	A	430	430

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	623	156	179	816	0.763	618	434	1.6	3.0	17.647	C
C	562	140	297	655	0.858	551	499	2.1	4.9	31.607	D
A	387	97	226	1011	0.382	386	621	0.5	0.6	5.753	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	763	191	219	795	0.960	734	505	3.0	10.3	45.165	E
C	688	172	353	626	1.099	611	600	4.9	24.2	103.430	F
A	473	118	251	996	0.475	472	712	0.6	0.9	6.862	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	763	191	219	795	0.960	752	508	10.3	13.0	64.723	F
C	688	172	361	622	1.107	618	610	24.2	41.7	205.424	F
A	473	118	254	994	0.476	473	725	0.9	0.9	6.915	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	623	156	179	816	0.764	661	467	13.0	3.5	27.562	D
C	562	140	318	644	0.872	629	523	41.7	24.9	193.719	F
A	387	97	259	991	0.390	388	688	0.9	0.6	5.974	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	2.99	0.08	1.35	7.68	11.17			N/A	N/A
C	4.89	0.14	2.26	11.96	16.54			N/A	N/A
A	0.61	0.13	0.88	1.38	1.44			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	10.30	0.14	4.01	27.59	39.61			N/A	N/A
C	24.20	5.15	20.62	44.01	52.77			N/A	N/A
A	0.89	0.03	0.26	0.89	0.89			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	13.00	0.09	2.69	37.48	58.14			N/A	N/A
C	41.74	11.70	37.07	72.29	85.14			N/A	N/A
A	0.90	0.03	0.27	0.90	2.21			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.53	0.04	0.42	9.69	18.09			N/A	N/A
C	24.94	5.31	21.27	45.38	54.41			N/A	N/A
A	0.65	0.18	0.92	1.38	1.44			N/A	N/A

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D9 - 2045 + CD, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	252.12	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-29	Arm C	252.12	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D9	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	488	100.000
C		ONE HOUR	✓	800	100.000
A		ONE HOUR	✓	559	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	298	190
	C	553	0	247
	A	158	401	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	1	4
	C	0	0	1
	A	4	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.81	27.18	3.9	19.4	D	488	488

C	1.27	558.41	110.8	175.1	F	800	800
A	0.73	15.77	2.6	11.8	C	559	559

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	439	110	359	709	0.619	436	610	1.0	1.6	13.069	B
C	719	180	170	714	1.007	678	625	4.1	14.4	64.387	F
A	503	126	469	849	0.592	500	379	0.9	1.4	10.265	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	537	134	438	668	0.804	529	651	1.6	3.6	24.543	C
C	881	220	206	695	1.267	692	761	14.4	61.5	211.084	F
A	615	154	479	843	0.730	611	420	1.4	2.6	15.212	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	537	134	441	666	0.806	536	653	3.6	3.9	27.179	D
C	881	220	209	694	1.270	693	769	61.5	108.4	447.396	F
A	615	154	479	843	0.730	615	423	2.6	2.6	15.771	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	439	110	364	707	0.621	447	634	3.9	1.7	14.298	B
C	719	180	174	712	1.011	710	637	108.4	110.8	558.408	F
A	503	126	491	836	0.601	507	393	2.6	1.6	11.086	B

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.56	0.07	1.03	3.44	4.77			N/A	N/A
C	14.37	0.35	8.16	35.10	47.45			N/A	N/A
A	1.41	0.08	1.05	2.85	3.87			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.62	0.04	0.37	8.84	19.44			N/A	N/A
C	61.49	27.55	57.91	92.97	104.93			N/A	N/A
A	2.55	0.03	0.30	2.73	11.78			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.86	0.03	0.31	4.95	18.69			N/A	N/A
C	108.42	62.57	105.01	148.97	163.35			N/A	N/A
A	2.63	0.03	0.28	2.63	6.79			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.70	0.04	0.45	4.52	7.44			N/A	N/A
C	110.80	58.61	106.46	158.02	175.11			N/A	N/A
A	1.55	0.06	0.75	3.76	5.57			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D10 - 2045 + CD, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	402.50	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-34	Arm C	402.50	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D10	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	668	100.000
C		ONE HOUR	✓	818	100.000
A		ONE HOUR	✓	484	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	363	305
	C	289	0	529
	A	192	292	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	0	0
	C	0	0	0
	A	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.99	88.03	17.6	64.2	F	668	668

C	1.41	894.71	175.5	200.0	F	818	818
A	0.53	7.54	1.1	1.6	A	484	484

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	601	150	262	773	0.777	594	404	1.7	3.2	19.529	C
C	735	184	271	669	1.099	655	585	5.9	26.1	105.519	F
A	435	109	231	1007	0.432	434	695	0.6	0.8	6.277	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	735	184	321	742	0.992	697	438	3.2	12.8	55.765	F
C	901	225	318	645	1.396	644	699	26.1	90.2	337.836	F
A	533	133	228	1009	0.528	532	735	0.8	1.1	7.512	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	735	184	321	741	0.992	716	438	12.8	17.6	88.028	F
C	901	225	327	641	1.406	640	711	90.2	155.3	692.422	F
A	533	133	226	1010	0.528	533	741	1.1	1.1	7.543	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	601	150	263	772	0.778	655	404	17.6	3.9	39.700	E
C	735	184	299	655	1.123	655	619	155.3	175.5	894.710	F
A	435	109	231	1007	0.432	436	722	1.1	0.8	6.326	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.19	0.08	1.42	8.21	11.91			N/A	N/A
C	26.10	0.24	11.75	69.62	98.56			N/A	N/A
A	0.75	0.14	0.90	1.39	1.45			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	12.79	0.33	7.24	31.09	41.98			N/A	N/A
C	90.22	34.67	83.69	144.29	165.51			N/A	N/A
A	1.10	0.03	0.26	1.10	1.10			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	17.60	0.23	8.39	45.87	64.18			N/A	N/A
C	155.29	>199	>199	>199	>199			N/A	N/A
A	1.11	0.03	0.27	1.11	1.57			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.94	0.04	0.43	10.86	20.23			N/A	N/A
C	175.49	>199	>199	>199	>199			N/A	N/A
A	0.77	0.15	0.91	1.40	1.46			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D11 - 2045 + ST, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	332.03	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-32	Arm C	332.03	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D11	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	598	100.000
C		ONE HOUR	✓	840	100.000
A		ONE HOUR	✓	559	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	413	185
	C	573	0	267
	A	128	431	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	0	4
	C	0	0	1
	A	6	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	1.01	107.39	19.6	63.3	F	598	598

C	1.32	707.14	145.1	200.0	F	840	840
A	0.73	15.83	2.6	11.9	C	559	559

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	538	134	386	698	0.771	532	588	1.5	3.1	20.914	C
C	755	189	164	717	1.054	694	753	5.1	20.4	82.550	F
A	503	126	474	844	0.595	500	385	0.9	1.4	10.408	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	658	165	471	653	1.008	617	618	3.1	13.5	64.455	F
C	925	231	191	703	1.316	701	897	20.4	76.3	260.784	F
A	615	154	478	841	0.732	611	414	1.4	2.6	15.328	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	658	165	474	652	1.011	634	618	13.5	19.6	107.394	F
C	925	231	196	700	1.321	700	912	76.3	132.5	544.513	F
A	615	154	477	842	0.731	615	419	2.6	2.6	15.833	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	538	134	391	695	0.773	600	597	19.6	3.9	50.803	F
C	755	189	186	705	1.070	705	806	132.5	145.1	707.142	F
A	503	126	481	840	0.599	507	410	2.6	1.5	10.962	B

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.06	0.08	1.39	7.84	11.38			N/A	N/A
C	20.38	0.33	10.80	51.60	70.85			N/A	N/A
A	1.43	0.08	1.06	2.89	3.92			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	13.49	0.59	8.62	31.10	40.92			N/A	N/A
C	76.26	32.52	71.53	117.66	133.55			N/A	N/A
A	2.57	0.03	0.30	2.81	11.93			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	19.63	0.53	11.78	47.31	63.34			N/A	N/A
C	132.53	>199	>199	>199	>199			N/A	N/A
A	2.64	0.03	0.28	2.64	6.83			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.91	0.04	0.43	10.82	20.05			N/A	N/A
C	145.06	>199	>199	>199	>199			N/A	N/A
A	1.53	0.05	0.69	3.75	5.60			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D12 - 2045 + ST, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	704.13	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-41	Arm C	704.13	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D12	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	657	100.000
C		ONE HOUR	✓	956	100.000
A		ONE HOUR	✓	547	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	374	283
	C	296	0	660
	A	200	347	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	0	0
	C	0	0	0
	A	0	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	1.02	111.91	22.8	68.9	F	657	657

C	1.61	1512.66	307.6	200.0	F	956	956
A	0.59	8.50	1.4	1.7	A	547	547

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	591	148	311	746	0.791	584	389	1.7	3.4	21.246	C
C	859	215	251	680	1.264	677	644	15.4	60.9	217.915	F
A	492	123	210	1022	0.481	491	719	0.7	0.9	6.769	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	723	181	381	710	1.019	676	424	3.4	15.4	65.735	F
C	1053	263	291	660	1.595	660	765	60.9	159.1	611.123	F
A	602	151	204	1025	0.588	600	746	0.9	1.4	8.439	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	723	181	382	709	1.020	694	423	15.4	22.8	111.905	F
C	1053	263	299	656	1.605	656	777	159.1	258.3	1141.837	F
A	602	151	203	1026	0.587	602	752	1.4	1.4	8.497	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	591	148	313	746	0.792	664	386	22.8	4.5	58.414	F
C	859	215	286	662	1.298	662	691	258.3	307.6	1512.664	F
A	492	123	205	1024	0.480	494	743	1.4	0.9	6.807	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.42	0.08	1.02	8.80	12.73			N/A	N/A
C	60.85	>199	>199	>199	>199			N/A	N/A
A	0.92	0.11	0.93	1.26	1.68			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	15.35	0.93	10.44	34.34	44.56			N/A	N/A
C	159.11	>199	>199	>199	>199			N/A	N/A
A	1.39	0.03	0.27	1.39	1.39			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	22.75	1.04	14.97	52.53	68.86			N/A	N/A
C	258.33	>199	>199	>199	>199			N/A	N/A
A	1.41	0.03	0.27	1.41	1.41			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	4.48	0.04	0.45	12.58	22.87			N/A	N/A
C	307.60	>199	>199	>199	>199			N/A	N/A
A	0.94	0.11	0.94	1.35	1.73			N/A	N/A

LinSig V1 style report

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	221215 A2050_Palmars Cross Hill.lsg3x
Author:	
Company:	
Address:	

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Filter	A	4	0
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Traffic		7	7

Phase Intergreens Matrix

	Starting Phase						
Terminating Phase		A	B	C	D	E	F
	A		-	6	6	5	-
	B	-		-	-	5	-
	C	5	-		-	5	5
	D	5	-	-		-	-
	E	6	8	5	-		-
	F	-	-	5	-	-	

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage				
From Stage		1	2	3	4
	1		5	6	6
	2	6		2	8
	3	6	0		8
	4	5	X	X	

Phases in Stage

Stage No.	Phases in Stage
1	A F
2	E F
3	D E F
4	B C D

Give-Way Lane Input Data

Junction: Unnamed Junction
There are no Opposed Lanes in this Junction

Lane Input Data

Junction: Unnamed Junction												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1	U		2	3	60.0	Inf	-	-	-	-	-	-
1/2	U		2	3	60.0	Inf	-	-	-	-	-	-
2/1	U	A B	2	3	14.8	Geom	-	5.00	0.00	Y	Arm 5 Left	18.90
2/2	U	A	2	3	60.0	Geom	-	4.20	0.00	N	Arm 1 Ahead	Inf
2/3	U	A	2	3	11.3	Geom	-	3.40	0.00	N	Arm 1 Ahead	Inf
3/1	U	D	2	3	6.3	Geom	-	5.00	0.00	Y	Arm 1 Left	26.60
3/2	U	C	2	3	60.0	Geom	-	3.50	0.00	N	Arm 4 Right	17.90
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U	F	2	3	60.0	Geom	-	3.40	0.00	Y	Arm 4 Ahead	Inf
6/2	U	E	2	3	19.1	Geom	-	3.10	0.00	N	Arm 5 Right	13.50

Lane Saturation Flows

Scenario 1: '2045 AM' (FG1: '2045 AM', Plan 1: 'Network Control Plan 1')

Junction: Unnamed Junction								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1	Infinite Saturation Flow						Inf	Inf
1/2	Infinite Saturation Flow						Inf	Inf
2/1	5.00	0.00	Y	Arm 5 Left	18.90	100.0 %	1959	1959
2/2	4.20	0.00	N	Arm 1 Ahead	Inf	100.0 %	2175	2175
2/3	3.40	0.00	N	Arm 1 Ahead	Inf	100.0 %	2095	2095
3/1	5.00	0.00	Y	Arm 1 Left	26.60	100.0 %	2002	2002
3/2	3.50	0.00	N	Arm 4 Right	17.90	100.0 %	1942	1942
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.40	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1955	1955
6/2	3.10	0.00	N	Arm 5 Right	13.50	100.0 %	1859	1859

Scenario 2: '2045 PM' (FG2: '2045 PM', Plan 1: 'Network Control Plan 1')

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	Infinite Saturation Flow						Inf	Inf
1/2	Infinite Saturation Flow						Inf	Inf
2/1	5.00	0.00	Y	Arm 5 Left	18.90	100.0 %	1959	1959
2/2	4.20	0.00	N	Arm 1 Ahead	Inf	100.0 %	2175	2175
2/3	3.40	0.00	N	Arm 1 Ahead	Inf	100.0 %	2095	2095
3/1	5.00	0.00	Y	Arm 1 Left	26.60	100.0 %	2002	2002
3/2	3.50	0.00	N	Arm 4 Right	17.90	100.0 %	1942	1942
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.40	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1955	1955
6/2	3.10	0.00	N	Arm 5 Right	13.50	100.0 %	1859	1859

Scenario 3: '2045+CD AM' (FG3: '2045+CD AM', Plan 1: 'Network Control Plan 1')

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	Infinite Saturation Flow						Inf	Inf
1/2	Infinite Saturation Flow						Inf	Inf
2/1	5.00	0.00	Y	Arm 5 Left	18.90	100.0 %	1959	1959
2/2	4.20	0.00	N	Arm 1 Ahead	Inf	100.0 %	2175	2175
2/3	3.40	0.00	N	Arm 1 Ahead	Inf	100.0 %	2095	2095
3/1	5.00	0.00	Y	Arm 1 Left	26.60	100.0 %	2002	2002
3/2	3.50	0.00	N	Arm 4 Right	17.90	100.0 %	1942	1942
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.40	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1955	1955
6/2	3.10	0.00	N	Arm 5 Right	13.50	100.0 %	1859	1859

Scenario 4: '2045+CD PM' (FG4: '2045+CD PM', Plan 1: 'Network Control Plan 1')

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	Infinite Saturation Flow						Inf	Inf
1/2	Infinite Saturation Flow						Inf	Inf
2/1	5.00	0.00	Y	Arm 5 Left	18.90	100.0 %	1959	1959
2/2	4.20	0.00	N	Arm 1 Ahead	Inf	100.0 %	2175	2175
2/3	3.40	0.00	N	Arm 1 Ahead	Inf	100.0 %	2095	2095
3/1	5.00	0.00	Y	Arm 1 Left	26.60	100.0 %	2002	2002
3/2	3.50	0.00	N	Arm 4 Right	17.90	100.0 %	1942	1942
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.40	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1955	1955
6/2	3.10	0.00	N	Arm 5 Right	13.50	100.0 %	1859	1859

Scenario 5: '2045+ST AM' (FG5: '2045+ST AM', Plan 1: 'Network Control Plan 1')

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	Infinite Saturation Flow						Inf	Inf
1/2	Infinite Saturation Flow						Inf	Inf
2/1	5.00	0.00	Y	Arm 5 Left	18.90	100.0 %	1959	1959
2/2	4.20	0.00	N	Arm 1 Ahead	Inf	100.0 %	2175	2175
2/3	3.40	0.00	N	Arm 1 Ahead	Inf	100.0 %	2095	2095
3/1	5.00	0.00	Y	Arm 1 Left	26.60	100.0 %	2002	2002
3/2	3.50	0.00	N	Arm 4 Right	17.90	100.0 %	1942	1942
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.40	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1955	1955
6/2	3.10	0.00	N	Arm 5 Right	13.50	100.0 %	1859	1859

Scenario 6: '2045+ST PM' (FG6: '2045+ST PM', Plan 1: 'Network Control Plan 1')

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	Infinite Saturation Flow						Inf	Inf
1/2	Infinite Saturation Flow						Inf	Inf
2/1	5.00	0.00	Y	Arm 5 Left	18.90	100.0 %	1959	1959
2/2	4.20	0.00	N	Arm 1 Ahead	Inf	100.0 %	2175	2175
2/3	3.40	0.00	N	Arm 1 Ahead	Inf	100.0 %	2095	2095
3/1	5.00	0.00	Y	Arm 1 Left	26.60	100.0 %	2002	2002
3/2	3.50	0.00	N	Arm 4 Right	17.90	100.0 %	1942	1942
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.40	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1955	1955
6/2	3.10	0.00	N	Arm 5 Right	13.50	100.0 %	1859	1859

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2045 AM'	08:00	09:00	01:00	
2: '2045 PM'	16:30	17:30	01:00	
3: '2045+CD AM'	08:00	09:00	01:00	
4: '2045+CD PM'	16:30	17:30	01:00	
5: '2045+ST AM'	08:00	09:00	01:00	
6: '2045+ST PM'	16:30	17:30	01:00	

Traffic Flows, Desired

FG1: '2045 AM'

Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	460	1078	1538
	B	257	0	246	503
	C	509	164	0	673
	Tot.	766	624	1324	2714

FG2: '2045 PM'
Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	147	671	818
	B	288	0	147	435
	C	697	258	0	955
	Tot.	985	405	818	2208

FG3: '2045+CD AM'
Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	482	1078	1560
	B	341	0	317	658
	C	509	183	0	692
	Tot.	850	665	1395	2910

FG4: '2045+CD PM'
Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	241	671	912
	B	337	0	189	526
	C	697	338	0	1035
	Tot.	1034	579	860	2473

FG5: '2045+ST AM'
Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	532	1078	1610
	B	532	0	282	814
	C	509	173	0	682
	Tot.	1041	705	1360	3106

FG6: '2045+ST PM'
Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	451	671	1122
	B	448	0	168	616
	C	736	297	0	1033
	Tot.	1184	748	839	2771

Stage Timings

Scenario 1: '2045 AM' (FG1: '2045 AM', Plan 1: 'Network Control Plan 1')

Stage	1	2	3	4
Duration	26	2	3	9
Change Point	0	31	38	43

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.2%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.2%**
1/1		U	N/A	N/A	-		-	-	-	795	Inf	Inf	0.0%
1/2		U	N/A	N/A	-		-	-	-	529	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	A	B	1	40	14	460	1959	1339	34.4%
2/2+2/3	Ahead	U	N/A	N/A	A		1	26	-	1078	2175:2095	838+807	65.5 : 65.5%
3/2+3/1	Left Right	U	N/A	N/A	C D		1	12:20	-	503	1942:2002	409+391	62.9 : 62.9%
4/1		U	N/A	N/A	-		-	-	-	766	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	624	Inf	Inf	0.0%
6/1+6/2	Ahead Right	U	N/A	N/A	F E		1	38:7	-	673	1955:1859	1241+248	41.0 : 66.2%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**8.5**	**2.5**	**0.0**	**10.9**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**8.5**	**2.5**	**0.0**	**10.9**	**-**	**-**	**-**	**-**
1/1	795	795	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	529	529	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	460	460	-	-	-	0.5	0.3	-	0.8	6.0	3.1	0.3	3.3
2/2+2/3	1078	1078	-	-	-	3.6	0.9	-	4.6	15.3	6.7	0.9	7.7
3/2+3/1	503	503	-	-	-	2.5	0.8	-	3.3	24.0	3.9	0.8	4.7
4/1	766	766	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	624	624	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1+6/2	673	673	-	-	-	1.8	0.4	-	2.2	12.0	4.0	0.4	4.4

C1	PRC for Signalled Lanes (%):	36.0	Total Delay for Signalled Lanes (pcuHr):	10.94	Cycle Time (s):	60
	PRC Over All Lanes (%):	36.0	Total Delay Over All Lanes(pcuHr):	10.94		

Stage Timings

Scenario 2: '2045 PM' (FG2: '2045 PM', Plan 1: 'Network Control Plan 1')

Stage	1	2	3	4
Duration	10	2	4	6
Change Point	0	15	22	28

LinSig V1 style report

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**64.8%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**64.8%**
1/1		U	N/A	N/A	-		-	-	-	489	Inf	Inf	0.0%
1/2		U	N/A	N/A	-		-	-	-	329	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	A	B	1	21	11	147	1959	1026	14.3%
2/2+2/3	Ahead	U	N/A	N/A	A		1	10	-	671	2175:2095	570+549	60.0 : 60.0%
3/2+3/1	Left Right	U	N/A	N/A	C D		1	9:18	-	435	1942:2002	462+236	62.3 : 62.3%
4/1		U	N/A	N/A	-		-	-	-	985	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	405	Inf	Inf	0.0%
6/1+6/2	Ahead Right	U	N/A	N/A	F E		1	23:8	-	955	1955:1859	1117+398	62.4 : 64.8%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**6.4**	**2.5**	**0.0**	**8.9**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**6.4**	**2.5**	**0.0**	**8.9**	**-**	**-**	**-**	**-**
1/1	489	489	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	329	329	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	147	147	-	-	-	0.2	0.1	-	0.3	7.2	0.9	0.1	0.9
2/2+2/3	671	671	-	-	-	2.5	0.7	-	3.3	17.6	3.4	0.7	4.2
3/2+3/1	435	435	-	-	-	1.4	0.8	-	2.2	18.6	3.0	0.8	3.8
4/1	985	985	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	405	405	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1+6/2	955	955	-	-	-	2.2	0.8	-	3.1	11.6	5.2	0.8	6.1

C1	PRC for Signalled Lanes (%):	39.0	Total Delay for Signalled Lanes (pcuHr):	8.91	Cycle Time (s):	42
	PRC Over All Lanes (%):	39.0	Total Delay Over All Lanes(pcuHr):	8.91		

Stage Timings

Scenario 3: '2045+CD AM' (FG3: '2045+CD AM', Plan 1: 'Network Control Plan 1')

Stage	1	2	3	4
Duration	21	2	4	13
Change Point	0	26	33	39

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.5%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.5%**
1/1		U	N/A	N/A	-		-	-	-	866	Inf	Inf	0.0%
1/2		U	N/A	N/A	-		-	-	-	529	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	A	B	1	39	18	482	1959	1306	36.9%
2/2+2/3	Ahead	U	N/A	N/A	A		1	21	-	1078	2175:2095	747+720	73.5 : 73.5%
3/2+3/1	Left Right	U	N/A	N/A	C D		1	16:25	-	658	1942:2002	477+443	71.5 : 71.5%
4/1		U	N/A	N/A	-		-	-	-	850	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	665	Inf	Inf	0.0%
6/1+6/2	Ahead Right	U	N/A	N/A	F E		1	34:8	-	692	1955:1859	1140+279	44.6 : 65.6%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**10.4**	**3.4**	**0.0**	**13.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**10.4**	**3.4**	**0.0**	**13.8**	**-**	**-**	**-**	**-**
1/1	866	866	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	529	529	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	482	482	-	-	-	0.6	0.3	-	0.9	6.6	3.5	0.3	3.8
2/2+2/3	1078	1078	-	-	-	4.8	1.4	-	6.2	20.7	7.6	1.4	9.0
3/2+3/1	658	658	-	-	-	2.8	1.2	-	4.0	22.0	4.9	1.2	6.2
4/1	850	850	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	665	665	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1+6/2	692	692	-	-	-	2.2	0.5	-	2.7	14.0	4.7	0.5	5.1

C1	PRC for Signalled Lanes (%):	22.5	Total Delay for Signalled Lanes (pcuHr):	13.80	Cycle Time (s):	60
	PRC Over All Lanes (%):	22.5	Total Delay Over All Lanes(pcuHr):	13.80		

Stage Timings

Scenario 4: '2045+CD PM' (FG4: '2045+CD PM', Plan 1: 'Network Control Plan 1')

Stage	1	2	3	4
Duration	8	0	8	6
Change Point	0	13	18	28

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.4%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.4%**
1/1		U	N/A	N/A	-		-	-	-	531	Inf	Inf	0.0%
1/2		U	N/A	N/A	-		-	-	-	329	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	A	B	1	19	11	241	1959	933	25.8%
2/2+2/3	Ahead	U	N/A	N/A	A		1	8	-	671	2175:2095	466+449	73.4 : 73.3%
3/2+3/1	Left Right	U	N/A	N/A	C D		1	9:22	-	526	1942:2002	462+259	72.9 : 72.9%
4/1		U	N/A	N/A	-		-	-	-	1034	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	579	Inf	Inf	0.0%
6/1+6/2	Ahead Right	U	N/A	N/A	F E		1	23:10	-	1035	1955:1859	1117+487	62.4 : 69.4%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**7.4**	**3.8**	**0.0**	**11.2**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**7.4**	**3.8**	**0.0**	**11.2**	**-**	**-**	**-**	**-**
1/1	531	531	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	329	329	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	241	241	-	-	-	0.4	0.2	-	0.6	9.2	1.7	0.2	1.8
2/2+2/3	671	671	-	-	-	2.9	1.4	-	4.2	22.7	3.7	1.4	5.1
3/2+3/1	526	526	-	-	-	1.6	1.3	-	3.0	20.2	3.6	1.3	4.9
4/1	1034	1034	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	579	579	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1+6/2	1035	1035	-	-	-	2.5	0.9	-	3.4	11.8	5.2	0.9	6.1

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C1	PRC for Signalled Lanes (%):	22.7	Total Delay for Signalled Lanes (pcuHr):	11.18	Cycle Time (s):	42
	PRC Over All Lanes (%):	22.7	Total Delay Over All Lanes(pcuHr):	11.18		

Stage Timings

Scenario 5: '2045+ST AM' (FG5: '2045+ST AM', Plan 1: 'Network Control Plan 1')

Stage	1	2	3	4
Duration	17	2	3	18
Change Point	0	22	29	34

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.4%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.4%**
1/1		U	N/A	N/A	-		-	-	-	831	Inf	Inf	0.0%
1/2		U	N/A	N/A	-		-	-	-	529	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	A	B	1	40	23	532	1959	1339	39.7%
2/2+2/3	Ahead	U	N/A	N/A	A		1	17	-	1078	2175:2095	653+628	84.1 : 84.2%
3/2+3/1	Left Right	U	N/A	N/A	C D		1	21:29	-	814	1942:2002	608+323	87.4 : 87.4%
4/1		U	N/A	N/A	-		-	-	-	1041	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	705	Inf	Inf	0.0%
6/1+6/2	Ahead Right	U	N/A	N/A	F E		1	29:7	-	682	1955:1859	978+248	52.1 : 69.8%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**12.3**	**6.8**	**0.0**	**19.2**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**12.3**	**6.8**	**0.0**	**19.2**	**-**	**-**	**-**	**-**
1/1	831	831	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	529	529	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	532	532	-	-	-	0.6	0.3	-	0.9	6.4	3.8	0.3	4.2
2/2+2/3	1078	1078	-	-	-	5.9	2.6	-	8.5	28.3	8.5	2.6	11.1
3/2+3/1	814	814	-	-	-	3.2	3.3	-	6.5	28.7	8.8	3.3	12.1
4/1	1041	1041	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	705	705	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1+6/2	682	682	-	-	-	2.6	0.6	-	3.3	17.2	5.7	0.6	6.3

C1	PRC for Signalled Lanes (%):	2.9	Total Delay for Signalled Lanes (pcuHr):	19.16	Cycle Time (s):	60
	PRC Over All Lanes (%):	2.9	Total Delay Over All Lanes(pcuHr):	19.16		

Stage Timings

Scenario 6: '2045+ST PM' (FG6: '2045+ST PM', Plan 1: 'Network Control Plan 1')

Stage	1	2	3	4
Duration	8	2	4	8
Change Point	0	13	20	26

LinSig V1 style report

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.7%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.7%**
1/1		U	N/A	N/A	-		-	-	-	510	Inf	Inf	0.0%
1/2		U	N/A	N/A	-		-	-	-	329	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	A	B	1	21	13	451	1959	1026	44.0%
2/2+2/3	Ahead	U	N/A	N/A	A		1	8	-	671	2175:2095	466+449	73.4 : 73.3%
3/2+3/1	Left Right	U	N/A	N/A	C D		1	11:20	-	616	1942:2002	555+208	80.7 : 80.7%
4/1		U	N/A	N/A	-		-	-	-	1184	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	748	Inf	Inf	0.0%
6/1+6/2	Ahead Right	U	N/A	N/A	F E		1	21:8	-	1033	1955:1859	1024+398	71.9 : 74.6%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**8.5**	**5.1**	**0.0**	**13.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**8.5**	**5.1**	**0.0**	**13.6**	**-**	**-**	**-**	**-**
1/1	510	510	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	329	329	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	451	451	-	-	-	0.8	0.4	-	1.2	9.3	3.1	0.4	3.5
2/2+2/3	671	671	-	-	-	2.9	1.4	-	4.2	22.7	3.7	1.4	5.1
3/2+3/1	616	616	-	-	-	2.0	2.0	-	4.0	23.6	4.7	2.0	6.8
4/1	1184	1184	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	748	748	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1+6/2	1033	1033	-	-	-	2.8	1.3	-	4.2	14.5	6.5	1.3	7.9

C1	PRC for Signalled Lanes (%):	11.5	Total Delay for Signalled Lanes (pcuHr):	13.59	Cycle Time (s):	42
	PRC Over All Lanes (%):	11.5	Total Delay Over All Lanes(pcuHr):	13.59		

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: Junction 4 - A290_Giles Lane.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2\Junction 4 - A290_Giles Lane_Junctions 10 Report
Report generation date: 16/01/2023 08:19:56

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 Base Modelled													
Stream B-AC	D7	1.8	38.19	0.65	E	5.00	-2 % [Stream B-AC]	D8	3.7	57.06	0.81	F	10.96	-10 % [Stream B-AC]
Stream C-AB		0.6	6.97	0.26	A				0.2	4.55	0.09	A		
	2045 + CD													
Stream B-AC	D9	0.3	13.94	0.26	B	1.74	52 % [Stream B-AC]	D10	0.2	10.44	0.14	B	0.73	97 % [Stream B-AC]
Stream C-AB		0.5	5.58	0.20	A				0.1	4.10	0.07	A		
	2045 + ST													
Stream B-AC	D11	0.2	13.54	0.13	B	1.28	73 % [Stream B-AC]	D12	0.1	10.47	0.10	B	0.63	118 % [Stream B-AC]
Stream C-AB		0.4	5.53	0.19	A				0.1	4.42	0.06	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A290/Giles Lane
Location	University of Kent
Site number	
Date	23/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 Base Modelled	AM	ONE HOUR	07:45	09:15	15	✓	✓
D8	2045 Base Modelled	PM	ONE HOUR	16:15	17:45	15	✓	✓
D9	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓
D10	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓
D11	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓
D12	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 Base Modelled, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D7 - 2045 Base Modelled, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		5.00	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-2	Stream B-AC	5.00	A

Arms

Arms

Arm	Name	Description	Arm type
A	A290 Whitstable Road West		Major
B	Giles Lane		Minor
C	A290 Whitstable Road East		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.90			139.2	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.78	18	17

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	481	0.085	0.214	0.134	0.305
B-C	621	0.091	0.230	-	-
C-B	655	0.244	0.244	-	-

The slopes and intercepts shown above include custom intercept adjustments only.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

		Time Period	Traffic	Start time	Finish time	Time segment	Results for	Run

ID	Scenario name	name	profile type	(HH:mm)	(HH:mm)	length (min)	central hour only	automatically
D7	2045 Base Modelled	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	851	100.000
B		ONE HOUR	✓	160	100.000
C		ONE HOUR	✓	411	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	384	467
	B	142	0	18
	C	332	79	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.65	38.19	1.8	9.0	E	160	160
C-AB	0.26	6.97	0.6	1.4	A	155	155
C-A						256	256
A-B						384	384
A-C						467	467

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	144	36	311	0.462	143	0.5	0.8	21.223	C
C-AB	126	32	686	0.184	126	0.3	0.4	6.433	A
C-A	243	61			243				
A-B	345	86			345				
A-C	420	105			420				

08:15 - 08:30

	Total	Junction	Capacity		Throughput	Start queue	End queue		Unsignalised

Stream	Demand (Veh/hr)	Arrivals (Veh)	(Veh/hr)	RFC	(Veh/hr)	(Veh)	(Veh)	Delay (s)	level of service
B-AC	176	44	269	0.654	173	0.8	1.7	35.946	E
C-AB	183	46	701	0.260	182	0.4	0.6	6.935	A
C-A	270	67			270				
A-B	423	106			423				
A-C	514	129			514				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	176	44	269	0.654	176	1.7	1.8	38.191	E
C-AB	183	46	702	0.261	183	0.6	0.6	6.966	A
C-A	269	67			269				
A-B	423	106			423				
A-C	514	129			514				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	144	36	311	0.463	147	1.8	0.9	22.484	C
C-AB	127	32	686	0.185	128	0.6	0.4	6.481	A
C-A	243	61			243				
A-B	345	86			345				
A-C	420	105			420				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.83	0.16	0.93	1.42	1.49			N/A	N/A
C-AB	0.37	0.00	0.00	0.37	0.37			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.70	0.03	0.32	3.43	8.92			N/A	N/A
C-AB	0.63	0.03	0.26	0.63	0.82			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.79	0.03	0.31	2.76	8.99			N/A	N/A
C-AB	0.64	0.05	0.49	1.43	1.43			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.90	0.05	0.46	1.94	2.93			N/A	N/A
C-AB	0.39	0.00	0.00	0.39	0.39			N/A	N/A

2045 Base Modelled, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D8 - 2045 Base Modelled, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		10.96	B

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-10	Stream B-AC	10.96	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D8	2045 Base Modelled	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	484	100.000
B		ONE HOUR	✓	230	100.000
C		ONE HOUR	✓	511	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	125	359
	B	214	0	16
	C	480	31	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.81	57.06	3.7	20.1	F	230	230
C-AB	0.09	4.55	0.2	1.2	A	70	70
C-A						441	441
A-B						125	125
A-C						359	359

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	207	52	345	0.600	205	0.9	1.4	25.296	D
C-AB	57	14	848	0.067	57	0.1	0.1	4.549	A
C-A	402	101			402				
A-B	112	28			112				
A-C	323	81			323				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	253	63	312	0.812	245	1.4	3.4	49.057	E
C-AB	83	21	899	0.093	83	0.1	0.2	4.413	A
C-A	479	120			479				
A-B	138	34			138				
A-C	395	99			395				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	253	63	312	0.812	252	3.4	3.7	57.057	F
C-AB	83	21	899	0.093	83	0.2	0.2	4.416	A
C-A	479	120			479				
A-B	138	34			138				
A-C	395	99			395				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	207	52	344	0.600	215	3.7	1.6	29.430	D
C-AB	57	14	848	0.067	57	0.2	0.1	4.554	A
C-A	402	101			402				
A-B	112	28			112				
A-C	323	81			323				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

B-AC	1.41	0.11	1.17	2.57	3.30			N/A	N/A
C-AB	0.11	0.03	0.25	0.46	0.48			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	3.38	0.05	0.48	9.53	16.20			N/A	N/A
C-AB	0.18	0.03	0.27	0.49	1.16			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	3.74	0.04	0.37	9.21	20.09			N/A	N/A
C-AB	0.19	0.00	0.00	0.19	0.19			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	1.60	0.04	0.41	4.25	7.43			N/A	N/A
C-AB	0.12	0.00	0.00	0.12	0.12			N/A	N/A

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D9 - 2045 + CD, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.74	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	52	Stream B-AC	1.74	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D9	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	550	100.000
B		ONE HOUR	✓	81	100.000
C		ONE HOUR	✓	458	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	78	472
	B	44	0	37
	C	388	70	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.26	13.94	0.3	1.1	B	81	81
C-AB	0.20	5.58	0.5	1.4	A	139	139
C-A						319	319
A-B						78	78
A-C						472	472

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	73	18	384	0.190	73	0.2	0.2	11.566	B
C-AB	115	29	776	0.148	114	0.2	0.3	5.442	A
C-A	297	74			297				
A-B	70	18			70				
A-C	424	106			424				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	89	22	347	0.257	89	0.2	0.3	13.895	B
C-AB	164	41	810	0.202	163	0.3	0.5	5.568	A
C-A	340	85			340				
A-B	86	21			86				
A-C	520	130			520				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	89	22	347	0.257	89	0.3	0.3	13.945	B
C-AB	164	41	811	0.202	164	0.5	0.5	5.581	A
C-A	340	85			340				
A-B	86	21			86				
A-C	520	130			520				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	73	18	383	0.190	73	0.3	0.2	11.621	B
C-AB	115	29	777	0.148	116	0.5	0.3	5.465	A
C-A	297	74			297				
A-B	70	18			70				
A-C	424	106			424				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

B-AC	0.23	0.00	0.00	0.23	0.23			N/A	N/A
C-AB	0.30	0.00	0.00	0.30	0.30			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.34	0.03	0.26	0.46	0.49			N/A	N/A
C-AB	0.47	0.03	0.26	0.48	0.85			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.34	0.03	0.31	1.07	1.07			N/A	N/A
C-AB	0.47	0.04	0.41	1.24	1.37			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.24	0.00	0.00	0.24	0.24			N/A	N/A
C-AB	0.31	0.00	0.00	0.31	0.31			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D10 - 2045 + CD, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.73	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	97	Stream B-AC	0.73	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D10	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	389	100.000
B		ONE HOUR	✓	51	100.000
C		ONE HOUR	✓	595	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	19	370
	B	21	0	30
	C	574	21	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.14	10.44	0.2	0.5	B	51	51
C-AB	0.07	4.10	0.1	0.7	A	54	54
C-A						541	541
A-B						19	19
A-C						370	370

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	46	11	431	0.106	46	0.1	0.1	9.347	A
C-AB	43	11	922	0.047	43	0.0	0.1	4.096	A
C-A	492	123			492				
A-B	17	4			17				
A-C	333	83			333				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	56	14	401	0.140	56	0.1	0.2	10.433	B
C-AB	64	16	989	0.065	64	0.1	0.1	3.894	A
C-A	591	148			591				
A-B	21	5			21				
A-C	407	102			407				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	56	14	401	0.140	56	0.2	0.2	10.444	B
C-AB	64	16	989	0.065	64	0.1	0.1	3.897	A
C-A	591	148			591				
A-B	21	5			21				
A-C	407	102			407				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	46	11	431	0.106	46	0.2	0.1	9.359	A
C-AB	43	11	922	0.047	43	0.1	0.1	4.098	A
C-A	492	123			492				
A-B	17	4			17				
A-C	333	83			333				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

B-AC	0.12	0.00	0.00	0.12	0.12			N/A	N/A
C-AB	0.07	0.03	0.25	0.45	0.48			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.16	0.03	0.26	0.47	0.49			N/A	N/A
C-AB	0.11	0.03	0.27	0.48	0.69			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.16	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	0.11	0.00	0.00	0.11	0.11			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.12	0.00	0.00	0.12	0.12			N/A	N/A
C-AB	0.07	0.00	0.00	0.07	0.07			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D11 - 2045 + ST, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.28	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	73	Stream B-AC	1.28	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D11	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	479	100.000
B		ONE HOUR	✓	37	100.000
C		ONE HOUR	✓	435	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	86	393
	B	35	0	2
	C	365	70	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.13	13.54	0.2	0.5	B	37	37
C-AB	0.19	5.53	0.4	1.3	A	132	132
C-A						303	303
A-B						86	86
A-C						393	393

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	33	8	340	0.098	33	0.1	0.1	11.729	B
C-AB	110	27	774	0.142	109	0.2	0.3	5.415	A
C-A	281	70			281				
A-B	77	19			77				
A-C	353	88			353				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	41	10	307	0.133	41	0.1	0.2	13.517	B
C-AB	154	39	807	0.191	154	0.3	0.4	5.514	A
C-A	325	81			325				
A-B	95	24			95				
A-C	433	108			433				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	41	10	307	0.133	41	0.2	0.2	13.538	B
C-AB	154	39	807	0.191	154	0.4	0.4	5.530	A
C-A	324	81			324				
A-B	95	24			95				
A-C	433	108			433				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	33	8	340	0.098	33	0.2	0.1	11.758	B
C-AB	110	27	775	0.142	110	0.4	0.3	5.438	A
C-A	281	70			281				
A-B	77	19			77				
A-C	353	88			353				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

B-AC	0.11	0.00	0.00	0.11	0.11			N/A	N/A
C-AB	0.28	0.00	0.00	0.28	0.28			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.15	0.03	0.26	0.47	0.49			N/A	N/A
C-AB	0.42	0.03	0.26	0.48	0.72			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.15	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	0.42	0.04	0.35	1.16	1.33			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.11	0.00	0.00	0.11	0.11			N/A	N/A
C-AB	0.29	0.00	0.00	0.29	0.29			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D12 - 2045 + ST, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.63	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	118	Stream B-AC	0.63	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D12	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	368	100.000
B		ONE HOUR	✓	33	100.000
C		ONE HOUR	✓	480	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	15	353
	B	20	0	13
	C	458	22	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.10	10.47	0.1	0.5	B	33	33
C-AB	0.06	4.42	0.1	0.6	A	47	47
C-A						433	433
A-B						15	15
A-C						353	353

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	30	7	408	0.073	30	0.1	0.1	9.510	A
C-AB	38	10	854	0.045	38	0.0	0.1	4.413	A
C-A	393	98			393				
A-B	13	3			13				
A-C	317	79			317				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	36	9	380	0.096	36	0.1	0.1	10.465	B
C-AB	55	14	904	0.061	55	0.1	0.1	4.238	A
C-A	474	118			474				
A-B	17	4			17				
A-C	389	97			389				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	36	9	380	0.096	36	0.1	0.1	10.472	B
C-AB	55	14	904	0.061	55	0.1	0.1	4.240	A
C-A	473	118			473				
A-B	17	4			17				
A-C	389	97			389				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	30	7	408	0.073	30	0.1	0.1	9.517	A
C-AB	38	10	854	0.045	38	0.1	0.1	4.416	A
C-A	393	98			393				
A-B	13	3			13				
A-C	317	79			317				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

B-AC	0.08	0.03	0.26	0.46	0.49			N/A	N/A
C-AB	0.07	0.03	0.25	0.45	0.48			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.10	0.03	0.26	0.47	0.49			N/A	N/A
C-AB	0.10	0.03	0.26	0.48	0.56			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.11	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	0.10	0.00	0.00	0.10	0.10			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.08	0.00	0.00	0.08	0.08			N/A	N/A
C-AB	0.07	0.00	0.00	0.07	0.07			N/A	N/A

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: Junction 5 - A290_University Road.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2\Junction 5 - A290_University Road_Junctions 10 Report
Report generation date: 10/01/2023 16:58:36

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 Base Modelled													
Stream B-C	D7	1.4	17.82	0.59	C	10.19	1 % [Stream B-A]	D8	12.7	113.48	1.00	F	50.21	-12 % [Stream B-A]
Stream B-A		0.7	34.04	0.42	D				7.3	157.36	0.96	F		
Stream C-AB		3.3	20.18	0.73	C				0.2	7.95	0.20	A		
	2045 + CD													
Stream B-C	D9	1.2	15.06	0.54	C	6.35	8 % [Stream B-A]	D10	3.8	36.04	0.81	E	12.32	-3 % [Stream B-A]
Stream B-A		0.3	26.67	0.22	D				1.1	44.43	0.55	E		
Stream C-AB		1.8	14.68	0.61	B				0.2	7.95	0.19	A		
	2045 + ST													
Stream B-C	D11	1.2	14.73	0.55	B	7.17	10 % [Stream B-A]	D12	2.9	28.77	0.76	D	10.76	1 % [Stream B-A]
Stream B-A		0.4	24.72	0.27	C				0.9	32.23	0.48	D		
Stream C-AB		1.8	14.48	0.61	B				0.2	7.73	0.18	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	23/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 Base Modelled	AM	ONE HOUR	07:45	09:15	15	✓	✓
D8	2045 Base Modelled	PM	ONE HOUR	16:15	17:45	15	✓	✓
D9	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓
D10	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓
D11	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓
D12	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 Base Modelled, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D7 - 2045 Base Modelled, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		10.19	B

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	1	Stream B-A	10.19	B

Arms

Arms

Arm	Name	Description	Arm type
A	A290 St Thomas Hill North		Major
B	University Road		Minor
C	A290 St Thomas Hill South		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.55		✓	2.33	137.0	✓	3.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	4.80	3.50	3.50	3.50	✓	1.00	54	24

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	507	0.091	0.229	0.144	0.327
B-C	694	0.103	0.261	-	-
C-B	662	0.250	0.250	-	-

The slopes and intercepts shown above include custom intercept adjustments only.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 Base Modelled	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	487	100.000
B		ONE HOUR	✓	329	100.000
C		ONE HOUR	✓	694	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	171	316
	B	69	0	260
	C	347	347	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	2
	B	3	0	1
	C	2	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.59	17.82	1.4	5.3	C	260	260
B-A	0.42	34.04	0.7	3.2	D	69	69
C-AB	0.73	20.18	3.3	16.5	C	419	419
C-A						275	275
A-B						171	171
A-C						316	316

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	234	58	551	0.425	233	0.5	0.7	11.299	B

B-A	62	16	251	0.247	62	0.2	0.3	18.955	C
C-AB	345	86	606	0.570	343	0.9	1.4	13.643	B
C-A	279	70			279				
A-B	154	38			154				
A-C	284	71			284				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	286	72	491	0.583	284	0.7	1.3	17.149	C
B-A	76	19	184	0.413	75	0.3	0.7	32.500	D
C-AB	492	123	672	0.732	485	1.4	3.1	18.961	C
C-A	272	68			272				
A-B	188	47			188				
A-C	348	87			348				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	286	72	488	0.587	286	1.3	1.4	17.822	C
B-A	76	19	181	0.419	76	0.7	0.7	34.044	D
C-AB	492	123	673	0.731	491	3.1	3.3	20.183	C
C-A	272	68			272				
A-B	188	47			188				
A-C	348	87			348				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	234	58	548	0.427	236	1.4	0.8	11.645	B
B-A	62	16	248	0.250	63	0.7	0.3	19.672	C
C-AB	345	86	606	0.569	352	3.3	1.5	14.627	B
C-A	279	70			279				
A-B	154	38			154				
A-C	284	71			284				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.72	0.13	0.88	1.38	1.45			N/A	N/A
B-A	0.32	0.00	0.00	0.32	0.32			N/A	N/A
C-AB	1.40	0.11	1.17	2.55	3.26			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.34	0.03	0.28	1.34	3.89			N/A	N/A
B-A	0.66	0.03	0.27	0.66	1.07			N/A	N/A
C-AB	3.07	0.03	0.35	7.01	16.48			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.38	0.03	0.29	1.38	5.28			N/A	N/A
B-A	0.70	0.03	0.32	1.53	3.24			N/A	N/A
C-AB	3.26	0.03	0.31	4.30	15.86			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

B-C	0.76	0.06	0.69	1.11	1.65			N/A	N/A
B-A	0.34	0.03	0.29	0.76	1.13			N/A	N/A
C-AB	1.54	0.06	0.73	3.73	5.53			N/A	N/A

2045 Base Modelled, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D8 - 2045 Base Modelled, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		50.21	F

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-12	Stream B-A	50.21	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D8	2045 Base Modelled	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	366	100.000
B		ONE HOUR	✓	530	100.000
C		ONE HOUR	✓	456	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	55	311
	B	159	0	371
	C	355	101	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0

	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	1.00	113.48	12.7	45.2	F	371	371
B-A	0.96	157.36	7.3	26.5	F	159	159
C-AB	0.20	7.95	0.2	1.2	A	101	101
C-A						355	355
A-B						55	55
A-C						311	311

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	334	83	522	0.638	331	0.9	1.7	18.461	C
B-A	143	36	298	0.480	141	0.5	0.9	22.824	C
C-AB	91	23	581	0.157	91	0.1	0.2	7.342	A
C-A	319	80			319				
A-B	49	12			49				
A-C	280	70			280				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	408	102	422	0.969	382	1.7	8.3	66.470	F
B-A	175	44	184	0.951	158	0.9	5.3	101.358	F
C-AB	112	28	564	0.198	112	0.2	0.2	7.947	A
C-A	390	98			390				
A-B	61	15			61				
A-C	342	86			342				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	408	102	410	0.996	391	8.3	12.7	113.484	F
B-A	175	44	182	0.962	167	5.3	7.3	157.363	F
C-AB	112	28	564	0.198	112	0.2	0.2	7.955	A
C-A	390	98			390				
A-B	61	15			61				
A-C	342	86			342				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	334	83	480	0.695	374	12.7	2.5	43.456	E
B-A	143	36	255	0.561	167	7.3	1.4	49.087	E
C-AB	91	23	581	0.157	91	0.2	0.2	7.355	A
C-A	319	80			319				
A-B	49	12			49				
A-C	280	70			280				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.67	0.06	0.80	4.08	6.04			N/A	N/A
B-A	0.88	0.05	0.55	1.79	2.57			N/A	N/A
C-AB	0.18	0.00	0.00	0.18	0.18			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	8.34	0.20	4.22	20.71	28.45			N/A	N/A
B-A	5.27	0.16	2.60	12.72	17.41			N/A	N/A
C-AB	0.25	0.03	0.26	0.46	0.49			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	12.69	0.21	6.17	32.53	45.20			N/A	N/A
B-A	7.31	0.14	3.13	18.83	26.54			N/A	N/A
C-AB	0.25	0.03	0.29	0.79	1.16			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	2.52	0.04	0.44	6.94	12.06			N/A	N/A
B-A	1.39	0.04	0.39	3.63	6.47			N/A	N/A
C-AB	0.19	0.00	0.00	0.19	0.19			N/A	N/A

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D9 - 2045 + CD, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		6.35	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	8	Stream B-A	6.35	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D9	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	497	100.000
B		ONE HOUR	✓	292	100.000
C		ONE HOUR	✓	727	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	58	439
	B	35	0	257
	C	440	287	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	2
	B	3	0	1

	C	2	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.54	15.06	1.2	4.0	C	257	257
B-A	0.22	26.67	0.3	1.3	D	35	35
C-AB	0.61	14.68	1.8	7.3	B	331	331
C-A						396	396
A-B						58	58
A-C						439	439

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	231	58	562	0.411	230	0.5	0.7	10.811	B
B-A	31	8	238	0.132	31	0.1	0.1	17.369	C
C-AB	278	70	588	0.474	277	0.6	0.9	11.559	B
C-A	375	94			375				
A-B	52	13			52				
A-C	395	99			395				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	283	71	523	0.541	281	0.7	1.1	14.794	B
B-A	39	10	175	0.221	38	0.1	0.3	26.240	D
C-AB	383	96	629	0.608	380	0.9	1.8	14.324	B
C-A	418	104			418				
A-B	64	16			64				
A-C	483	121			483				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	283	71	522	0.542	283	1.1	1.2	15.056	C
B-A	39	10	173	0.222	39	0.3	0.3	26.674	D
C-AB	383	96	630	0.608	383	1.8	1.8	14.679	B
C-A	418	104			418				
A-B	64	16			64				
A-C	483	121			483				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	231	58	562	0.411	233	1.2	0.7	11.011	B
B-A	31	8	237	0.133	32	0.3	0.2	17.631	C
C-AB	278	70	588	0.473	281	1.8	1.0	11.904	B
C-A	375	94			375				
A-B	52	13			52				
A-C	395	99			395				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.68	0.16	0.91	1.38	1.44			N/A	N/A
B-A	0.15	0.00	0.00	0.15	0.15			N/A	N/A
C-AB	0.94	0.19	0.98	1.02	1.53			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.14	0.03	0.27	1.14	1.78			N/A	N/A
B-A	0.27	0.03	0.26	0.47	0.58			N/A	N/A
C-AB	1.76	0.03	0.29	1.76	7.20			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.16	0.03	0.28	1.16	4.01			N/A	N/A
B-A	0.28	0.03	0.30	0.97	1.28			N/A	N/A
C-AB	1.81	0.03	0.29	1.81	7.30			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.71	0.07	0.73	1.14	1.14			N/A	N/A
B-A	0.16	0.00	0.00	0.16	0.16			N/A	N/A
C-AB	1.00	0.08	0.88	1.74	2.25			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D10 - 2045 + CD, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		12.32	B

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-3	Stream B-A	12.32	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D10	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	387	100.000
B		ONE HOUR	✓	451	100.000
C		ONE HOUR	✓	602	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	27	360
	B	88	0	363
	C	506	96	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0

	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.81	36.04	3.8	20.0	E	363	363
B-A	0.55	44.43	1.1	5.7	E	88	88
C-AB	0.19	7.95	0.2	1.1	A	96	96
C-A						506	506
A-B						27	27
A-C						360	360

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	326	82	555	0.588	324	0.9	1.4	15.485	C
B-A	79	20	278	0.285	79	0.2	0.4	17.993	C
C-AB	87	22	576	0.150	86	0.1	0.2	7.345	A
C-A	455	114			455				
A-B	24	6			24				
A-C	324	81			324				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	400	100	500	0.800	391	1.4	3.4	31.184	D
B-A	97	24	184	0.525	94	0.4	1.0	38.932	E
C-AB	106	27	559	0.190	106	0.2	0.2	7.945	A
C-A	556	139			556				
A-B	30	7			30				
A-C	396	99			396				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	400	100	495	0.807	398	3.4	3.8	36.037	E
B-A	97	24	177	0.549	96	1.0	1.1	44.427	E
C-AB	106	27	559	0.190	106	0.2	0.2	7.953	A
C-A	556	139			556				
A-B	30	7			30				
A-C	396	99			396				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	326	82	551	0.593	335	3.8	1.5	17.351	C
B-A	79	20	271	0.292	82	1.1	0.4	19.298	C
C-AB	87	22	576	0.150	87	0.2	0.2	7.355	A
C-A	455	114			455				
A-B	24	6			24				
A-C	324	81			324				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.38	0.08	1.03	2.77	3.76			N/A	N/A
B-A	0.39	0.00	0.00	0.39	0.39			N/A	N/A
C-AB	0.18	0.00	0.00	0.18	0.18			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	3.42	0.04	0.39	9.08	18.08			N/A	N/A
B-A	1.02	0.03	0.28	1.11	4.01			N/A	N/A
C-AB	0.23	0.03	0.26	0.46	0.49			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	3.77	0.03	0.33	7.05	20.02			N/A	N/A
B-A	1.14	0.03	0.34	2.69	5.65			N/A	N/A
C-AB	0.24	0.03	0.28	0.66	1.09			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.52	0.04	0.43	3.96	6.66			N/A	N/A
B-A	0.42	0.04	0.37	1.21	1.37			N/A	N/A
C-AB	0.18	0.00	0.00	0.18	0.18			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D11 - 2045 + ST, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		7.17	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	10	Stream B-A	7.17	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D11	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	397	100.000
B		ONE HOUR	✓	315	100.000
C		ONE HOUR	✓	694	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	64	333
	B	48	0	267
	C	389	305	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	2
	B	2	0	1

	C	2	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.55	14.73	1.2	3.9	B	267	267
B-A	0.27	24.72	0.4	1.5	C	48	48
C-AB	0.61	14.48	1.8	7.1	B	345	345
C-A						349	349
A-B						64	64
A-C						333	333

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	240	60	578	0.416	239	0.5	0.7	10.613	B
B-A	43	11	261	0.165	43	0.1	0.2	16.458	C
C-AB	294	73	607	0.483	292	0.7	1.0	11.393	B
C-A	330	83			330				
A-B	58	14			58				
A-C	299	75			299				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	294	73	539	0.545	292	0.7	1.2	14.464	B
B-A	53	13	200	0.265	52	0.2	0.3	24.296	C
C-AB	397	99	647	0.614	394	1.0	1.8	14.155	B
C-A	367	92			367				
A-B	70	18			70				
A-C	367	92			367				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	294	73	538	0.546	294	1.2	1.2	14.732	B
B-A	53	13	198	0.266	53	0.3	0.4	24.720	C
C-AB	397	99	647	0.614	397	1.8	1.8	14.484	B
C-A	367	92			367				
A-B	70	18			70				
A-C	367	92			367				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	240	60	577	0.416	242	1.2	0.7	10.812	B
B-A	43	11	260	0.166	44	0.4	0.2	16.727	C
C-AB	294	73	608	0.483	297	1.8	1.0	11.721	B
C-A	330	83			330				
A-B	58	14			58				
A-C	299	75			299				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.70	0.16	0.91	1.38	1.44			N/A	N/A
B-A	0.19	0.00	0.00	0.19	0.19			N/A	N/A
C-AB	0.97	0.18	0.99	1.24	1.65			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.16	0.03	0.27	1.16	1.80			N/A	N/A
B-A	0.35	0.03	0.26	0.47	0.50			N/A	N/A
C-AB	1.77	0.03	0.29	1.77	7.08			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.18	0.03	0.28	1.18	3.95			N/A	N/A
B-A	0.36	0.03	0.32	1.20	1.50			N/A	N/A
C-AB	1.82	0.03	0.29	1.82	6.83			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.73	0.07	0.74	1.23	1.23			N/A	N/A
B-A	0.20	0.00	0.00	0.20	0.20			N/A	N/A
C-AB	1.03	0.08	0.89	1.82	2.43			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Demand Sets	D12 - 2045 + ST, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		10.76	B

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	1	Stream B-A	10.76	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D12	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	361	100.000
B		ONE HOUR	✓	444	100.000
C		ONE HOUR	✓	476	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	27	334
	B	94	0	350
	C	386	90	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0

	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.76	28.77	2.9	14.8	D	350	350
B-A	0.48	32.23	0.9	4.4	D	94	94
C-AB	0.18	7.73	0.2	0.8	A	90	90
C-A						386	386
A-B						27	27
A-C						334	334

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	315	79	561	0.561	313	0.8	1.2	14.426	B
B-A	85	21	306	0.276	84	0.2	0.4	16.201	C
C-AB	81	20	582	0.139	81	0.1	0.2	7.184	A
C-A	347	87			347				
A-B	24	6			24				
A-C	300	75			300				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	385	96	511	0.754	379	1.2	2.8	26.217	D
B-A	103	26	220	0.470	102	0.4	0.8	29.927	D
C-AB	100	25	565	0.176	99	0.2	0.2	7.727	A
C-A	425	106			425				
A-B	30	7			30				
A-C	368	92			368				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	385	96	508	0.759	385	2.8	2.9	28.773	D
B-A	103	26	215	0.482	103	0.8	0.9	32.229	D
C-AB	100	25	565	0.176	99	0.2	0.2	7.733	A
C-A	425	106			425				
A-B	30	7			30				
A-C	368	92			368				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	315	79	558	0.564	321	2.9	1.3	15.578	C
B-A	85	21	301	0.281	86	0.9	0.4	16.932	C
C-AB	81	20	582	0.139	81	0.2	0.2	7.193	A
C-A	347	87			347				
A-B	24	6			24				
A-C	300	75			300				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.24	0.09	1.02	2.27	2.95			N/A	N/A
B-A	0.37	0.00	0.00	0.37	0.37			N/A	N/A
C-AB	0.16	0.00	0.00	0.16	0.16			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	2.76	0.03	0.34	6.17	14.78			N/A	N/A
B-A	0.84	0.03	0.27	0.84	1.81			N/A	N/A
C-AB	0.21	0.03	0.26	0.46	0.49			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	2.94	0.03	0.31	3.56	13.98			N/A	N/A
B-A	0.89	0.03	0.32	1.88	4.41			N/A	N/A
C-AB	0.21	0.03	0.27	0.49	0.82			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.34	0.05	0.46	3.40	5.39			N/A	N/A
B-A	0.40	0.03	0.34	1.13	1.32			N/A	N/A
C-AB	0.16	0.00	0.00	0.16	0.16			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 6 - Whitsable Road_London Road Mini Roundabout.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2\Junction 6 - Whitsable Road_London Road Mini Roundabout
Report generation date: 16/01/2023 08:45:49

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 Base													
Arm A	D7	27.6	108.41	1.03	F	109.10	-17 % [Arm C]	D8	38.3	143.66	1.06	F	84.89	-15 % [Arm A]
Arm B		1.3	11.22	0.57	B				2.4	17.06	0.71	C		
Arm C		36.2	170.00	1.08	F				9.1	56.93	0.93	F		
	2045 + CD													
Arm A	D9	122.2	505.20	1.24	F	329.23	-27 % [Arm A]	D10	84.7	343.10	1.17	F	289.01	-25 % [Arm C]
Arm B		1.8	15.44	0.65	C				4.0	26.95	0.81	D		
Arm C		56.9	261.55	1.14	F				79.9	411.68	1.22	F		
	2045 + ST													
Arm A	D11	33.0	124.99	1.04	F	117.64	-17 % [Arm C]	D12	41.8	154.43	1.07	F	91.42	-16 % [Arm A]
Arm B		1.3	11.24	0.57	B				2.7	18.28	0.73	C		
Arm C		37.1	174.14	1.08	F				10.1	62.99	0.94	F		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	10/01/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 Base	AM	ONE HOUR	07:45	09:15	15	✓	✓
D8	2045 Base	PM	ONE HOUR	16:15	17:45	15	✓	✓
D9	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓
D10	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓
D11	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓
D12	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D7 - 2045 Base, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	109.10	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-17	Arm C	109.10	F

Arms

Arms

Arm	Name	Description
A	Whitstable Road	
B	St. Dunstans Street	
C	London Road	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.20	2.90	4.45	10.5	15.70	15.90	0.0	
B	4.00	3.10	5.15	15.3	15.80	13.60	0.0	
C	3.05	2.98	4.90	2.0	10.80	7.20	0.0	✓

Zebra Crossings

Arm	Space between crossing and junction entry (Zebra) (PCU)	Vehicles queueing on exit (Zebra) (PCU)	Central Refuge	Crossing data type	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
C	1.00	1.00	✓	Distance	4.00	2.86	4.00	2.86

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.665	977
B	0.661	1108
C	0.497	827

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 Base	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)

A		ONE HOUR	✓	812	100.000
B		ONE HOUR	✓	385	100.000
C		ONE HOUR	✓	659	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
A		
B		
C	[ONEHOUR]	90.00

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	471	341
	B	244	0	141
	C	545	114	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	2	5
	B	6	0	6
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.03	108.41	27.6	79.8	F	812	812
B	0.57	11.22	1.3	3.3	B	385	385
C	1.08	170.00	36.2	81.5	F	659	659

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	730	182	101		881	0.829	721	701	2.1	4.3	21.414	C
B	346	87	303		802	0.431	345	519	0.5	0.7	7.856	A
C	592	148	219	80.91	702	0.845	583	429	2.1	4.6	28.094	D

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	894	224	113		873	1.025	838	810	4.3	18.2	62.498	F
B	424	106	352		751	0.564	422	600	0.7	1.3	10.856	B
C	726	181	267	99.09	675	1.074	656	507	4.6	22.0	89.860	F

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	894	224	116		871	1.026	857	822	18.2	27.6	108.408	F
B	424	106	360		744	0.569	424	613	1.3	1.3	11.216	B
C	726	181	269	99.09	675	1.075	669	515	22.0	36.2	170.000	F

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	730	182	118		870	0.839	814	784	27.6	6.6	71.920	F
B	346	87	342		769	0.450	348	590	1.3	0.8	8.588	A
C	592	148	221	80.91	701	0.846	682	469	36.2	13.9	138.308	F

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	4.27	0.10	1.55	10.96	15.69			N/A	N/A
B	0.75	0.12	0.88	1.39	1.46			N/A	N/A
C	4.56	0.12	1.93	11.35	15.85			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	18.22	1.31	12.83	40.00	51.44			N/A	N/A
B	1.26	0.03	0.27	1.26	1.26			N/A	N/A
C	22.02	3.50	18.05	42.15	51.46			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	27.59	1.24	19.28	61.73	79.78			N/A	N/A
B	1.30	0.03	0.28	1.30	3.32			N/A	N/A
C	36.21	7.20	30.70	67.50	81.47			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.63	0.06	1.17	19.16	31.24			N/A	N/A
B	0.83	0.11	0.89	1.35	1.35			N/A	N/A
C	13.87	0.53	8.67	32.38	42.82			N/A	N/A

2045 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Arm B - Capacity	Pedestrian Crossing causes blocking on previous arm due to traffic queing to leave the junction in 2 timesegment(s).
Warning	Demand Sets	D8 - 2045 Base, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	84.89	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-15	Arm A	84.89	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D8	2045 Base	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	821	100.000
B		ONE HOUR	✓	475	100.000
C		ONE HOUR	✓	562	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
A		
B		
C	[ONEHOUR]	60.00

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	466	355
	B	272	0	203
	C	422	140	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	5
	B	2	0	8
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.06	143.66	38.3	89.7	F	821	821
B	0.71	17.06	2.4	10.3	C	475	475
C	0.93	56.93	9.1	45.7	F	562	562

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	738	185	125		870	0.849	728	620	2.2	4.8	23.724	C
B	427	107	315		791	0.540	425	538	0.7	1.1	9.791	A
C	505	126	244	53.94	695	0.727	501	496	1.4	2.5	18.139	C

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	904	226	149		854	1.059	830	746	4.8	23.4	75.897	F
B	523	131	359		739	0.708	518	620	1.1	2.3	16.006	C
C	619	155	297	66.06	668	0.927	598	580	2.5	7.6	42.657	E

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	904	226	153		852	1.062	844	759	23.4	38.3	143.659	F
B	523	131	365		733	0.714	523	632	2.3	2.4	17.056	C
C	619	155	299	66.06	667	0.928	613	588	7.6	9.1	56.930	F

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	738	185	132		865	0.853	843	645	38.3	12.1	114.018	F
B	427	107	364		747	0.572	431	611	2.4	1.4	11.556	B
C	505	126	247	53.94	693	0.729	530	549	9.1	2.9	24.796	C

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	4.81	0.11	1.88	12.24	17.33			N/A	N/A
B	1.15	0.08	0.95	2.01	2.79			N/A	N/A
C	2.49	0.08	1.28	6.12	8.78			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	23.36	3.13	18.74	46.03	56.74			N/A	N/A
B	2.29	0.03	0.30	2.29	10.34			N/A	N/A
C	7.62	0.08	1.82	21.38	32.41			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	38.32	6.52	31.81	73.61	89.70			N/A	N/A
B	2.40	0.03	0.28	2.40	7.70			N/A	N/A
C	9.13	0.06	0.95	26.57	45.75			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	12.10	0.23	6.13	30.58	42.18			N/A	N/A
B	1.37	0.07	0.93	2.91	4.06			N/A	N/A
C	2.90	0.04	0.41	7.90	14.67			N/A	N/A

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Arm B - Capacity	Pedestrian Crossing causes blocking on previous arm due to traffic queing to leave the junction in 2 timesegment(s).
Warning	Demand Sets	D9 - 2045 + CD, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	329.23	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-27	Arm A	329.23	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D9	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	980	100.000
B		ONE HOUR	✓	394	100.000
C		ONE HOUR	✓	695	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
A		
B		
C	[ONEHOUR]	90.00

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	477	503
	B	253	0	141
	C	581	114	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	2	5
	B	6	0	6
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.24	505.20	122.2	194.7	F	980	980
B	0.65	15.44	1.8	6.5	C	394	394
C	1.14	261.55	56.9	102.5	F	695	695

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	881	220	100		879	1.002	837	736	4.3	15.4	55.726	F
B	354	89	429		693	0.511	353	507	0.6	1.0	10.517	B
C	625	156	226	80.91	698	0.896	610	556	2.5	6.3	35.892	E

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1079	270	108		874	1.235	871	829	15.4	67.5	183.321	F
B	434	108	447		668	0.650	431	532	1.0	1.8	15.012	C
C	765	191	277	99.09	671	1.141	660	601	6.3	32.5	122.331	F

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1079	270	109		873	1.236	872	836	67.5	119.1	393.640	F
B	434	108	448		666	0.651	434	534	1.8	1.8	15.437	C
C	765	191	278	99.09	670	1.143	668	603	32.5	56.9	252.079	F

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	881	220	112		871	1.011	869	801	119.1	122.2	505.199	F
B	354	89	446		679	0.522	357	535	1.8	1.1	11.290	B
C	625	156	229	80.91	696	0.898	684	574	56.9	42.1	261.553	F

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	15.35	0.31	8.36	38.20	52.10			N/A	N/A
B	1.02	0.11	0.98	1.60	1.91			N/A	N/A
C	6.27	0.20	3.34	14.94	20.24			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	67.47	29.85	63.50	102.62	115.99			N/A	N/A
B	1.78	0.03	0.29	1.78	6.49			N/A	N/A
C	32.51	10.30	29.25	54.23	63.18			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	119.14	68.05	115.32	164.54	180.64			N/A	N/A
B	1.82	0.03	0.28	1.82	4.75			N/A	N/A
C	56.94	22.62	52.89	89.69	102.52			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	122.15	>199	>199	>199	>199			N/A	N/A
B	1.12	0.07	0.84	2.18	2.97			N/A	N/A
C	42.11	15.71	38.74	67.35	77.39			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Arm B - Capacity	Pedestrian Crossing causes blocking on previous arm due to traffic queing to leave the junction in 3 timesegment(s).
Warning	Demand Sets	D10 - 2045 + CD, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	289.01	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-25	Arm C	289.01	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D10	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	920	100.000
B		ONE HOUR	✓	511	100.000
C		ONE HOUR	✓	715	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
A		
B		
C	[ONEHOUR]	60.00

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	484	436
	B	308	0	203
	C	575	140	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	5
	B	2	0	8
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.17	343.10	84.7	140.4	F	920	920
B	0.81	26.95	4.0	20.0	D	511	511
C	1.22	411.68	79.9	127.6	F	715	715

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	827	207	121		871	0.950	801	773	3.3	9.9	40.914	E
B	459	115	380		735	0.625	457	543	0.9	1.6	12.793	B
C	643	161	275	53.94	679	0.946	619	561	3.0	8.9	47.404	E

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1013	253	126		867	1.168	861	852	9.9	48.0	134.523	F
B	563	141	408		696	0.809	554	579	1.6	3.7	24.074	C
C	787	197	334	66.06	649	1.212	644	628	8.9	44.7	165.473	F

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1013	253	127		867	1.168	866	858	48.0	84.7	285.631	F
B	563	141	410		692	0.812	561	582	3.7	4.0	26.951	D
C	787	197	338	66.06	647	1.217	646	633	44.7	79.9	354.438	F

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	827	207	131		864	0.957	854	819	84.7	77.9	343.096	F
B	459	115	405		711	0.646	468	580	4.0	1.9	15.258	C
C	643	161	282	53.94	676	0.951	667	591	79.9	73.7	411.678	F

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	9.88	0.27	5.49	23.92	32.35			N/A	N/A
B	1.61	0.07	1.03	3.60	4.98			N/A	N/A
C	8.86	0.25	4.89	21.36	28.87			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	47.96	18.78	44.43	75.73	86.67			N/A	N/A
B	3.72	0.04	0.37	9.11	19.99			N/A	N/A
C	44.66	18.62	41.63	68.95	78.39			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	84.70	41.25	80.63	124.64	139.48			N/A	N/A
B	4.00	0.03	0.31	5.15	19.38			N/A	N/A
C	79.91	41.50	76.54	114.60	127.30			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	77.87	31.15	72.53	122.83	140.37			N/A	N/A
B	1.90	0.05	0.47	5.07	8.24			N/A	N/A
C	73.75	32.34	69.38	112.68	127.55			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D11 - 2045 + ST, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	117.64	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-17	Arm C	117.64	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D11	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	826	100.000
B		ONE HOUR	✓	389	100.000
C		ONE HOUR	✓	659	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
A		
B		
C	[ONEHOUR]	90.00

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	485	341
	B	248	0	141
	C	545	114	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	2	5
	B	6	0	6
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.04	124.99	33.0	85.2	F	826	826
B	0.57	11.24	1.3	3.3	B	389	389
C	1.08	174.14	37.1	82.2	F	659	659

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	743	186	101		881	0.843	733	704	2.2	4.6	22.836	C
B	350	87	303		803	0.436	349	531	0.5	0.8	7.913	A
C	592	148	222	80.91	700	0.847	582	429	2.1	4.6	28.434	D

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	909	227	113		873	1.042	844	813	4.6	20.9	68.982	F
B	428	107	349		754	0.568	426	609	0.8	1.3	10.902	B
C	726	181	272	99.09	673	1.078	654	503	4.6	22.5	91.496	F

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	909	227	115		872	1.043	861	824	20.9	33.0	124.990	F
B	428	107	356		748	0.573	428	621	1.3	1.3	11.241	B
C	726	181	273	99.09	672	1.079	667	511	22.5	37.1	174.139	F

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	743	186	118		870	0.853	841	787	33.0	8.4	94.409	F
B	350	87	347		764	0.457	352	611	1.3	0.9	8.757	A
C	592	148	224	80.91	699	0.848	680	475	37.1	15.1	144.011	F

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	4.65	0.11	1.80	11.84	16.80			N/A	N/A
B	0.76	0.12	0.88	1.40	1.46			N/A	N/A
C	4.62	0.12	1.97	11.49	16.02			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	20.92	1.85	15.91	43.39	54.51			N/A	N/A
B	1.28	0.03	0.27	1.28	1.28			N/A	N/A
C	22.48	3.77	18.57	42.68	51.96			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	32.99	3.44	25.61	68.11	85.22			N/A	N/A
B	1.32	0.03	0.28	1.32	3.26			N/A	N/A
C	37.14	7.84	31.74	68.43	82.24			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	8.44	0.08	1.89	23.93	36.59			N/A	N/A
B	0.86	0.11	0.90	1.46	1.46			N/A	N/A
C	15.15	0.85	10.16	34.11	44.40			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Arm B - Capacity	Pedestrian Crossing causes blocking on previous arm due to traffic queing to leave the junction in 1 timesegment(s).
Warning	Demand Sets	D12 - 2045 + ST, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	91.42	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-16	Arm A	91.42	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D12	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	829	100.000
B		ONE HOUR	✓	491	100.000
C		ONE HOUR	✓	562	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
A		
B		
C	[ONEHOUR]	60.00

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	474	355
	B	288	0	203
	C	422	140	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	5
	B	2	0	8
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.07	154.43	41.8	93.3	F	829	829
B	0.73	18.28	2.7	12.2	C	491	491
C	0.94	62.99	10.1	48.5	F	562	562

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	745	186	125		870	0.857	734	634	2.3	5.1	24.658	C
B	441	110	314		792	0.557	440	545	0.8	1.2	10.153	B
C	505	126	258	53.94	688	0.735	501	496	1.4	2.6	18.765	C

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	913	228	148		854	1.068	833	762	5.1	25.1	79.998	F
B	541	135	357		741	0.729	535	625	1.2	2.5	17.051	C
C	619	155	314	66.06	659	0.939	596	578	2.6	8.3	45.696	E

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	913	228	152		852	1.071	846	776	25.1	41.8	154.427	F
B	541	135	362		736	0.735	540	636	2.5	2.7	18.285	C
C	619	155	317	66.06	658	0.941	611	585	8.3	10.1	62.986	F

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Pedestrian demand (Ped/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	745	186	133		865	0.862	844	662	41.8	17.1	130.603	F
B	441	110	362		750	0.589	446	616	2.7	1.5	12.037	B
C	505	126	262	53.94	686	0.737	534	546	10.1	3.0	27.098	D

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.06	0.12	2.06	12.81	18.04			N/A	N/A
B	1.23	0.08	0.96	2.39	3.19			N/A	N/A
C	2.58	0.08	1.30	6.38	9.13			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	25.09	4.07	20.65	48.10	58.71			N/A	N/A
B	2.52	0.03	0.31	3.23	12.15			N/A	N/A
C	8.25	0.10	2.53	22.69	33.51			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	41.85	8.72	35.73	77.50	93.28			N/A	N/A
B	2.66	0.03	0.29	2.66	9.21			N/A	N/A
C	10.14	0.06	1.05	29.65	48.54			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	17.07	1.21	11.97	37.47	48.18			N/A	N/A
B	1.47	0.06	0.88	3.36	4.79			N/A	N/A
C	3.03	0.04	0.41	8.29	15.43			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.0.2.1574

For sales and distribution information, program advice and maintenance, contact TRL Software:
+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

Filename: Junction 7- St Stephens Hill_Beaconsfield Road.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2\Junction 7 - St Stephens Hill_Beaconsfield Road
Report generation date: 16/01/2023 08:54:45

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 Base													
Arm A	D7	4.1	18.60	0.81	C	17.16	11 % [Arm A]	D8	1.2	7.79	0.55	A	14.81	4 % [Arm C]
Arm B		1.7	13.58	0.64	B				1.8	11.50	0.65	B		
Arm C		2.1	18.41	0.68	C				3.4	27.35	0.78	D		
	2045 + CD													
Arm A	D9	7.2	30.47	0.89	D	23.78	2 % [Arm A]	D10	1.5	8.68	0.60	A	21.86	-4 % [Arm C]
Arm B		2.0	14.87	0.67	B				2.8	15.81	0.74	C		
Arm C		2.2	19.77	0.70	C				5.8	47.18	0.88	E		
	2045 + ST													
Arm A	D11	6.3	26.93	0.88	D	21.95	4 % [Arm A]	D12	1.5	8.68	0.60	A	21.86	-4 % [Arm C]
Arm B		2.0	14.88	0.67	B				2.8	15.81	0.74	C		
Arm C		2.2	19.60	0.70	C				5.8	47.18	0.88	E		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	10/01/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 Base	AM	Trips to Zone D diverted to other zones	ONE HOUR	07:45	09:15	15	✓	✓
D8	2045 Base	PM	Trips to Zone D diverted to other zones	ONE HOUR	16:15	17:45	15	✓	✓
D9	2045 + CD	AM	Trips to Zone D diverted to other zones	ONE HOUR	07:45	09:15	15	✓	✓
D10	2045 + CD	PM	Trips to Zone D diverted to other zones	ONE HOUR	16:15	17:45	15	✓	✓
D11	2045 + ST	AM	Trips to Zone D diverted to other zones	ONE HOUR	07:45	09:15	15	✓	✓
D12	2045 + ST	PM	Trips to Zone D diverted to other zones	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D7 - 2045 Base, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	St Stephens Hill, Beaconsfield Road, Stephenson Road Mini Roundabout	Mini-roundabout		A, B, C	17.16	C

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		11	Arm A	17.16	C

Arms

Arms

Arm	Name	Description
A	St Stpehens Hill (North)	
B	St Stephens Hill (South)	
C	Beaconsfield Road	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.65	3.65	5.70	8.6	16.70	14.90	0.0	
B	4.40	2.93	5.25	6.1	14.55	11.20	0.0	
C	3.45	3.45	4.00	8.6	8.95	6.80	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.683	1117
B	0.631	1004
C	0.625	867

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 Base	AM	Trips to Zone D diverted to other zones	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	753	100.000
B		ONE HOUR	✓	428	100.000
C		ONE HOUR	✓	379	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	392	361
	B	357	0	71
	C	263	116	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	1
	B	2	0	2
	C	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.81	18.60	4.1	21.2	C	753	753
B	0.64	13.58	1.7	5.0	B	428	428
C	0.68	18.41	2.1	9.0	C	379	379

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	677	169	104	1036	0.653	674	555	1.2	1.8	9.874	A
B	385	96	323	782	0.492	384	455	0.6	1.0	9.036	A
C	341	85	320	658	0.518	339	387	0.7	1.0	11.241	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	829	207	127	1021	0.812	821	677	1.8	3.9	17.286	C
B	471	118	393	738	0.638	468	554	1.0	1.7	13.191	B
C	417	104	391	613	0.680	413	471	1.0	2.0	17.668	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	829	207	128	1020	0.813	828	682	3.9	4.1	18.596	C
B	471	118	397	736	0.640	471	559	1.7	1.7	13.577	B
C	417	104	393	612	0.682	417	475	2.0	2.1	18.412	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	677	169	105	1035	0.654	686	563	4.1	1.9	10.548	B
B	385	96	329	779	0.494	388	462	1.7	1.0	9.280	A
C	341	85	323	656	0.520	345	393	2.1	1.1	11.706	B

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.83	0.06	0.92	4.47	6.52			N/A	N/A
B	0.95	0.10	0.93	1.46	1.81			N/A	N/A
C	1.05	0.10	0.97	1.72	2.04			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.94	0.03	0.34	7.92	21.18			N/A	N/A
B	1.70	0.03	0.28	1.70	5.02			N/A	N/A
C	2.01	0.03	0.30	2.01	8.98			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	4.12	0.03	0.29	4.12	16.03			N/A	N/A
B	1.74	0.03	0.28	1.74	4.20			N/A	N/A
C	2.08	0.03	0.28	2.08	6.98			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.95	0.05	0.47	5.23	8.46			N/A	N/A
B	1.00	0.07	0.83	1.80	2.43			N/A	N/A
C	1.11	0.06	0.68	2.40	3.43			N/A	N/A

2045 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D8 - 2045 Base, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	St Stephens Hill, Beaconsfield Road, Stephenson Road Mini Roundabout	Mini-roundabout		A, B, C	14.81	B

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		4	Arm C	14.81	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D8	2045 Base	PM	Trips to Zone D diverted to other zones	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	510	100.000
B		ONE HOUR	✓	520	100.000
C		ONE HOUR	✓	425	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	346	164
	B	392	0	128
	C	309	116	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	2
	B	0	0	1
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.55	7.79	1.2	1.6	A	510	510
B	0.65	11.50	1.8	4.4	B	520	520
C	0.78	27.35	3.4	17.2	D	425	425

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	458	115	104	1040	0.441	458	628	0.6	0.8	6.174	A
B	467	117	147	907	0.516	466	414	0.7	1.0	8.149	A
C	382	96	351	647	0.591	380	262	0.9	1.4	13.373	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	562	140	126	1025	0.548	560	764	0.8	1.2	7.714	A
B	573	143	180	885	0.647	570	506	1.0	1.8	11.290	B
C	468	117	429	598	0.782	461	320	1.4	3.2	24.952	C

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	562	140	128	1024	0.549	561	771	1.2	1.2	7.785	A
B	573	143	181	885	0.647	572	508	1.8	1.8	11.498	B
C	468	117	432	597	0.784	467	321	3.2	3.4	27.348	D

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	458	115	106	1038	0.442	460	638	1.2	0.8	6.247	A
B	467	117	148	906	0.516	470	418	1.8	1.1	8.314	A
C	382	96	355	645	0.592	390	264	3.4	1.5	14.487	B

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.78	0.12	0.89	1.41	1.48			N/A	N/A
B	1.05	0.09	0.96	1.73	2.12			N/A	N/A
C	1.39	0.08	1.02	2.84	3.87			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.19	0.03	0.26	1.19	1.19			N/A	N/A
B	1.77	0.03	0.28	1.77	4.43			N/A	N/A
C	3.20	0.04	0.35	7.49	17.18			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.20	0.03	0.27	1.20	1.64			N/A	N/A
B	1.80	0.03	0.27	1.80	2.88			N/A	N/A
C	3.39	0.03	0.31	4.07	16.14			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.80	0.14	0.91	1.42	1.48			N/A	N/A

B	1.09	0.07	0.90	1.94	2.68			N/A	N/A
C	1.51	0.05	0.45	3.90	6.33			N/A	N/A

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D9 - 2045 + CD, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	St Stephens Hill, Beaconsfield Road, Stephenson Road Mini Roundabout	Mini-roundabout		A, B, C	23.78	C

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		2	Arm A	23.78	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D9	2045 + CD	AM	Trips to Zone D diverted to other zones	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	827	100.000
B		ONE HOUR	✓	446	100.000
C		ONE HOUR	✓	380	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	460	367
	B	375	0	71
	C	264	116	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	1
	B	2	0	2
	C	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.89	30.47	7.2	39.8	D	827	827
B	0.67	14.87	2.0	7.1	B	446	446
C	0.70	19.77	2.2	10.2	C	380	380

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	743	186	104	1036	0.718	739	572	1.4	2.4	11.969	B
B	401	100	328	779	0.515	400	515	0.7	1.0	9.456	A
C	342	85	336	648	0.527	340	392	0.7	1.1	11.635	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	911	228	126	1021	0.892	894	698	2.4	6.6	25.564	D
B	491	123	397	736	0.667	488	624	1.0	1.9	14.284	B
C	418	105	410	601	0.696	414	474	1.1	2.1	18.833	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	911	228	128	1020	0.893	908	703	6.6	7.2	30.472	D
B	491	123	403	732	0.671	491	633	1.9	2.0	14.874	B
C	418	105	413	599	0.698	418	481	2.1	2.2	19.769	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	743	186	106	1035	0.718	762	580	7.2	2.7	13.973	B
B	401	100	338	773	0.519	404	529	2.0	1.1	9.866	A
C	342	85	340	645	0.529	346	402	2.2	1.2	12.191	B

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.43	0.06	0.99	6.33	9.47			N/A	N/A
B	1.04	0.09	0.95	1.73	2.10			N/A	N/A
C	1.09	0.09	0.98	1.81	2.34			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.55	0.05	0.48	18.75	33.60			N/A	N/A
B	1.92	0.03	0.29	1.92	7.10			N/A	N/A
C	2.15	0.03	0.30	2.58	10.17			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	7.24	0.04	0.36	16.12	39.76			N/A	N/A
B	1.98	0.03	0.28	1.98	5.23			N/A	N/A
C	2.23	0.03	0.29	2.23	8.07			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.67	0.04	0.43	7.38	13.15			N/A	N/A

B	1.10	0.06	0.81	2.17	2.98			N/A	N/A
C	1.16	0.05	0.62	2.61	3.78			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D10 - 2045 + CD, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	St Stephens Hill, Beaconsfield Road, Stephenson Road Mini Roundabout	Mini-roundabout		A, B, C	21.86	C

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-4	Arm C	21.86	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D10	2045 + CD	PM	Trips to Zone D diverted to other zones	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	554	100.000
B		ONE HOUR	✓	596	100.000
C		ONE HOUR	✓	433	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	386	168
	B	468	0	128
	C	317	116	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	2
	B	0	0	1
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.60	8.68	1.5	1.7	A	554	554
B	0.74	15.81	2.8	12.8	C	596	596
C	0.88	47.18	5.8	31.5	E	433	433

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	498	125	103	1040	0.479	497	702	0.7	0.9	6.613	A
B	536	134	151	905	0.592	534	450	0.9	1.4	9.656	A
C	389	97	419	605	0.644	386	265	1.0	1.7	16.270	C

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	610	152	124	1026	0.594	608	850	0.9	1.4	8.561	A
B	656	164	184	883	0.743	651	548	1.4	2.7	15.174	C
C	477	119	511	547	0.871	463	324	1.7	5.1	37.989	E

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	610	152	127	1024	0.595	610	862	1.4	1.5	8.679	A
B	656	164	185	883	0.743	656	552	2.7	2.8	15.814	C
C	477	119	515	545	0.875	474	326	5.1	5.8	47.180	E

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	498	125	108	1037	0.480	500	721	1.5	0.9	6.732	A
B	536	134	152	904	0.593	541	457	2.8	1.5	10.056	B
C	389	97	425	601	0.648	405	268	5.8	1.9	19.622	C

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.91	0.10	0.91	1.27	1.69			N/A	N/A
B	1.42	0.07	0.99	2.95	4.09			N/A	N/A
C	1.72	0.07	1.04	3.93	5.61			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.43	0.03	0.27	1.43	1.43			N/A	N/A
B	2.72	0.03	0.30	3.16	12.83			N/A	N/A
C	5.10	0.05	0.76	14.65	24.45			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.45	0.03	0.27	1.45	1.61			N/A	N/A
B	2.80	0.03	0.28	2.80	7.78			N/A	N/A
C	5.82	0.04	0.40	15.22	31.54			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.94	0.11	0.94	1.35	1.74			N/A	N/A

B	1.49	0.05	0.65	3.66	5.48			N/A	N/A
C	1.93	0.04	0.40	5.20	9.37			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D11 - 2045 + ST, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	St Stephens Hill, Beaconsfield Road, Stephenson Road Mini Roundabout	Mini-roundabout		A, B, C	21.95	C

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		4	Arm A	21.95	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D11	2045 + ST	AM	Trips to Zone D diverted to other zones	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	811	100.000
B		ONE HOUR	✓	439	100.000
C		ONE HOUR	✓	383	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	433	378
	B	368	0	71
	C	267	116	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	1
	B	2	0	2
	C	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.88	26.93	6.3	33.5	D	811	811
B	0.67	14.88	2.0	6.9	B	439	439
C	0.70	19.60	2.2	10.1	C	383	383

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	729	182	104	1036	0.704	725	569	1.4	2.3	11.449	B
B	395	99	338	773	0.511	393	491	0.7	1.0	9.454	A
C	344	86	330	652	0.528	343	402	0.7	1.1	11.590	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	893	223	126	1021	0.875	879	693	2.3	5.8	23.302	C
B	483	121	410	728	0.664	480	596	1.0	1.9	14.309	B
C	422	105	402	606	0.696	417	487	1.1	2.1	18.686	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	893	223	128	1020	0.875	891	699	5.8	6.3	26.928	D
B	483	121	415	724	0.667	483	603	1.9	2.0	14.879	B
C	422	105	405	604	0.698	421	493	2.1	2.2	19.602	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	729	182	106	1035	0.704	744	577	6.3	2.5	12.984	B
B	395	99	347	767	0.514	398	503	2.0	1.1	9.846	A
C	344	86	334	649	0.530	349	411	2.2	1.2	12.134	B

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.28	0.06	0.96	5.87	8.78			N/A	N/A
B	1.02	0.09	0.95	1.69	1.99			N/A	N/A
C	1.09	0.09	0.98	1.82	2.37			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.81	0.04	0.43	16.01	30.73			N/A	N/A
B	1.89	0.03	0.29	1.89	6.92			N/A	N/A
C	2.15	0.03	0.30	2.55	10.14			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.31	0.03	0.34	11.55	33.55			N/A	N/A
B	1.95	0.03	0.28	1.95	5.19			N/A	N/A
C	2.23	0.03	0.29	2.23	7.99			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.49	0.04	0.43	6.84	11.96			N/A	N/A

B	1.08	0.06	0.80	2.08	2.91			N/A	N/A
C	1.16	0.05	0.63	2.62	3.79			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D12 - 2045 + ST, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	St Stephens Hill, Beaconsfield Road, Stephenson Road Mini Roundabout	Mini-roundabout		A, B, C	21.86	C

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-4	Arm C	21.86	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D12	2045 + ST	PM	Trips to Zone D diverted to other zones	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	554	100.000
B		ONE HOUR	✓	596	100.000
C		ONE HOUR	✓	433	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	386	168
	B	468	0	128
	C	317	116	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	2
	B	0	0	1
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.60	8.68	1.5	1.7	A	554	554
B	0.74	15.81	2.8	12.8	C	596	596
C	0.88	47.18	5.8	31.5	E	433	433

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	498	125	103	1040	0.479	497	702	0.7	0.9	6.613	A
B	536	134	151	905	0.592	534	450	0.9	1.4	9.656	A
C	389	97	419	605	0.644	386	265	1.0	1.7	16.270	C

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	610	152	124	1026	0.594	608	850	0.9	1.4	8.561	A
B	656	164	184	883	0.743	651	548	1.4	2.7	15.174	C
C	477	119	511	547	0.871	463	324	1.7	5.1	37.989	E

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	610	152	127	1024	0.595	610	862	1.4	1.5	8.679	A
B	656	164	185	883	0.743	656	552	2.7	2.8	15.814	C
C	477	119	515	545	0.875	474	326	5.1	5.8	47.180	E

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	498	125	108	1037	0.480	500	721	1.5	0.9	6.732	A
B	536	134	152	904	0.593	541	457	2.8	1.5	10.056	B
C	389	97	425	601	0.648	405	268	5.8	1.9	19.622	C

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.91	0.10	0.91	1.27	1.69			N/A	N/A
B	1.42	0.07	0.99	2.95	4.09			N/A	N/A
C	1.72	0.07	1.04	3.93	5.61			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.43	0.03	0.27	1.43	1.43			N/A	N/A
B	2.72	0.03	0.30	3.16	12.83			N/A	N/A
C	5.10	0.05	0.76	14.65	24.45			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.45	0.03	0.27	1.45	1.61			N/A	N/A
B	2.80	0.03	0.28	2.80	7.78			N/A	N/A
C	5.82	0.04	0.40	15.22	31.54			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.94	0.11	0.94	1.35	1.74			N/A	N/A

B	1.49	0.05	0.65	3.66	5.48			N/A	N/A
C	1.93	0.04	0.40	5.20	9.37			N/A	N/A

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.2.1574

For sales and distribution information, program advice and maintenance, contact TRL Software:
+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

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Report generation date: 10/01/2023 17:06:36

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 Base Modelled													
Stream B-C	D3	1.3	12.64	0.56	B	14.64	3 % [Stream C-AB]	D4	0.4	6.69	0.26	A	19.67	1 % [Stream C-AB]
Stream B-A		0.1	15.04	0.13	C				0.0	10.57	0.01	B		
Stream C-AB		4.7	29.13	0.81	D				6.1	33.50	0.85	D		
	2045 + CD													
Stream B-C	D5	0.4	6.58	0.28	A	12.83	18 % [Stream C-AB]	D6	0.3	6.11	0.23	A	11.53	26 % [Stream C-AB]
Stream B-A		0.0	9.27	0.05	A				0.0	8.69	0.02	A		
Stream C-AB		2.7	18.49	0.71	C				1.9	17.17	0.66	C		
	2045 + ST													
Stream B-C	D7	0.4	6.60	0.28	A	12.18	23 % [Stream C-AB]	D8	0.3	5.95	0.21	A	9.91	39 % [Stream C-AB]
Stream B-A		0.0	9.00	0.04	A				0.0	0.00	0.00	A		
Stream C-AB		2.2	17.55	0.68	C				1.4	14.56	0.59	B		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Giles Lane / University Road Priority Junction
Location	University of Kent
Site number	
Date	26/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2045 Base Modelled	AM	ONE HOUR	00:00	01:30	15	✓
D4	2045 Base Modelled	PM	ONE HOUR	00:00	01:30	15	✓
D5	2045 + CD	AM	ONE HOUR	00:00	01:30	15	✓
D6	2045 + CD	PM	ONE HOUR	00:00	01:30	15	✓
D7	2045 + ST	AM	ONE HOUR	00:00	01:30	15	✓
D8	2045 + ST	PM	ONE HOUR	00:00	01:30	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 Base Modelled, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		14.64	B

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	3	Stream C-AB	14.64	B

Arms

Arms

Arm	Name	Description	Arm type
A	Giles Lane West		Major
B	University Road		Minor
C	Giles Lane East		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	7.90			83.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	6.30	4.05	3.50	3.50	✓	1.00	119	124

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	589	0.097	0.245	0.154	0.350
B-C	787	0.112	0.284	-	-
C-B	622	0.221	0.221	-	-

The slopes and intercepts shown above include custom intercept adjustments only.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2045 Base Modelled	AM	ONE HOUR	00:00	01:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	364	100.000
B		ONE HOUR	✓	365	100.000
C		ONE HOUR	✓	517	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	52	312
	B	33	0	332
	C	168	349	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	2
	C	0	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.56	12.64	1.3	3.3	B	305	457
B-A	0.13	15.04	0.1	0.5	C	30	45
C-AB	0.81	29.13	4.7	25.5	D	426	639
C-A						49	73
A-B						48	72
A-C						286	429

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	250	62	694	0.360	248	0.0	0.6	8.026	A
B-A	25	6	397	0.063	25	0.0	0.1	9.649	A
C-AB	327	82	644	0.508	322	0.0	1.1	11.080	B
C-A	62	16			62				
A-B	39	10			39				

A-C	235	59			235				

00:15 - 00:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	298	75	677	0.441	298	0.6	0.8	9.474	A
B-A	30	7	350	0.085	30	0.1	0.1	11.236	B
C-AB	410	102	651	0.630	407	1.1	1.9	14.687	B
C-A	55	14			55				
A-B	47	12			47				
A-C	280	70			280				

00:30 - 00:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	366	91	650	0.562	364	0.8	1.2	12.468	B
B-A	36	9	279	0.130	36	0.1	0.1	14.809	B
C-AB	536	134	661	0.812	527	1.9	4.4	25.878	D
C-A	33	8			33				
A-B	57	14			57				
A-C	344	86			344				

00:45 - 01:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	366	91	650	0.562	365	1.2	1.3	12.639	B
B-A	36	9	276	0.132	36	0.1	0.1	15.037	C
C-AB	539	135	663	0.814	538	4.4	4.7	29.131	D
C-A	30	7			30				
A-B	57	14			57				
A-C	344	86			344				

01:00 - 01:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	298	75	676	0.441	300	1.3	0.8	9.622	A
B-A	30	7	345	0.086	30	0.1	0.1	11.427	B
C-AB	413	103	654	0.631	424	4.7	2.1	16.413	C
C-A	52	13			52				
A-B	47	12			47				
A-C	280	70			280				

01:15 - 01:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	250	62	694	0.360	251	0.8	0.6	8.144	A
B-A	25	6	394	0.063	25	0.1	0.1	9.750	A
C-AB	329	82	645	0.509	332	2.1	1.2	11.651	B
C-A	61	15			61				
A-B	39	10			39				
A-C	235	59			235				

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.55	0.55	1.00	1.40	1.45			N/A	N/A
B-A	0.07	0.00	0.00	0.07	0.07			N/A	N/A
C-AB	1.15	0.55	1.00	1.40	1.45			N/A	N/A

00:15 - 00:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.78	0.16	0.91	1.40	1.46			N/A	N/A
B-A	0.09	0.00	0.00	0.09	0.09			N/A	N/A
C-AB	1.88	0.11	1.34	3.87	5.17			N/A	N/A

00:30 - 00:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.25	0.03	0.27	1.25	1.71			N/A	N/A
B-A	0.15	0.03	0.26	0.47	0.50			N/A	N/A
C-AB	4.37	0.04	0.43	12.13	22.50			N/A	N/A

00:45 - 01:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	1.26	0.03	0.28	1.26	3.27			N/A	N/A
B-A	0.15	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	4.71	0.03	0.34	9.66	25.50			N/A	N/A

01:00 - 01:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.80	0.08	0.81	1.50	1.53			N/A	N/A
B-A	0.10	0.00	0.00	0.10	0.10			N/A	N/A
C-AB	2.09	0.05	0.57	5.58	8.76			N/A	N/A

01:15 - 01:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.57	0.05	0.47	1.36	1.48			N/A	N/A
B-A	0.07	0.00	0.00	0.07	0.07			N/A	N/A
C-AB	1.22	0.04	0.36	3.05	5.82			N/A	N/A

2045 Base Modelled, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		19.67	C

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	1	Stream C-AB	19.67	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2045 Base Modelled	PM	ONE HOUR	00:00	01:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	204	100.000
B		ONE HOUR	✓	175	100.000
C		ONE HOUR	✓	586	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	31	173
	B	2	0	173
	C	198	388	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0

	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.26	6.69	0.4	1.2	A	159	238
B-A	0.01	10.57	0.0	0.5	B	2	3
C-AB	0.85	33.50	6.1	33.4	D	488	731
C-A						50	75
A-B						28	43
A-C						159	238

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	130	33	747	0.174	129	0.0	0.2	5.822	A
B-A	2	0.38	427	0.004	1	0.0	0.0	8.460	A
C-AB	373	93	688	0.542	368	0.0	1.3	11.091	B
C-A	68	17			68				
A-B	23	6			23				
A-C	130	33			130				

00:15 - 00:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	156	39	739	0.210	155	0.2	0.3	6.166	A
B-A	2	0.45	393	0.005	2	0.0	0.0	9.202	A
C-AB	469	117	703	0.667	465	1.3	2.2	15.069	C
C-A	58	15			58				
A-B	28	7			28				
A-C	156	39			156				

00:30 - 00:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	190	48	728	0.262	190	0.3	0.4	6.686	A
B-A	2	0.55	347	0.006	2	0.0	0.0	10.453	B
C-AB	615	154	723	0.852	602	2.2	5.6	28.375	D
C-A	30	7			30				
A-B	34	9			34				
A-C	190	48			190				

00:45 - 01:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	190	48	728	0.262	190	0.4	0.4	6.694	A
B-A	2	0.55	343	0.006	2	0.0	0.0	10.568	B
C-AB	620	155	726	0.854	617	5.6	6.1	33.497	D
C-A	25	6			25				
A-B	34	9			34				

A-C	190	48			190				

01:00 - 01:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	156	39	739	0.210	156	0.4	0.3	6.177	A
B-A	2	0.45	388	0.005	2	0.0	0.0	9.334	A
C-AB	474	118	707	0.670	488	6.1	2.5	17.642	C
C-A	53	13			53				
A-B	28	7			28				
A-C	156	39			156				

01:15 - 01:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	130	33	747	0.174	130	0.3	0.2	5.842	A
B-A	2	0.38	424	0.004	2	0.0	0.0	8.521	A
C-AB	375	94	690	0.543	379	2.5	1.4	11.798	B
C-A	66	17			66				
A-B	23	6			23				
A-C	130	33			130				

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.21	0.00	0.00	0.21	0.21			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	1.32	0.55	1.00	1.40	1.45			N/A	N/A

00:15 - 00:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.26	0.00	0.00	0.26	0.26			N/A	N/A
B-A	0.00	0.00	0.25	0.45	0.48			N/A	N/A
C-AB	2.23	0.10	1.43	4.91	6.72			N/A	N/A

00:30 - 00:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.35	0.03	0.25	0.46	0.48			N/A	N/A
B-A	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	5.55	0.05	0.67	15.96	27.09			N/A	N/A

00:45 - 01:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.35	0.03	0.31	1.17	1.17			N/A	N/A
B-A	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	6.15	0.04	0.38	15.15	33.44			N/A	N/A

01:00 - 01:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.27	0.00	0.00	0.27	0.27			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	2.53	0.05	0.51	6.93	11.20			N/A	N/A

01:15 - 01:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.21	0.00	0.00	0.21	0.21			N/A	N/A

B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	1.42	0.04	0.36	3.54	7.09			N/A	N/A

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		12.83	B

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	18	Stream C-AB	12.83	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2045 + CD	AM	ONE HOUR	00:00	01:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	51	100.000
B		ONE HOUR	✓	209	100.000
C		ONE HOUR	✓	473	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	**B**	**C**
From	**A**	0	25	26
	B	17	0	192
	C	107	366	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	**B**	**C**
From	**A**	0	0	0
	B	0	0	1
	C	0	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.28	6.58	0.4	1.5	A	176	264
B-A	0.05	9.27	0.0	0.5	A	16	23
C-AB	0.71	18.49	2.7	13.2	C	396	594
C-A						38	57
A-B						23	34
A-C						24	36

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	145	36	766	0.189	144	0.0	0.2	5.778	A
B-A	13	3	469	0.027	13	0.0	0.0	7.880	A
C-AB	314	78	662	0.474	310	0.0	1.0	10.141	B
C-A	42	11			42				
A-B	19	5			19				
A-C	20	5			20				

00:15 - 00:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	173	43	763	0.226	172	0.2	0.3	6.094	A
B-A	15	4	444	0.034	15	0.0	0.0	8.403	A
C-AB	385	96	671	0.573	383	1.0	1.4	12.450	B
C-A	41	10			41				
A-B	22	6			22				
A-C	23	6			23				

00:30 - 00:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	211	53	758	0.279	211	0.3	0.4	6.572	A
B-A	19	5	408	0.046	19	0.0	0.0	9.236	A
C-AB	488	122	683	0.714	483	1.4	2.6	17.744	C
C-A	33	8			33				
A-B	28	7			28				
A-C	29	7			29				

00:45 - 01:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	211	53	758	0.279	211	0.4	0.4	6.580	A
B-A	19	5	407	0.046	19	0.0	0.0	9.273	A
C-AB	489	122	684	0.715	488	2.6	2.7	18.487	C
C-A	32	8			32				
A-B	28	7			28				
A-C	29	7			29				

01:00 - 01:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	173	43	763	0.226	173	0.4	0.3	6.109	A
B-A	15	4	442	0.035	15	0.0	0.0	8.447	A
C-AB	386	96	672	0.574	390	2.7	1.5	13.020	B
C-A	40	10			40				
A-B	22	6			22				
A-C	23	6			23				

01:15 - 01:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	145	36	766	0.189	145	0.3	0.2	5.800	A
B-A	13	3	467	0.027	13	0.0	0.0	7.919	A
C-AB	314	79	662	0.475	317	1.5	1.0	10.488	B
C-A	42	10			42				
A-B	19	5			19				
A-C	20	5			20				

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.23	0.00	0.00	0.23	0.23			N/A	N/A
B-A	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.95	0.55	1.00	1.40	1.45			N/A	N/A

00:15 - 00:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.29	0.00	0.00	0.29	0.29			N/A	N/A
B-A	0.04	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	1.42	0.12	1.19	2.54	3.21			N/A	N/A

00:30 - 00:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.38	0.03	0.25	0.46	0.48			N/A	N/A
B-A	0.05	0.03	0.26	0.46	0.49			N/A	N/A
C-AB	2.57	0.03	0.32	4.22	13.22			N/A	N/A

00:45 - 01:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.38	0.03	0.31	1.26	1.50			N/A	N/A
B-A	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-AB	2.66	0.03	0.29	2.66	10.20			N/A	N/A

01:00 - 01:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.29	0.00	0.00	0.29	0.29			N/A	N/A
B-A	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	1.52	0.06	0.82	3.60	5.21			N/A	N/A

01:15 - 01:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.23	0.00	0.00	0.23	0.23			N/A	N/A
B-A	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	1.00	0.04	0.43	2.41	3.80			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		11.53	B

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	26	Stream C-AB	11.53	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2045 + CD	PM	ONE HOUR	00:00	01:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	95	100.000
B		ONE HOUR	✓	163	100.000
C		ONE HOUR	✓	373	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	37	58
	B	7	0	156
	C	19	354	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0

	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.23	6.11	0.3	1.3	A	143	215
B-A	0.02	8.69	0.0	0.5	A	6	10
C-AB	0.66	17.17	1.9	7.9	C	335	502
C-A						8	11
A-B						34	51
A-C						53	80

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	117	29	770	0.153	117	0.0	0.2	5.508	A
B-A	5	1	478	0.011	5	0.0	0.0	7.611	A
C-AB	273	68	616	0.443	270	0.0	0.8	10.317	B
C-A	8	2			8				
A-B	28	7			28				
A-C	44	11			44				

00:15 - 00:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	140	35	766	0.183	140	0.2	0.2	5.749	A
B-A	6	2	455	0.014	6	0.0	0.0	8.025	A
C-AB	327	82	615	0.533	326	0.8	1.1	12.424	B
C-A	8	2			8				
A-B	33	8			33				
A-C	52	13			52				

00:30 - 00:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	172	43	761	0.226	171	0.2	0.3	6.103	A
B-A	8	2	423	0.018	8	0.0	0.0	8.664	A
C-AB	404	101	613	0.659	401	1.1	1.9	16.741	C
C-A	7	2			7				
A-B	41	10			41				
A-C	64	16			64				

00:45 - 01:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	172	43	761	0.226	172	0.3	0.3	6.108	A
B-A	8	2	422	0.018	8	0.0	0.0	8.686	A
C-AB	404	101	613	0.659	404	1.9	1.9	17.167	C
C-A	7	2			7				
A-B	41	10			41				

A-C	64	16			64				

01:00 - 01:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	140	35	766	0.183	140	0.3	0.2	5.757	A
B-A	6	2	453	0.014	6	0.0	0.0	8.055	A
C-AB	328	82	615	0.533	330	1.9	1.2	12.796	B
C-A	8	2			8				
A-B	33	8			33				
A-C	52	13			52				

01:15 - 01:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	117	29	770	0.153	118	0.2	0.2	5.522	A
B-A	5	1	476	0.011	5	0.0	0.0	7.642	A
C-AB	273	68	616	0.443	274	1.2	0.8	10.596	B
C-A	8	2			8				
A-B	28	7			28				
A-C	44	11			44				

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.18	0.00	0.00	0.18	0.18			N/A	N/A
B-A	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	0.79	0.55	1.00	1.40	1.45			N/A	N/A

00:15 - 00:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.22	0.00	0.00	0.22	0.22			N/A	N/A
B-A	0.01	0.01	0.25	0.45	0.48			N/A	N/A
C-AB	1.13	0.13	1.05	1.75	2.03			N/A	N/A

00:30 - 00:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.29	0.03	0.25	0.46	0.48			N/A	N/A
B-A	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-AB	1.87	0.03	0.29	1.87	7.88			N/A	N/A

00:45 - 01:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.29	0.03	0.31	1.02	1.31			N/A	N/A
B-A	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-AB	1.91	0.03	0.28	1.91	5.55			N/A	N/A

01:00 - 01:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.23	0.00	0.00	0.23	0.23			N/A	N/A
B-A	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	1.19	0.06	0.78	2.57	3.62			N/A	N/A

01:15 - 01:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.18	0.00	0.00	0.18	0.18			N/A	N/A

B-A	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	0.82	0.04	0.44	1.79	2.72			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		12.18	B

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	23	Stream C-AB	12.18	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2045 + ST	AM	ONE HOUR	00:00	01:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	56	100.000
B		ONE HOUR	✓	211	100.000
C		ONE HOUR	✓	420	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	31	25
	B	15	0	196
	C	61	359	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	1
	C	0	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.28	6.60	0.4	1.6	A	180	270
B-A	0.04	9.00	0.0	0.5	A	14	21
C-AB	0.68	17.55	2.2	10.0	C	362	543
C-A						23	35
A-B						28	43
A-C						23	34

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	148	37	768	0.192	147	0.0	0.2	5.786	A
B-A	11	3	476	0.024	11	0.0	0.0	7.744	A
C-AB	291	73	637	0.458	288	0.0	0.9	10.236	B
C-A	25	6			25				
A-B	23	6			23				
A-C	19	5			19				

00:15 - 00:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	176	44	765	0.230	176	0.2	0.3	6.106	A
B-A	13	3	451	0.030	13	0.0	0.0	8.221	A
C-AB	353	88	641	0.551	352	0.9	1.3	12.400	B
C-A	24	6			24				
A-B	28	7			28				
A-C	22	6			22				

00:30 - 00:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	216	54	761	0.284	215	0.3	0.4	6.592	A
B-A	17	4	418	0.040	16	0.0	0.0	8.973	A
C-AB	442	110	647	0.683	438	1.3	2.2	17.019	C
C-A	21	5			21				
A-B	34	9			34				
A-C	28	7			28				

00:45 - 01:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	216	54	761	0.284	216	0.4	0.4	6.601	A
B-A	17	4	416	0.040	17	0.0	0.0	9.002	A
C-AB	442	111	647	0.683	442	2.2	2.2	17.551	C
C-A	20	5			20				
A-B	34	9			34				
A-C	28	7			28				

01:00 - 01:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	176	44	765	0.230	177	0.4	0.3	6.119	A
B-A	13	3	450	0.030	14	0.0	0.0	8.256	A
C-AB	354	88	641	0.552	357	2.2	1.3	12.842	B
C-A	24	6			24				
A-B	28	7			28				
A-C	22	6			22				

01:15 - 01:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	148	37	768	0.192	148	0.3	0.2	5.809	A
B-A	11	3	474	0.024	11	0.0	0.0	7.780	A
C-AB	292	73	637	0.458	293	1.3	0.9	10.542	B
C-A	25	6			25				
A-B	23	6			23				
A-C	19	5			19				

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.24	0.00	0.00	0.24	0.24			N/A	N/A
B-A	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-AB	0.86	0.55	1.00	1.40	1.45			N/A	N/A

00:15 - 00:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.30	0.00	0.00	0.30	0.30			N/A	N/A
B-A	0.03	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	1.25	0.13	1.12	1.97	2.64			N/A	N/A

00:30 - 00:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.39	0.03	0.25	0.46	0.48			N/A	N/A
B-A	0.04	0.03	0.25	0.46	0.48			N/A	N/A
C-AB	2.15	0.03	0.30	2.44	10.05			N/A	N/A

00:45 - 01:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.39	0.03	0.31	1.28	1.59			N/A	N/A
B-A	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	2.21	0.03	0.28	2.21	7.27			N/A	N/A

01:00 - 01:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.30	0.00	0.00	0.30	0.30			N/A	N/A
B-A	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	1.33	0.06	0.81	2.95	4.26			N/A	N/A

01:15 - 01:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.24	0.00	0.00	0.24	0.24			N/A	N/A
B-A	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-AB	0.90	0.04	0.44	2.00	3.15			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		9.91	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	39	Stream C-AB	9.91	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2045 + ST	PM	ONE HOUR	00:00	01:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	91	100.000
B		ONE HOUR	✓	144	100.000
C		ONE HOUR	✓	328	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	27	64
	B	0	0	144
	C	7	321	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0

	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.21	5.95	0.3	1.2	A	132	198
B-A	0.00	0.00	0.0	~1	A	0	0
C-AB	0.59	14.56	1.4	3.7	B	298	447
C-A						3	5
A-B						25	37
A-C						59	88

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	108	27	771	0.141	108	0.0	0.2	5.421	A
B-A	0	0	489	0.000	0	0.0	0.0	0.000	A
C-AB	244	61	610	0.399	241	0.0	0.7	9.685	A
C-A	3	0.79			3				
A-B	20	5			20				
A-C	48	12			48				

00:15 - 00:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	129	32	768	0.169	129	0.2	0.2	5.633	A
B-A	0	0	469	0.000	0	0.0	0.0	0.000	A
C-AB	292	73	608	0.480	291	0.7	0.9	11.301	B
C-A	3	0.81			3				
A-B	24	6			24				
A-C	58	14			58				

00:30 - 00:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	159	40	764	0.208	158	0.2	0.3	5.940	A
B-A	0	0	442	0.000	0	0.0	0.0	0.000	A
C-AB	358	90	605	0.592	356	0.9	1.4	14.340	B
C-A	3	0.78			3				
A-B	30	7			30				
A-C	70	18			70				

00:45 - 01:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	159	40	764	0.208	159	0.3	0.3	5.946	A
B-A	0	0	442	0.000	0	0.0	0.0	0.000	A
C-AB	358	90	605	0.592	358	1.4	1.4	14.556	B
C-A	3	0.77			3				
A-B	30	7			30				

A-C	70	18			70				

01:00 - 01:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	129	32	768	0.169	130	0.3	0.2	5.641	A
B-A	0	0	468	0.000	0	0.0	0.0	0.000	A
C-AB	292	73	608	0.480	294	1.4	0.9	11.516	B
C-A	3	0.80			3				
A-B	24	6			24				
A-C	58	14			58				

01:15 - 01:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	108	27	771	0.141	109	0.2	0.2	5.432	A
B-A	0	0	488	0.000	0	0.0	0.0	0.000	A
C-AB	244	61	610	0.399	245	0.9	0.7	9.878	A
C-A	3	0.78			3				
A-B	20	5			20				
A-C	48	12			48				

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.16	0.00	0.00	0.16	0.16			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.66	0.55	1.00	1.40	1.45			N/A	N/A

00:15 - 00:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.20	0.00	0.00	0.20	0.20			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.91	0.18	0.96	1.40	1.40			N/A	N/A

00:30 - 00:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.26	0.03	0.25	0.46	0.48			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	1.41	0.03	0.28	1.41	3.66			N/A	N/A

00:45 - 01:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.26	0.03	0.30	0.87	1.20			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	1.43	0.03	0.28	1.43	3.62			N/A	N/A

01:00 - 01:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.20	0.00	0.00	0.20	0.20			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.95	0.07	0.83	1.66	2.05			N/A	N/A

01:15 - 01:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.16	0.00	0.00	0.16	0.16			N/A	N/A

B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.68	0.05	0.48	1.10	1.70			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.0.2.1574

For sales and distribution information, program advice and maintenance, contact TRL Software:
+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

Filename: Junction 9 - Giles Lane_Parkwood Road.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2\Junction 9 - Giles Lane_Parkwood Road_Junctions 10 Report
Report generation date: 12/01/2023 15:35:28

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 Base Modelled													
Arm A	D3	26.8	134.40	1.04	F	67.16	-15 % [Arm A]	D4	1.0	9.58	0.50	A	9.55	39 % [Arm C]
Arm B		0.4	7.06	0.29	A				0.7	7.73	0.42	A		
Arm C		3.0	16.57	0.76	C				1.5	10.75	0.60	B		
	2045 + CD													
Arm A	D5	89.4	463.86	1.23	F	246.02	-27 % [Arm A]	D6	1.9	15.44	0.67	C	16.70	10 % [Arm B]
Arm B		1.6	10.88	0.62	B				3.9	20.61	0.80	C		
Arm C		0.4	6.05	0.28	A				0.5	7.41	0.33	A		
	2045 + ST													
Arm A	D7	32.5	154.76	1.06	F	78.07	-17 % [Arm A]	D8	1.3	12.15	0.58	B	12.35	22 % [Arm B]
Arm B		1.8	11.48	0.64	B				2.5	14.34	0.72	B		
Arm C		0.4	6.30	0.30	A				0.4	6.91	0.30	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	o Giles Lane / Parkwood Road – Roundabout junction
Location	University of Kent
Site number	
Date	26/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2045 Base Modelled	AM	ONE HOUR	00:00	01:30	15	✓
D4	2045 Base Modelled	PM	ONE HOUR	00:00	01:30	15	✓
D5	2045 + CD	AM	ONE HOUR	00:00	01:30	15	✓
D6	2045 + CD	PM	ONE HOUR	00:00	01:30	15	✓
D7	2045 + ST	AM	ONE HOUR	00:00	01:30	15	✓
D8	2045 + ST	PM	ONE HOUR	00:00	01:30	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 Base Modelled, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 86% of the total flow for the roundabout for one or more time segments]
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	67.16	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-15	Arm A	67.16	F

Arms

Arms

Arm	Name	Description
A	Park Wood Road	
B	Giles Lane (East)	
C	Giles Lane (West)	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.50	3.45	3.55	1.2	13.00	10.20	0.0	
B	3.70	3.55	3.55	0.0	16.30	16.50	0.0	✓
C	3.85	3.63	4.50	2.2	12.80	10.30	0.0	✓

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.612	803
B	0.553	961
C	0.520	950

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2045 Base Modelled	AM	ONE HOUR	00:00	01:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	633	100.000
B		ONE HOUR	✓	192	100.000
C		ONE HOUR	✓	616	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	226	407
	B	88	0	104
	C	428	188	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	1
	B	0	0	1
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.04	134.40	26.8	71.8	F	581	871
B	0.29	7.06	0.4	1.7	A	176	264
C	0.76	16.57	3.0	14.5	C	565	848

Main Results for each time segment

00:00 - 00:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	477	119	140	710	0.671	469	385	0.0	1.9	14.488	B
B	145	36	301	789	0.183	144	308	0.0	0.2	5.571	A
C	464	116	66	910	0.510	460	379	0.0	1.0	7.924	A

00:15 - 00:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	569	142	168	693	0.821	561	462	1.9	4.0	25.706	D
B	173	43	361	756	0.228	172	369	0.2	0.3	6.161	A
C	554	138	79	903	0.613	552	454	1.0	1.5	10.178	B

00:30 - 00:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	697	174	205	671	1.039	644	564	4.0	17.3	76.219	F
B	211	53	414	727	0.291	211	435	0.3	0.4	6.972	A
C	678	170	97	894	0.759	673	528	1.5	2.9	15.857	C

00:45 - 01:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	697	174	207	670	1.041	659	568	17.3	26.8	134.405	F
B	211	53	424	721	0.293	211	442	0.4	0.4	7.058	A
C	678	170	97	894	0.759	678	538	2.9	3.0	16.575	C

01:00 - 01:15

Arm	Total Demand	Junction Arrivals	Circulating	Capacity	RFC	Throughput	Throughput (exit side)	Start queue	End queue	Delay (s)	Unsignalised level of

	(Veh/hr)	(Veh)	flow (Veh/hr)	(Veh/hr)		(Veh/hr)	(Veh/hr)	(Veh)	(Veh)		service
A	569	142	171	692	0.823	652	468	26.8	6.1	90.781	F
B	173	43	419	724	0.238	173	403	0.4	0.3	6.539	A
C	554	138	79	903	0.613	559	513	3.0	1.6	10.637	B

01:15 - 01:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	477	119	142	709	0.672	493	390	6.1	2.2	17.716	C
B	145	36	317	781	0.185	145	318	0.3	0.2	5.664	A
C	464	116	66	910	0.510	466	395	1.6	1.1	8.155	A

Queue Variation Results for each time segment

00:00 - 00:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.94	0.56	1.31	2.89	3.53			N/A	N/A
B	0.22	0.00	0.00	0.22	0.22			N/A	N/A
C	1.02	0.55	1.00	1.40	1.45			N/A	N/A

00:15 - 00:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.99	0.10	1.59	9.96	14.03			N/A	N/A
B	0.29	0.00	0.00	0.29	0.29			N/A	N/A
C	1.54	0.07	1.02	3.37	4.69			N/A	N/A

00:30 - 00:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	17.32	1.24	12.86	36.40	46.02			N/A	N/A
B	0.41	0.03	0.25	0.46	0.48			N/A	N/A
C	2.94	0.03	0.31	4.04	14.47			N/A	N/A

00:45 - 01:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	26.80	2.14	20.09	56.77	71.77			N/A	N/A
B	0.41	0.03	0.31	1.32	1.66			N/A	N/A
C	3.03	0.03	0.28	3.03	9.00			N/A	N/A

01:00 - 01:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.14	0.06	0.97	17.77	29.42			N/A	N/A
B	0.32	0.00	0.00	0.32	0.32			N/A	N/A
C	1.63	0.05	0.58	4.12	6.34			N/A	N/A

01:15 - 01:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.16	0.03	0.31	2.83	10.47			N/A	N/A
B	0.23	0.00	0.00	0.23	0.23			N/A	N/A
C	1.06	0.04	0.39	2.67	4.62			N/A	N/A

2045 Base Modelled, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	9.55	A

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		39	Arm C	9.55	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2045 Base Modelled	PM	ONE HOUR	00:00	01:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	345	100.000
B		ONE HOUR	✓	307	100.000
C		ONE HOUR	✓	452	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	86	259
	B	206	0	101
	C	381	71	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)

A	0.50	9.58	1.0	2.5	A	317	475
B	0.42	7.73	0.7	2.8	A	282	423
C	0.60	10.75	1.5	2.5	B	415	622

Main Results for each time segment

00:00 - 00:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	260	65	53	771	0.337	258	439	0.0	0.5	6.991	A
B	231	58	193	854	0.271	230	117	0.0	0.4	5.752	A
C	340	85	154	870	0.391	338	269	0.0	0.6	6.721	A

00:15 - 00:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	310	78	64	764	0.406	309	526	0.5	0.7	7.903	A
B	276	69	232	833	0.331	275	141	0.4	0.5	6.456	A
C	406	102	185	854	0.476	405	323	0.6	0.9	7.997	A

00:30 - 00:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	380	95	78	756	0.503	379	644	0.7	1.0	9.514	A
B	338	85	284	804	0.420	337	172	0.5	0.7	7.699	A
C	498	124	226	833	0.598	495	395	0.9	1.4	10.608	B

00:45 - 01:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	380	95	78	755	0.503	380	646	1.0	1.0	9.581	A
B	338	85	285	803	0.421	338	173	0.7	0.7	7.734	A
C	498	124	227	832	0.598	498	396	1.4	1.5	10.750	B

01:00 - 01:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	310	78	64	764	0.406	311	530	1.0	0.7	7.975	A
B	276	69	234	832	0.332	277	142	0.7	0.5	6.498	A
C	406	102	186	854	0.476	409	325	1.5	0.9	8.127	A

01:15 - 01:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	260	65	54	770	0.337	260	443	0.7	0.5	7.068	A
B	231	58	196	853	0.271	232	119	0.5	0.4	5.797	A
C	340	85	155	869	0.391	341	272	0.9	0.7	6.831	A

Queue Variation Results for each time segment

00:00 - 00:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.50	0.50	1.00	1.40	1.45			N/A	N/A
B	0.37	0.00	0.00	0.37	0.37			N/A	N/A
C	0.63	0.55	1.00	1.40	1.45			N/A	N/A

00:15 - 00:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.67	0.18	0.92	1.38	1.44			N/A	N/A
B	0.49	0.00	0.00	0.49	0.49			N/A	N/A

C	0.89	0.12	0.92	1.11	1.59			N/A	N/A

00:30 - 00:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.99	0.03	0.26	0.99	0.99			N/A	N/A
B	0.72	0.03	0.26	0.72	0.72			N/A	N/A
C	1.45	0.03	0.27	1.45	2.00			N/A	N/A

00:45 - 01:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.00	0.03	0.27	1.00	2.49			N/A	N/A
B	0.72	0.03	0.28	0.90	2.84			N/A	N/A
C	1.47	0.03	0.27	1.47	2.51			N/A	N/A

01:00 - 01:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.69	0.10	0.84	1.38	1.44			N/A	N/A
B	0.50	0.50	1.00	1.40	1.45			N/A	N/A
C	0.92	0.09	0.89	1.47	1.83			N/A	N/A

01:15 - 01:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.51	0.05	0.47	1.29	1.40			N/A	N/A
B	0.37	0.03	0.26	0.47	0.50			N/A	N/A
C	0.65	0.05	0.50	1.45	1.45			N/A	N/A

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and B have 85% of the total flow for the roundabout for one or more time segments]
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	246.02	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-27	Arm A	246.02	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2045 + CD	AM	ONE HOUR	00:00	01:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	746	100.000
B		ONE HOUR	✓	486	100.000
C		ONE HOUR	✓	215	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	560	186
	B	199	0	287
	C	38	177	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	3	1
	B	1	0	0
	C	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)

A	1.23	463.86	89.4	145.3	F	685	1027
B	0.62	10.88	1.6	2.9	B	446	669
C	0.28	6.05	0.4	1.6	A	197	296

Main Results for each time segment

00:00 - 00:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	562	140	133	704	0.798	548	177	0.0	3.5	21.415	C
B	366	91	137	882	0.415	363	544	0.0	0.7	6.902	A
C	162	40	149	868	0.186	161	351	0.0	0.2	5.085	A

00:15 - 00:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	671	168	159	688	0.974	641	213	3.5	11.0	54.905	F
B	437	109	160	869	0.503	436	640	0.7	1.0	8.285	A
C	193	48	178	853	0.227	193	417	0.2	0.3	5.454	A

00:30 - 00:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	821	205	195	667	1.231	663	260	11.0	50.6	182.096	F
B	535	134	165	866	0.618	533	692	1.0	1.6	10.730	B
C	237	59	218	832	0.285	236	480	0.3	0.4	6.040	A

00:45 - 01:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	821	205	195	667	1.232	666	261	50.6	89.4	385.545	F
B	535	134	166	865	0.618	535	695	1.6	1.6	10.884	B
C	237	59	219	831	0.285	237	482	0.4	0.4	6.052	A

01:00 - 01:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	671	168	159	688	0.975	680	214	89.4	86.9	463.862	F
B	437	109	170	864	0.506	439	670	1.6	1.0	8.525	A
C	193	48	180	852	0.227	194	429	0.4	0.3	5.474	A

01:15 - 01:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	562	140	133	704	0.798	696	179	86.9	53.4	365.277	F
B	366	91	173	861	0.425	367	656	1.0	0.7	7.298	A
C	162	40	150	867	0.187	162	390	0.3	0.2	5.109	A

Queue Variation Results for each time segment

00:00 - 00:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.50	0.06	0.91	9.72	15.34			N/A	N/A
B	0.70	0.55	1.00	1.40	1.45			N/A	N/A
C	0.23	0.00	0.00	0.23	0.23			N/A	N/A

00:15 - 00:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	10.97	0.31	6.25	26.45	35.64			N/A	N/A
B	0.99	0.11	0.96	1.53	1.86			N/A	N/A

C	0.29	0.00	0.00	0.29	0.29			N/A	N/A

00:30 - 00:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	50.56	21.82	47.37	77.33	87.64			N/A	N/A
B	1.57	0.03	0.27	1.57	2.86			N/A	N/A
C	0.39	0.03	0.25	0.46	0.48			N/A	N/A

00:45 - 01:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	89.37	48.43	86.00	126.02	139.26			N/A	N/A
B	1.59	0.03	0.27	1.59	2.28			N/A	N/A
C	0.40	0.03	0.31	1.29	1.55			N/A	N/A

01:00 - 01:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	86.92	41.10	82.50	129.37	145.25			N/A	N/A
B	1.04	0.08	0.93	1.78	2.29			N/A	N/A
C	0.30	0.00	0.00	0.30	0.30			N/A	N/A

01:15 - 01:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	53.41	14.92	47.49	92.95	109.58			N/A	N/A
B	0.75	0.05	0.57	1.30	1.81			N/A	N/A
C	0.23	0.00	0.00	0.23	0.23			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and B have 83% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	16.70	C

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		10	Arm B	16.70	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2045 + CD	PM	ONE HOUR	00:00	01:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	421	100.000
B		ONE HOUR	✓	642	100.000
C		ONE HOUR	✓	213	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	286	135
	B	402	0	240
	C	54	159	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.67	15.44	1.9	7.4	C	386	579
B	0.80	20.61	3.9	20.0	C	589	884
C	0.33	7.41	0.5	2.1	A	195	293

Main Results for each time segment

00:00 - 00:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	317	79	119	730	0.434	314	340	0.0	0.8	8.583	A
B	483	121	101	905	0.534	479	332	0.0	1.1	8.355	A
C	160	40	300	794	0.202	159	280	0.0	0.3	5.652	A

00:15 - 00:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	378	95	143	716	0.529	377	408	0.8	1.1	10.581	B
B	577	144	121	894	0.645	575	399	1.1	1.8	11.170	B
C	191	48	360	763	0.251	191	336	0.3	0.3	6.292	A

00:30 - 00:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	464	116	175	696	0.666	460	497	1.1	1.9	15.043	C
B	707	177	148	879	0.804	699	487	1.8	3.7	19.152	C
C	235	59	438	723	0.325	234	409	0.3	0.5	7.357	A

00:45 - 01:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	464	116	175	696	0.666	463	502	1.9	1.9	15.436	C
B	707	177	149	879	0.804	706	490	3.7	3.9	20.610	C
C	235	59	442	720	0.326	234	413	0.5	0.5	7.409	A

01:00 - 01:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	378	95	143	715	0.529	382	415	1.9	1.2	10.883	B
B	577	144	122	893	0.646	585	403	3.9	1.9	11.962	B
C	191	48	366	760	0.252	192	341	0.5	0.3	6.347	A

01:15 - 01:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	317	79	120	730	0.434	318	345	1.2	0.8	8.783	A
B	483	121	102	905	0.534	486	336	1.9	1.2	8.661	A
C	160	40	304	792	0.203	161	284	0.3	0.3	5.708	A

Queue Variation Results for each time segment

00:00 - 00:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.75	0.55	1.00	1.40	1.45			N/A	N/A
B	1.12	0.55	1.00	1.40	1.45			N/A	N/A
C	0.25	0.00	0.00	0.25	0.25			N/A	N/A

00:15 - 00:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

A	1.10	0.10	1.00	1.79	2.23			N/A	N/A
B	1.76	0.07	1.02	4.08	5.84			N/A	N/A
C	0.33	0.00	0.00	0.33	0.33			N/A	N/A

00:30 - 00:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.90	0.03	0.29	1.90	7.37			N/A	N/A
B	3.71	0.03	0.34	7.83	20.03			N/A	N/A
C	0.47	0.03	0.25	0.47	0.48			N/A	N/A

00:45 - 01:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.94	0.03	0.28	1.94	4.92			N/A	N/A
B	3.89	0.03	0.30	3.89	15.99			N/A	N/A
C	0.48	0.03	0.31	1.38	2.11			N/A	N/A

01:00 - 01:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.15	0.06	0.78	2.42	3.38			N/A	N/A
B	1.89	0.05	0.47	5.03	8.20			N/A	N/A
C	0.34	0.00	0.00	0.34	0.34			N/A	N/A

01:15 - 01:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.78	0.04	0.43	1.71	2.59			N/A	N/A
B	1.17	0.04	0.36	2.88	5.63			N/A	N/A
C	0.26	0.00	0.00	0.26	0.26			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and B have 84% of the total flow for the roundabout for one or more time segments]
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	78.07	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-17	Arm A	78.07	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2045 + ST	AM	ONE HOUR	00:00	01:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	656	100.000
B		ONE HOUR	✓	516	100.000
C		ONE HOUR	✓	219	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	527	129
	B	227	0	289
	C	41	178	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	1	0	0
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)

A	1.06	154.76	32.5	77.9	F	602	903
B	0.64	11.48	1.8	4.3	B	473	710
C	0.30	6.30	0.4	1.7	A	201	301

Main Results for each time segment

00:00 - 00:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	494	123	133	719	0.687	486	200	0.0	2.1	14.918	B
B	388	97	95	902	0.431	385	523	0.0	0.7	6.933	A
C	165	41	170	854	0.193	164	311	0.0	0.2	5.208	A

00:15 - 00:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	590	147	160	703	0.839	580	240	2.1	4.4	27.379	D
B	464	116	114	891	0.520	463	626	0.7	1.1	8.369	A
C	197	49	204	837	0.235	197	373	0.2	0.3	5.621	A

00:30 - 00:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	722	181	196	681	1.061	659	294	4.4	20.3	84.223	F
B	568	142	130	883	0.644	565	725	1.1	1.7	11.242	B
C	241	60	249	813	0.297	241	446	0.3	0.4	6.282	A

00:45 - 01:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	722	181	196	681	1.061	673	295	20.3	32.5	154.762	F
B	568	142	132	881	0.645	568	737	1.7	1.8	11.479	B
C	241	60	250	813	0.297	241	451	0.4	0.4	6.298	A

01:00 - 01:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	590	147	160	703	0.839	684	242	32.5	8.9	118.801	F
B	464	116	135	880	0.527	466	710	1.8	1.1	8.758	A
C	197	49	205	836	0.236	197	396	0.4	0.3	5.641	A

01:15 - 01:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	494	123	134	719	0.687	520	202	8.9	2.3	20.203	C
B	388	97	102	898	0.433	390	552	1.1	0.8	7.108	A
C	165	41	172	853	0.193	165	321	0.3	0.2	5.234	A

Queue Variation Results for each time segment

00:00 - 00:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.08	0.53	1.39	3.29	3.94			N/A	N/A
B	0.75	0.55	1.00	1.40	1.45			N/A	N/A
C	0.24	0.00	0.00	0.24	0.24			N/A	N/A

00:15 - 00:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	4.42	0.12	1.86	10.97	15.36			N/A	N/A
B	1.07	0.10	0.98	1.75	2.16			N/A	N/A

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
C	0.31	0.00	0.00	0.31	0.31			N/A	N/A

00:30 - 00:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	20.28	2.53	16.11	40.15	49.62			N/A	N/A
B	1.75	0.03	0.28	1.75	4.27			N/A	N/A
C	0.42	0.03	0.25	0.46	0.48			N/A	N/A

00:45 - 01:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	32.52	4.91	26.54	63.52	77.90			N/A	N/A
B	1.78	0.03	0.27	1.78	2.73			N/A	N/A
C	0.42	0.03	0.31	1.32	1.74			N/A	N/A

01:00 - 01:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	8.87	0.10	2.64	24.57	36.47			N/A	N/A
B	1.14	0.08	0.95	1.99	2.76			N/A	N/A
C	0.31	0.00	0.00	0.31	0.31			N/A	N/A

01:15 - 01:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.32	0.03	0.31	2.97	11.22			N/A	N/A
B	0.77	0.05	0.49	1.52	2.04			N/A	N/A
C	0.24	0.00	0.00	0.24	0.24			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and B have 82% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	12.35	B

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		22	Arm B	12.35	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2045 + ST	PM	ONE HOUR	00:00	01:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	364	100.000
B		ONE HOUR	✓	591	100.000
C		ONE HOUR	✓	203	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	265	99
	B	360	0	231
	C	45	158	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.58	12.15	1.3	3.0	B	334	501
B	0.72	14.34	2.5	10.6	B	542	813
C	0.30	6.91	0.4	1.8	A	186	279

Main Results for each time segment

00:00 - 00:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	274	69	118	731	0.375	272	302	0.0	0.6	7.801	A
B	445	111	74	920	0.484	441	316	0.0	0.9	7.460	A
C	153	38	269	810	0.189	152	246	0.0	0.2	5.458	A

00:15 - 00:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	327	82	142	716	0.457	326	363	0.6	0.8	9.204	A
B	531	133	89	912	0.583	530	379	0.9	1.4	9.366	A
C	182	46	323	782	0.233	182	296	0.2	0.3	5.994	A

00:30 - 00:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	401	100	174	697	0.575	399	443	0.8	1.3	11.994	B
B	651	163	108	901	0.722	646	464	1.4	2.5	13.883	B
C	224	56	394	745	0.300	223	361	0.3	0.4	6.885	A

00:45 - 01:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	401	100	174	697	0.575	401	446	1.3	1.3	12.150	B
B	651	163	109	901	0.722	650	466	2.5	2.5	14.338	B
C	224	56	396	744	0.300	223	363	0.4	0.4	6.913	A

01:00 - 01:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	327	82	142	716	0.457	329	367	1.3	0.9	9.349	A
B	531	133	90	912	0.583	536	382	2.5	1.4	9.687	A
C	182	46	326	781	0.234	183	299	0.4	0.3	6.031	A

01:15 - 01:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	274	69	119	730	0.375	275	306	0.9	0.6	7.926	A
B	445	111	75	920	0.484	447	319	1.4	1.0	7.642	A
C	153	38	272	809	0.189	153	249	0.3	0.2	5.493	A

Queue Variation Results for each time segment

00:00 - 00:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.59	0.55	1.00	1.40	1.45			N/A	N/A
B	0.92	0.55	1.00	1.40	1.45			N/A	N/A
C	0.23	0.00	0.00	0.23	0.23			N/A	N/A

00:15 - 00:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.83	0.15	0.92	1.43	1.49			N/A	N/A
B	1.36	0.08	1.01	2.77	3.77			N/A	N/A
C	0.30	0.00	0.00	0.30	0.30			N/A	N/A

00:30 - 00:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.31	0.03	0.27	1.31	1.92			N/A	N/A
B	2.47	0.03	0.30	2.47	10.64			N/A	N/A
C	0.42	0.03	0.25	0.46	0.48			N/A	N/A

00:45 - 01:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.33	0.03	0.27	1.33	2.98			N/A	N/A
B	2.53	0.03	0.28	2.53	5.72			N/A	N/A
C	0.43	0.03	0.31	1.34	1.77			N/A	N/A

01:00 - 01:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.86	0.08	0.84	1.26	1.70			N/A	N/A
B	1.43	0.06	0.75	3.37	4.89			N/A	N/A
C	0.31	0.00	0.00	0.31	0.31			N/A	N/A

01:15 - 01:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.61	0.05	0.48	1.19	1.19			N/A	N/A
B	0.95	0.04	0.41	2.29	3.70			N/A	N/A
C	0.23	0.00	0.00	0.23	0.23			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 10 - St Stephen's Hill_Giles Lane Mini Roundabout Base Updated Flows.j10
Path: \\?\UNC\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2\Junction 10 - St Stephen's Hill_Giles Lane Mini Roundabout_Junctions 10 Report
Report generation date: 16/01/2023 09:41:26

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 Base Modelled													
Arm A	D7	245.6	926.31	1.41	F	538.43	-34 % [Arm A]	D8	1.0	8.66	0.49	A	72.81	-15 % [Arm C]
Arm B		0.0	19.73	0.03	C				0.0	0.00	0.00	A		
Arm C		22.4	114.94	1.02	F				33.7	130.97	1.05	F		
Arm D		0.6	6.68	0.38	A				4.2	28.10	0.82	D		
	2045 + CD													
Arm A	D9	118.5	507.80	1.26	F	250.43	-26 % [Arm A]	D10	1.4	10.86	0.58	B	218.83	-26 % [Arm C]
Arm B		0.0	25.86	0.05	D				0.0	10.81	0.02	B		
Arm C		15.2	78.37	0.98	F				101.7	437.70	1.22	F		
Arm D		1.8	11.66	0.65	B				6.6	38.08	0.89	E		
	2045 + ST													
Arm A	D11	124.4	526.28	1.27	F	267.40	-26 % [Arm A]	D12	1.1	9.60	0.53	A	110.54	-19 % [Arm C]
Arm B		0.1	24.39	0.06	C				0.0	9.84	0.02	A		
Arm C		15.9	82.86	0.98	F				57.2	213.44	1.11	F		
Arm D		1.5	10.20	0.60	B				5.3	31.48	0.85	D		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	St Stephens Hill/Giles Lane Mini Roundabout
Location	
Site number	
Date	17/01/2022
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 Base Modelled	AM	ONE HOUR	07:45	09:15	15	✓	✓
D8	2045 Base Modelled	PM	ONE HOUR	16:15	17:45	15	✓	✓
D9	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓
D10	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓
D11	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓
D12	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 Base Modelled, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 85% of the total flow for the roundabout for one or more time segments][Arms A and D have 68% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D7 - 2045 Base Modelled, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	538.43	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-34	Arm A	538.43	F

Arms

Arms

Arm	Name	Description
A	St Stephen's Hill (north)	
B	Giles Lane (Private Road)	
C	St Stephen's Hill (south)	
D	Giles Lane	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.55	3.03	4.50	3.2	9.60	5.20	0.0	✓
B	3.30	3.30	10.00	1.1	12.90	8.99	0.0	
C	3.65	3.50	4.70	1.5	14.80	12.99	0.0	✓
D	3.45	3.45	5.05	1.8	15.15	10.10	0.0	✓

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.503	892
B	0.615	865
C	0.520	892
D	0.514	1023

The slope and intercept shown above include any corrections and adjustments.

Arm Capacity Adjustments

Arm	Type	Reason	Direct capacity adjustment (PCU/hr)
A	Direct	To macth observed queue	100

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 Base Modelled	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1123	100.000
B		ONE HOUR	✓	6	100.000
C		ONE HOUR	✓	635	100.000
D		ONE HOUR	✓	305	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	0	639	484
	B	0	0	1	5
	C	269	1	0	365
	D	104	2	199	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	1	0	0	1
	D	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.41	926.31	245.6	245.6	F	1123	1123
B	0.03	19.73	0.0	0.5	C	6	6
C	1.02	114.94	22.4	68.1	F	635	635
D	0.38	6.68	0.6	2.7	A	305	305

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1010	252	181	899	1.123	888	331	8.1	38.5	108.741	F
B	5	1	1066	208	0.026	5	3	0.0	0.0	17.772	C
C	571	143	387	685	0.834	562	685	2.0	4.3	27.434	D
D	274	69	239	899	0.305	274	710	0.3	0.4	5.756	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1236	309	222	878	1.408	878	392	38.5	128.2	350.641	F
B	7	2	1097	189	0.035	7	3	0.0	0.0	19.684	C
C	699	175	384	686	1.019	655	719	4.3	15.4	69.924	F
D	336	84	278	878	0.382	335	760	0.4	0.6	6.620	A

08:30 - 08:45

	Total	Junction	Circulating	Capacity		Throughput	Throughput	Start	End		Unsignalised

Arm	Demand (Veh/hr)	Arrivals (Veh)	flow (Veh/hr)	(Veh/hr)	RFC	(Veh/hr)	(exit side) (Veh/hr)	queue (Veh)	queue (Veh)	Delay (s)	level of service
A	1236	309	222	878	1.408	878	399	128.2	217.7	708.460	F
B	7	2	1097	189	0.035	7	3	0.0	0.0	19.735	C
C	699	175	384	686	1.019	671	720	15.4	22.4	114.937	F
D	336	84	285	875	0.384	336	770	0.6	0.6	6.679	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1010	252	182	898	1.124	898	362	217.7	245.6	926.312	F
B	5	1	1078	201	0.027	5	3	0.0	0.0	18.405	C
C	571	143	392	682	0.837	634	691	22.4	6.6	79.794	F
D	274	69	270	883	0.311	275	756	0.6	0.5	5.929	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	38.52	0.23	15.65	105.49	151.95			N/A	N/A
B	0.03	0.03	0.25	0.45	0.48			N/A	N/A
C	4.28	0.13	1.92	10.40	14.37			N/A	N/A
D	0.44	0.00	0.00	0.44	0.44			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	128.16	>199	>199	>199	>199			N/A	N/A
B	0.04	0.03	0.25	0.45	0.48			N/A	N/A
C	15.36	0.96	10.50	34.21	44.32			N/A	N/A
D	0.61	0.03	0.25	0.61	0.61			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	217.75	>199	>199	>199	>199			N/A	N/A
B	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C	22.40	1.00	14.67	51.85	68.06			N/A	N/A
D	0.62	0.03	0.29	1.15	2.73			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	245.58	>199	>199	>199	>199			N/A	N/A
B	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C	6.61	0.06	1.06	19.15	31.62			N/A	N/A
D	0.45	0.00	0.00	0.45	0.45			N/A	N/A

2045 Base Modelled, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 69% of the total flow for the roundabout for one or more time segments][Arms C and D have 78% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D8 - 2045 Base Modelled, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	72.81	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-15	Arm C	72.81	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D8	2045 Base Modelled	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	366	100.000
B		ONE HOUR	✓	3	100.000
C		ONE HOUR	✓	803	100.000
D		ONE HOUR	✓	518	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	1	281	84
	B	1	0	2	0
	C	615	1	0	187
	D	208	2	308	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.49	8.66	1.0	2.6	A	366	366
B	0.00	0.00	0.0	~1	A	0	0
C	1.05	130.97	33.7	85.0	F	803	803
D	0.82	28.10	4.2	21.1	D	518	518

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	329	82	278	850	0.387	328	731	0.5	0.6	6.890	A
B	0	0	603	494	0.000	0	4	0.0	0.0	0.000	A
C	722	180	75	853	0.846	712	527	2.3	4.7	23.906	C
D	466	116	546	742	0.627	463	241	1.0	1.6	12.771	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	403	101	337	821	0.491	402	852	0.6	0.9	8.539	A
B	0	0	734	413	0.000	0	4	0.0	0.0	0.000	A
C	884	221	92	844	1.047	818	642	4.7	21.3	72.154	F
D	570	143	627	701	0.814	561	283	1.6	3.8	24.451	C

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	403	101	341	818	0.492	403	868	0.9	1.0	8.662	A
B	0	0	740	409	0.000	0	4	0.0	0.0	0.000	A
C	884	221	92	844	1.047	835	648	21.3	33.7	130.966	F
D	570	143	640	694	0.822	569	287	3.8	4.2	28.105	D

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	329	82	285	847	0.389	330	822	1.0	0.6	6.988	A
B	0	0	611	489	0.000	0	4	0.0	0.0	0.000	A
C	722	180	76	853	0.846	825	535	33.7	8.0	96.828	F
D	466	116	633	698	0.667	474	268	4.2	2.1	16.651	C

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.62	0.14	0.89	1.38	1.44			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	4.73	0.11	1.89	11.96	16.88			N/A	N/A
D	1.62	0.07	1.02	3.67	5.12			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.95	0.03	0.26	0.95	0.95			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	21.33	2.17	16.51	43.54	54.37			N/A	N/A
D	3.84	0.04	0.37	9.59	20.63			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.96	0.03	0.28	0.96	2.64			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	33.68	4.01	26.61	68.34	84.97			N/A	N/A
D	4.22	0.03	0.32	6.16	21.13			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.64	0.11	0.85	1.37	1.44			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	8.00	0.07	1.35	22.97	36.05			N/A	N/A
D	2.10	0.05	0.72	5.53	8.49			N/A	N/A

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 75% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D9 - 2045 + CD, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	250.43	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-26	Arm A	250.43	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D9	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	922	100.000
B		ONE HOUR	✓	6	100.000
C		ONE HOUR	✓	661	100.000
D		ONE HOUR	✓	511	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	0	614	308
	B	0	0	2	4
	C	268	1	0	392
	D	182	2	327	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	0	0	0	0
	C	1	0	0	1
	D	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.26	507.80	118.5	184.7	F	922	922
B	0.05	25.86	0.0	0.5	D	6	6
C	0.98	78.37	15.2	61.2	F	661	661
D	0.65	11.66	1.8	4.3	B	511	511

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	829	207	296	840	0.987	791	401	3.7	13.2	51.704	F
B	5	1	1084	196	0.028	5	3	0.0	0.0	18.885	C
C	594	149	268	747	0.795	587	822	1.8	3.5	21.575	C
D	459	115	239	897	0.512	458	616	0.7	1.0	8.176	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1015	254	361	807	1.258	804	481	13.2	66.1	190.133	F
B	7	2	1162	148	0.045	7	3	0.0	0.0	25.443	D
C	728	182	273	745	0.977	696	896	3.5	11.6	52.679	F
D	563	141	283	874	0.643	560	685	1.0	1.7	11.338	B

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1015	254	363	806	1.260	805	489	66.1	118.5	416.356	F
B	7	2	1165	146	0.045	7	3	0.0	0.0	25.861	D
C	728	182	273	745	0.978	713	898	11.6	15.2	78.367	F
D	563	141	290	871	0.646	562	696	1.7	1.8	11.662	B

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	829	207	299	838	0.989	830	423	118.5	118.2	507.798	F
B	5	1	1126	170	0.032	5	3	0.0	0.0	21.874	C
C	594	149	281	741	0.802	636	850	15.2	4.6	41.964	E
D	459	115	259	887	0.518	462	658	1.8	1.1	8.532	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	13.17	0.32	7.41	32.17	43.54			N/A	N/A
B	0.03	0.03	0.25	0.45	0.48			N/A	N/A
C	3.49	0.09	1.28	8.73	12.37			N/A	N/A
D	1.03	0.09	0.95	1.70	2.00			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	66.06	31.78	62.72	97.43	109.15			N/A	N/A
B	0.05	0.03	0.25	0.46	0.48			N/A	N/A
C	11.55	0.21	5.73	29.36	40.64			N/A	N/A
D	1.75	0.03	0.28	1.75	4.31			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

A	118.51	70.69	115.14	160.46	175.13			N/A	N/A
B	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C	15.21	0.14	5.43	41.92	61.21			N/A	N/A
D	1.79	0.03	0.27	1.79	3.03			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	118.19	64.04	113.86	167.04	184.65			N/A	N/A
B	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C	4.65	0.05	0.46	13.17	23.55			N/A	N/A
D	1.10	0.08	0.93	1.92	2.64			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms C and D have 78% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D10 - 2045 + CD, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	218.83	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-26	Arm C	218.83	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D10	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	415	100.000
B		ONE HOUR	✓	6	100.000
C		ONE HOUR	✓	903	100.000
D		ONE HOUR	✓	608	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	2	285	128
	B	2	0	3	1
	C	571	2	0	330
	D	242	2	364	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.58	10.86	1.4	2.8	B	415	415
B	0.02	10.81	0.0	0.5	B	6	6
C	1.22	437.70	101.7	163.6	F	903	903
D	0.89	38.08	6.6	36.2	E	608	608

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	373	93	328	826	0.452	372	710	0.6	0.8	7.922	A
B	5	1	695	437	0.012	5	5	0.0	0.0	8.337	A
C	812	203	117	831	0.977	779	583	3.8	12.1	49.465	E
D	547	137	496	768	0.712	542	400	1.3	2.3	15.654	C

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	457	114	396	791	0.577	455	777	0.8	1.3	10.629	B
B	7	2	845	345	0.019	7	6	0.0	0.0	10.638	B
C	994	249	144	818	1.216	813	708	12.1	57.3	166.639	F
D	669	167	518	756	0.885	655	439	2.3	5.9	31.677	D

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	457	114	403	788	0.580	457	784	1.3	1.4	10.864	B
B	7	2	854	340	0.019	7	6	0.0	0.0	10.813	B
C	994	249	144	817	1.216	817	716	57.3	101.7	357.979	F
D	669	167	520	755	0.886	667	440	5.9	6.6	38.078	E

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	373	93	340	820	0.455	375	746	1.4	0.8	8.137	A
B	5	1	710	428	0.013	5	5	0.0	0.0	8.515	A
C	812	203	118	831	0.977	823	597	101.7	98.9	437.704	F
D	547	137	524	754	0.725	562	417	6.6	2.8	20.039	C

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.81	0.12	0.90	1.43	1.50			N/A	N/A
B	0.01	0.01	0.25	0.45	0.48			N/A	N/A
C	12.08	0.34	6.97	29.10	39.15			N/A	N/A
D	2.33	0.07	1.22	5.71	8.15			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.33	0.03	0.27	1.33	1.41			N/A	N/A
B	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C	57.27	25.40	53.86	86.88	98.19			N/A	N/A
D	5.92	0.05	0.64	17.02	29.18			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

A	1.36	0.03	0.27	1.36	2.83			N/A	N/A
B	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C	101.65	56.11	98.04	142.36	156.96			N/A	N/A
D	6.62	0.04	0.38	16.10	36.22			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.85	0.09	0.87	1.08	1.59			N/A	N/A
B	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C	98.92	47.90	94.18	146.06	163.56			N/A	N/A
D	2.81	0.04	0.44	7.80	13.78			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 76% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D11 - 2045 + ST, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	267.40	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-26	Arm A	267.40	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D11	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	945	100.000
B		ONE HOUR	✓	8	100.000
C		ONE HOUR	✓	651	100.000
D		ONE HOUR	✓	475	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	1	606	338
	B	1	0	2	5
	C	258	1	0	392
	D	176	2	297	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	0	0	0	0
	C	1	0	0	1
	D	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.27	526.28	124.4	192.7	F	945	945
B	0.06	24.39	0.1	0.5	C	8	8
C	0.98	82.86	15.9	61.8	F	651	651
D	0.60	10.20	1.5	2.3	B	475	475

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	850	212	269	853	0.996	808	388	3.9	14.3	54.000	F
B	7	2	1073	202	0.036	7	4	0.0	0.0	18.430	C
C	585	146	294	733	0.799	578	786	1.8	3.6	22.306	C
D	427	107	231	901	0.474	426	642	0.6	0.9	7.564	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1040	260	329	823	1.264	820	465	14.3	69.3	195.767	F
B	9	2	1145	158	0.056	9	4	0.0	0.1	24.060	C
C	717	179	300	730	0.982	683	854	3.6	11.9	54.918	F
D	523	131	273	879	0.595	521	710	0.9	1.4	9.988	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1040	260	330	822	1.265	822	473	69.3	124.0	427.200	F
B	9	2	1148	156	0.056	9	4	0.1	0.1	24.386	C
C	717	179	301	729	0.983	701	856	11.9	15.9	82.858	F
D	523	131	280	875	0.597	523	721	1.4	1.5	10.204	B

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	850	212	271	852	0.997	848	409	124.0	124.4	526.278	F
B	7	2	1115	177	0.041	7	4	0.1	0.0	21.267	C
C	585	146	309	725	0.807	630	814	15.9	4.8	45.869	E
D	427	107	251	890	0.480	429	687	1.5	0.9	7.844	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	14.26	0.36	8.14	34.72	46.85			N/A	N/A
B	0.04	0.03	0.25	0.45	0.48			N/A	N/A
C	3.56	0.10	1.35	8.86	12.53			N/A	N/A
D	0.89	0.11	0.92	1.10	1.59			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	69.34	33.56	65.89	102.06	114.25			N/A	N/A
B	0.06	0.03	0.26	0.46	0.49			N/A	N/A
C	11.93	0.25	6.25	29.79	40.84			N/A	N/A
D	1.43	0.03	0.27	1.43	1.65			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

A	123.97	74.71	120.59	167.19	182.31			N/A	N/A
B	0.06	0.03	0.25	0.45	0.48			N/A	N/A
C	15.92	0.16	6.40	43.04	61.83			N/A	N/A
D	1.46	0.03	0.27	1.46	2.35			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	124.39	68.41	120.01	174.69	192.72			N/A	N/A
B	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C	4.84	0.05	0.47	13.78	24.40			N/A	N/A
D	0.94	0.10	0.92	1.43	1.79			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms C and D have 78% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D12 - 2045 + ST, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	110.54	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-19	Arm C	110.54	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D12	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	385	100.000
B		ONE HOUR	✓	6	100.000
C		ONE HOUR	✓	830	100.000
D		ONE HOUR	✓	580	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	1	261	123
	B	2	0	3	1
	C	541	2	0	287
	D	234	2	344	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.53	9.60	1.1	2.6	A	385	385
B	0.02	9.84	0.0	0.5	A	6	6
C	1.11	213.44	57.2	107.7	F	830	830
D	0.85	31.48	5.3	28.1	D	580	580

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	346	87	311	834	0.415	345	687	0.5	0.7	7.352	A
B	5	1	652	464	0.012	5	4	0.0	0.0	7.852	A
C	746	187	113	834	0.895	731	544	2.7	6.5	31.123	D
D	521	130	480	776	0.672	518	364	1.1	2.0	13.766	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	424	106	376	801	0.529	422	782	0.7	1.1	9.457	A
B	7	2	793	377	0.018	7	5	0.0	0.0	9.727	A
C	914	228	138	820	1.114	807	662	6.5	33.1	103.150	F
D	639	160	530	750	0.851	627	415	2.0	4.8	27.040	D

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	424	106	382	799	0.531	424	792	1.1	1.1	9.603	A
B	7	2	800	372	0.018	7	5	0.0	0.0	9.842	A
C	914	228	139	820	1.114	817	668	33.1	57.2	209.870	F
D	639	160	537	747	0.855	637	419	4.8	5.3	31.476	D

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	346	87	320	830	0.417	348	750	1.1	0.7	7.495	A
B	5	1	663	457	0.012	5	5	0.0	0.0	7.971	A
C	746	187	114	833	0.896	819	554	57.2	39.0	213.438	F
D	521	130	538	747	0.698	533	395	5.3	2.4	17.615	C

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.70	0.14	0.89	1.38	1.44			N/A	N/A
B	0.01	0.01	0.25	0.45	0.48			N/A	N/A
C	6.48	0.19	3.36	15.67	21.35			N/A	N/A
D	1.96	0.07	1.09	4.69	6.70			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.10	0.03	0.26	1.10	1.10			N/A	N/A
B	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C	33.10	9.37	29.37	56.90	66.92			N/A	N/A
D	4.78	0.04	0.42	13.13	25.08			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

A	1.12	0.03	0.27	1.12	2.65			N/A	N/A
B	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C	57.22	20.32	52.45	93.30	107.74			N/A	N/A
D	5.26	0.03	0.34	9.96	28.12			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.73	0.10	0.85	1.39	1.46			N/A	N/A
B	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C	39.04	12.73	35.31	64.86	75.43			N/A	N/A
D	2.44	0.05	0.47	6.73	11.13			N/A	N/A

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: Junction 11 - Calais Hill_Canterbury Hill.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2\Junction 11 - Calais Hill_Canterbury Hill_Junctions 10 Report
Report generation date: 16/01/2023 09:38:55

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 Base Modelled													
Stream B-C	D7	0.0	6.90	0.01	A	1.20	16 % [Stream B-A]	D8	0.0	0.00	0.00	A	0.24	43 % [Stream B-A]
Stream B-A		0.5	22.90	0.35	C				0.1	16.07	0.08	C		
Stream C-AB		0.0	0.00	0.00	A				0.0	0.00	0.00	A		
	2045 + CD													
Stream B-C	D9	0.0	0.00	0.00	A	0.27	41 % [Stream B-A]	D10	0.0	0.00	0.00	A	0.00	900 % []
Stream B-A		0.1	16.30	0.09	C				0.0	0.00	0.00	A		
Stream C-AB		0.0	3.35	0.01	A				0.0	0.00	0.00	A		
	2045 + ST													
Stream B-C	D11	0.0	0.00	0.00	A	0.08	48 % [Stream B-A]	D12	0.0	0.00	0.00	A	0.00	900 % []
Stream B-A		0.0	15.40	0.03	C				0.0	0.00	0.00	A		
Stream C-AB		0.0	3.25	0.01	A				0.0	0.00	0.00	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Calais Hill / Wood Hill / Canterbury Hill – Roundabout junction
Location	Tyler Hill
Site number	
Date	26/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 Base Modelled	AM	ONE HOUR	07:45	09:15	15	✓	✓
D8	2045 Base Modelled	PM	ONE HOUR	16:15	17:45	15	✓	✓
D9	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓
D10	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓
D11	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓
D12	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 Base Modelled, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	Arm B - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Sets	D7 - 2045 Base Modelled, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.20	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	16	Stream B-A	1.20	A

Arms

Arms

Arm	Name	Description	Arm type
A	Canterbury Hill		Major
B	Calais Hill		Minor
C	Wood Hill		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	5.40			94.3	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	9.30	3.55	2.70	2.60	2.60	✓	1.00	23	21

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	510	0.095	0.240	0.151	0.343
B-C	720	0.114	0.288	-	-
C-B	629	0.250	0.250	-	-

The slopes and intercepts shown above include custom intercept adjustments only.
Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 Base Modelled	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	374	100.000
B		ONE HOUR	✓	82	100.000
C		ONE HOUR	✓	1041	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	31	343
	B	77	0	5
	C	1041	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.01	6.90	0.0	0.5	A	5	5
B-A	0.35	22.90	0.5	2.4	C	77	77
C-AB	0.00	0.00	0.0	~1	A	0	0
C-A						1041	1041
A-B						31	31
A-C						343	343

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service

B-C	4	1	582	0.008	4	0.0	0.0	6.233	A
B-A	69	17	291	0.238	69	0.2	0.3	16.177	C
C-AB	0	0	543	0.000	0	0.0	0.0	0.000	A
C-A	936	234			936				
A-B	28	7			28				
A-C	308	77			308				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	6	1	529	0.010	5	0.0	0.0	6.879	A
B-A	85	21	242	0.351	84	0.3	0.5	22.674	C
C-AB	0	0	524	0.000	0	0.0	0.0	0.000	A
C-A	1146	287			1146				
A-B	34	9			34				
A-C	378	94			378				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	6	1	527	0.010	6	0.0	0.0	6.896	A
B-A	85	21	242	0.351	85	0.5	0.5	22.905	C
C-AB	0	0	524	0.000	0	0.0	0.0	0.000	A
C-A	1146	287			1146				
A-B	34	9			34				
A-C	378	94			378				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	4	1	581	0.008	5	0.0	0.0	6.246	A
B-A	69	17	291	0.238	70	0.5	0.3	16.356	C
C-AB	0	0	543	0.000	0	0.0	0.0	0.000	A
C-A	936	234			936				
A-B	28	7			28				
A-C	308	77			308				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.01	0.01	0.25	0.45	0.48			N/A	N/A
B-A	0.31	0.00	0.00	0.31	0.31			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.01	0.00	0.00	0.01	0.01			N/A	N/A
B-A	0.52	0.03	0.26	0.52	0.52			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.01	0.00	0.00	0.01	0.01			N/A	N/A
B-A	0.53	0.03	0.31	1.49	2.39			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

08:45 - 09:00

	Mean	Q05	Q50	Q90	Q95	Percentile	Marker	Probability of reaching or	Probability of exactly

Stream	(Veh)	(Veh)	(Veh)	(Veh)	(Veh)	message	message	exceeding marker	reaching marker
B-C	0.01	0.00	0.00	0.01	0.01			N/A	N/A
B-A	0.32	0.03	0.25	0.46	0.48			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2045 Base Modelled, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	Arm B - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Sets	D8 - 2045 Base Modelled, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.24	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	43	Stream B-A	0.24	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D8	2045 Base Modelled	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	823	100.000
B		ONE HOUR	✓	18	100.000
C		ONE HOUR	✓	349	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	59	764
	B	18	0	0
	C	349	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To

		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.00	0.00	0.0	~1	A	0	0
B-A	0.08	16.07	0.1	0.5	C	18	18
C-AB	0.00	0.00	0.0	~1	A	0	0
C-A						349	349
A-B						59	59
A-C						764	764

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	510	0.000	0	0.0	0.0	0.000	A
B-A	16	4	293	0.055	16	0.0	0.1	13.016	B
C-AB	0	0	443	0.000	0	0.0	0.0	0.000	A
C-A	314	78			314				
A-B	53	13			53				
A-C	687	172			687				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	461	0.000	0	0.0	0.0	0.000	A
B-A	20	5	244	0.081	20	0.1	0.1	16.056	C
C-AB	0	0	402	0.000	0	0.0	0.0	0.000	A
C-A	384	96			384				
A-B	65	16			65				
A-C	841	210			841				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	461	0.000	0	0.0	0.0	0.000	A
B-A	20	5	244	0.081	20	0.1	0.1	16.072	C
C-AB	0	0	402	0.000	0	0.0	0.0	0.000	A
C-A	384	96			384				
A-B	65	16			65				
A-C	841	210			841				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	509	0.000	0	0.0	0.0	0.000	A
B-A	16	4	293	0.055	16	0.1	0.1	13.032	B
C-AB	0	0	443	0.000	0	0.0	0.0	0.000	A

C-A	314	78			314				
A-B	53	13			53				
A-C	687	172			687				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.06	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.09	0.03	0.26	0.47	0.50			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.09	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.06	0.00	0.00	0.06	0.06			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	Arm B - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Sets	D9 - 2045 + CD, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.27	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	41	Stream B-A	0.27	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D9	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	450	100.000
B		ONE HOUR	✓	21	100.000
C		ONE HOUR	✓	877	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	3	447
	B	21	0	0
	C	875	2	0

Vehicle Mix

Heavy Vehicle Percentages

	To

		A	B	C
From	A	0	0	1
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.00	0.00	0.0	~1	A	0	0
B-A	0.09	16.30	0.1	0.5	C	21	21
C-AB	0.01	3.35	0.0	0.5	A	9	9
C-A						868	868
A-B						3	3
A-C						447	447

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	594	0.000	0	0.0	0.0	0.000	A
B-A	19	5	293	0.064	19	0.0	0.1	13.136	B
C-AB	7	2	1082	0.006	7	0.0	0.0	3.345	A
C-A	782	195			782				
A-B	3	0.67			3				
A-C	402	100			402				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	564	0.000	0	0.0	0.0	0.000	A
B-A	23	6	244	0.095	23	0.1	0.1	16.275	C
C-AB	11	3	1196	0.009	11	0.0	0.0	3.036	A
C-A	954	239			954				
A-B	3	0.83			3				
A-C	492	123			492				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	564	0.000	0	0.0	0.0	0.000	A
B-A	23	6	244	0.095	23	0.1	0.1	16.296	C
C-AB	11	3	1196	0.009	11	0.0	0.0	3.036	A
C-A	954	239			954				
A-B	3	0.83			3				
A-C	492	123			492				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	594	0.000	0	0.0	0.0	0.000	A
B-A	19	5	293	0.064	19	0.1	0.1	13.157	B
C-AB	7	2	1082	0.006	7	0.0	0.0	3.349	A

C-A	782	195			782				
A-B	3	0.67			3				
A-C	402	100			402				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.07	0.03	0.25	0.46	0.48			N/A	N/A
C-AB	0.01	0.01	0.25	0.45	0.48			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.10	0.03	0.26	0.47	0.50			N/A	N/A
C-AB	0.01	0.01	0.26	0.47	0.49			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.10	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.07	0.00	0.00	0.07	0.07			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	Arm B - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Sets	D10 - 2045 + CD, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.00	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	900		0.00	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D10	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	813	100.000
B		ONE HOUR	✓	3	100.000
C		ONE HOUR	✓	412	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	2	811
	B	3	0	0
	C	412	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To

		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.00	0.00	0.0	~1	A	0	0
B-A	0.00	0.00	0.0	~1	A	0	0
C-AB	0.00	0.00	0.0	~1	A	0	0
C-A						412	412
A-B						2	2
A-C						811	811

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	526	0.000	0	0.0	0.0	0.000	A
B-A	0	0	277	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	445	0.000	0	0.0	0.0	0.000	A
C-A	370	93			370				
A-B	2	0.45			2				
A-C	729	182			729				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	478	0.000	0	0.0	0.0	0.000	A
B-A	0	0	225	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	404	0.000	0	0.0	0.0	0.000	A
C-A	454	113			454				
A-B	2	0.55			2				
A-C	893	223			893				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	478	0.000	0	0.0	0.0	0.000	A
B-A	0	0	225	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	404	0.000	0	0.0	0.0	0.000	A
C-A	454	113			454				
A-B	2	0.55			2				
A-C	893	223			893				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	526	0.000	0	0.0	0.0	0.000	A
B-A	0	0	277	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	445	0.000	0	0.0	0.0	0.000	A

C-A	370	93			370				
A-B	2	0.45			2				
A-C	729	182			729				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	Arm B - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Sets	D11 - 2045 + ST, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.08	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	48	Stream B-A	0.08	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D11	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	436	100.000
B		ONE HOUR	✓	6	100.000
C		ONE HOUR	✓	920	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	2	434
	B	6	0	0
	C	919	1	0

Vehicle Mix

Heavy Vehicle Percentages

	To

		A	B	C
From	A	0	0	1
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.00	0.00	0.0	~1	A	0	0
B-A	0.03	15.40	0.0	0.5	C	6	6
C-AB	0.01	3.25	0.0	0.5	A	5	5
C-A						915	915
A-B						2	2
A-C						434	434

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	604	0.000	0	0.0	0.0	0.000	A
B-A	5	1	290	0.019	5	0.0	0.0	12.658	B
C-AB	4	0.88	1112	0.003	4	0.0	0.0	3.247	A
C-A	824	206			824				
A-B	2	0.45			2				
A-C	390	98			390				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	577	0.000	0	0.0	0.0	0.000	A
B-A	7	2	240	0.027	7	0.0	0.0	15.400	C
C-AB	6	2	1233	0.005	6	0.0	0.0	2.933	A
C-A	1007	252			1007				
A-B	2	0.55			2				
A-C	478	119			478				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	577	0.000	0	0.0	0.0	0.000	A
B-A	7	2	240	0.027	7	0.0	0.0	15.404	C
C-AB	6	2	1233	0.005	6	0.0	0.0	2.934	A
C-A	1007	252			1007				
A-B	2	0.55			2				
A-C	478	119			478				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	604	0.000	0	0.0	0.0	0.000	A
B-A	5	1	290	0.019	5	0.0	0.0	12.662	B
C-AB	4	0.88	1112	0.003	4	0.0	0.0	3.250	A

C-A	824	206			824				
A-B	2	0.45			2				
A-C	390	98			390				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.02	0.02	0.25	0.45	0.48			N/A	N/A
C-AB	0.00	0.00	0.25	0.45	0.48			N/A	N/A

08:15 - 08:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

08:30 - 08:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

08:45 - 09:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	Arm B - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Sets	D12 - 2045 + ST, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.00	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	900		0.00	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D12	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	774	100.000
B		ONE HOUR	✓	2	100.000
C		ONE HOUR	✓	389	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	1	773
	B	2	0	0
	C	389	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To

		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.00	0.00	0.0	~1	A	0	0
B-A	0.00	0.00	0.0	~1	A	0	0
C-AB	0.00	0.00	0.0	~1	A	0	0
C-A						389	389
A-B						1	1
A-C						773	773

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	537	0.000	0	0.0	0.0	0.000	A
B-A	0	0	288	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	454	0.000	0	0.0	0.0	0.000	A
C-A	350	87			350				
A-B	0.90	0.22			0.90				
A-C	695	174			695				

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	490	0.000	0	0.0	0.0	0.000	A
B-A	0	0	239	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	415	0.000	0	0.0	0.0	0.000	A
C-A	428	107			428				
A-B	1	0.28			1				
A-C	851	213			851				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	490	0.000	0	0.0	0.0	0.000	A
B-A	0	0	239	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	415	0.000	0	0.0	0.0	0.000	A
C-A	428	107			428				
A-B	1	0.28			1				
A-C	851	213			851				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0	0	537	0.000	0	0.0	0.0	0.000	A
B-A	0	0	288	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	454	0.000	0	0.0	0.0	0.000	A

C-A	350	87			350				
A-B	0.90	0.22			0.90				
A-C	695	174			695				

Queue Variation Results for each time segment

16:30 - 16:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.00	0.00	0.00	0.00	0.00			N/A	N/A
B-A	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 12 - Kingsmead Road_Broad Oak Road.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2\Junction 12 - Kingsmead Road_Broad Oak Road
Report generation date: 16/01/2023 09:45:36

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 Base													
Arm A	D7	5.5	32.38	0.86	D	40.79	-9 % [Arm B]	D8	7.3	45.48	0.90	E	31.93	-3 % [Arm A]
Arm B		22.8	103.56	1.02	F				6.8	38.26	0.89	E		
Arm C		4.0	19.19	0.81	C				9.2	34.21	0.92	D		
Arm D		2.2	9.40	0.69	A				3.7	15.15	0.79	C		
	2045 + CD													
Arm A	D9	15.8	78.33	0.98	F	61.62	-12 % [Arm B]	D10	13.0	72.91	0.97	F	52.56	-6 % [Arm A]
Arm B		33.5	143.27	1.06	F				11.7	61.32	0.95	F		
Arm C		4.3	20.48	0.82	C				18.0	61.87	0.98	F		
Arm D		2.2	9.70	0.70	A				4.6	19.22	0.83	C		
	2045 + ST													
Arm A	D11	8.9	48.74	0.92	E	48.01	-10 % [Arm B]	D12	9.8	57.86	0.94	F	41.75	-5 % [Arm A]
Arm B		26.6	116.54	1.03	F				11.1	57.93	0.95	F		
Arm C		4.1	19.79	0.81	C				11.2	41.72	0.94	E		
Arm D		2.2	9.56	0.69	A				4.1	17.10	0.81	C		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	B2248 / Kingsmead Road / Broad Oak Road / St Stephens Road – Roundabout junction
Location	Canterbury
Site number	
Date	26/11/2021
Version	
Status	(new file)
Identifier	
Client	

Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓			✓	✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2045 Base	AM	ONE HOUR	08:00	09:30	15	✓
D8	2045 Base	PM	ONE HOUR	17:00	18:30	15	✓
D9	2045 + CD	AM	ONE HOUR	08:00	09:30	15	✓
D10	2045 + CD	PM	ONE HOUR	17:00	18:30	15	✓
D11	2045 + ST	AM	ONE HOUR	08:00	09:30	15	✓
D12	2045 + ST	PM	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	40.79	E

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-9	Arm B	40.79	E

Arms

Arms

Arm	Name	Description	No give-way line
A	St Stephens Road North		
B	Broad Oak Road		
C	Kingsmead Road		
D	St Stepehns Road South		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	3.28	6.20	8.6	15.2	32.3	59.0		
B	3.25	6.35	5.5	18.2	32.3	54.0		
C	3.25	6.65	5.7	21.4	32.3	21.5		
D	3.08	6.30	19.1	21.9	32.3	12.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.528	1252
B	0.527	1203
C	0.601	1383
D	0.670	1671

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2045 Base	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	595	100.000
B		ONE HOUR	✓	708	100.000
C		ONE HOUR	✓	711	100.000
D		ONE HOUR	✓	769	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	107	381	107
	B	70	0	208	430
	C	355	123	0	233
	D	87	461	221	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	0
	B	2	0	6	1
	C	1	4	0	4
	D	0	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.86	32.38	5.5	30.1	D	546	819
B	1.02	103.56	22.8	70.7	F	650	975
C	0.81	19.19	4.0	19.9	C	652	979
D	0.69	9.40	2.2	4.8	A	706	1058

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	448	112	603	912	0.491	444	383	0.0	0.9	7.632	A
B	533	133	530	896	0.595	527	517	0.0	1.4	9.630	A
C	535	134	452	1081	0.495	531	605	0.0	1.0	6.501	A
D	579	145	409	1355	0.427	576	574	0.0	0.7	4.602	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	535	134	722	848	0.631	532	458	0.9	1.7	11.290	B
B	636	159	635	841	0.757	631	619	1.4	2.9	16.667	C
C	639	160	541	1029	0.621	637	724	1.0	1.6	9.118	A
D	691	173	490	1302	0.531	690	687	0.7	1.1	5.871	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	655	164	881	762	0.859	642	554	1.7	5.0	27.244	D
B	780	195	768	771	1.012	731	755	2.9	15.0	59.045	F
C	783	196	632	975	0.803	774	868	1.6	3.7	17.222	C
D	847	212	593	1233	0.686	843	813	1.1	2.1	9.118	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	655	164	886	760	0.862	653	560	5.0	5.5	32.375	D
B	780	195	779	765	1.019	748	760	15.0	22.8	103.559	F
C	783	196	646	967	0.810	782	881	3.7	4.0	19.193	C
D	847	212	600	1229	0.689	846	828	2.1	2.2	9.398	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	535	134	729	844	0.633	550	473	5.5	1.8	12.801	B
B	636	159	651	832	0.765	713	628	22.8	3.6	42.777	E
C	639	160	603	992	0.644	648	762	4.0	1.9	10.688	B
D	691	173	506	1291	0.535	695	744	2.2	1.2	6.081	A

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	448	112	608	909	0.493	451	388	1.8	1.0	7.913	A
B	533	133	537	892	0.598	541	522	3.6	1.5	10.504	B
C	535	134	464	1075	0.498	539	615	1.9	1.0	6.760	A
D	579	145	416	1351	0.428	581	587	1.2	0.8	4.683	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.95	0.55	1.00	1.40	1.45			N/A	N/A
B	1.43	0.48	1.31	1.94	2.45			N/A	N/A
C	0.97	0.55	1.00	1.40	1.45			N/A	N/A
D	0.74	0.55	1.00	1.40	1.45			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.65	0.06	0.79	4.01	5.96			N/A	N/A
B	2.90	0.06	1.07	7.75	11.71			N/A	N/A
C	1.60	0.06	0.82	3.83	5.62			N/A	N/A
D	1.12	0.06	0.81	2.24	3.06			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.02	0.04	0.44	13.98	26.00			N/A	N/A
B	15.03	0.71	9.78	34.46	45.19			N/A	N/A
C	3.72	0.03	0.33	7.21	19.85			N/A	N/A
D	2.12	0.03	0.28	2.12	4.80			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.54	0.03	0.35	11.62	30.14			N/A	N/A

B	22.85	0.89	14.63	53.57	70.72			N/A	N/A
C	4.00	0.03	0.30	4.00	16.33			N/A	N/A
D	2.17	0.03	0.27	2.17	2.45			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.79	0.04	0.41	4.79	8.37			N/A	N/A
B	3.63	0.04	0.41	9.90	18.76			N/A	N/A
C	1.86	0.05	0.68	4.80	7.35			N/A	N/A
D	1.17	0.08	0.96	2.10	2.85			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.99	0.03	0.31	1.84	4.95			N/A	N/A
B	1.52	0.03	0.29	1.52	6.29			N/A	N/A
C	1.01	0.03	0.34	2.42	4.81			N/A	N/A
D	0.76	0.05	0.45	1.56	2.22			N/A	N/A

2045 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	31.93	D

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-3	Arm A	31.93	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2045 Base	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	566	100.000
B		ONE HOUR	✓	625	100.000
C		ONE HOUR	✓	936	100.000
D		ONE HOUR	✓	819	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	130	357	79
	B	113	0	345	167
	C	365	219	0	352
	D	94	443	282	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	1	0	1	3
	C	1	3	0	2
	D	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.90	45.48	7.3	39.3	E	519	779
B	0.89	38.26	6.8	37.2	E	574	860
C	0.92	34.21	9.2	50.1	D	859	1288
D	0.79	15.15	3.7	17.1	C	752	1127

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	426	107	706	867	0.491	422	427	0.0	0.9	8.026	A
B	471	118	536	903	0.521	466	592	0.0	1.1	8.159	A
C	705	176	268	1197	0.589	699	735	0.0	1.4	7.151	A
D	617	154	520	1300	0.474	613	446	0.0	0.9	5.211	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	509	127	846	793	0.642	506	512	0.9	1.7	12.406	B
B	562	140	642	848	0.663	559	709	1.1	1.9	12.308	B
C	841	210	321	1165	0.722	837	880	1.4	2.5	10.826	B
D	736	184	623	1231	0.598	734	535	0.9	1.5	7.208	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	623	156	1027	696	0.896	605	617	1.7	6.2	34.557	D
B	688	172	774	778	0.884	672	858	1.9	5.9	30.158	D
C	1031	258	386	1126	0.915	1009	1061	2.5	7.9	26.728	D
D	902	225	751	1145	0.787	894	643	1.5	3.5	13.891	B

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	623	156	1037	690	0.903	619	627	6.2	7.3	45.479	E
B	688	172	787	772	0.892	684	869	5.9	6.8	38.259	E
C	1031	258	393	1122	0.919	1026	1078	7.9	9.2	34.215	D
D	902	225	764	1137	0.793	901	655	3.5	3.7	15.153	C

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	509	127	862	784	0.649	530	529	7.3	1.9	15.312	C
B	562	140	665	836	0.672	581	727	6.8	2.1	15.050	C
C	841	210	334	1157	0.727	867	911	9.2	2.8	13.391	B
D	736	184	646	1216	0.606	745	555	3.7	1.6	7.771	A

18:15 - 18:30

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity	RFC	Throughput	Throughput (exit side)	Start queue	End queue	Delay	Unsignalised level of

	(Veh/hr)	(Veh)	(Veh/hr)	(Veh/hr)		(Veh/hr)	(Veh/hr)	(Veh)	(Veh)	(s)	service
A	426	107	714	863	0.494	430	434	1.9	1.0	8.382	A
B	471	118	544	899	0.523	475	600	2.1	1.1	8.558	A
C	705	176	273	1194	0.590	710	746	2.8	1.5	7.516	A
D	617	154	529	1295	0.476	619	454	1.6	0.9	5.351	A

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.95	0.55	1.00	1.40	1.45			N/A	N/A
B	1.07	0.55	1.01	1.42	1.47			N/A	N/A
C	1.40	0.58	1.30	1.76	1.90			N/A	N/A
D	0.89	0.55	1.00	1.40	1.45			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.73	0.06	0.75	4.32	6.47			N/A	N/A
B	1.89	0.06	0.85	4.74	7.01			N/A	N/A
C	2.50	0.06	0.79	6.71	10.38			N/A	N/A
D	1.46	0.05	0.65	3.56	5.30			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.21	0.06	1.08	17.91	29.32			N/A	N/A
B	5.89	0.05	0.57	16.94	29.26			N/A	N/A
C	7.93	0.06	1.05	23.08	38.80			N/A	N/A
D	3.46	0.03	0.31	4.79	17.05			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	7.34	0.04	0.44	20.21	39.31			N/A	N/A
B	6.83	0.04	0.39	17.16	37.23			N/A	N/A
C	9.16	0.04	0.42	24.05	50.13			N/A	N/A
D	3.67	0.03	0.29	3.67	11.84			N/A	N/A

18:00 - 18:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.93	0.04	0.40	5.15	9.43			N/A	N/A
B	2.14	0.04	0.42	5.82	10.26			N/A	N/A
C	2.79	0.04	0.42	7.70	13.85			N/A	N/A
D	1.57	0.05	0.64	3.88	5.87			N/A	N/A

18:15 - 18:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.99	0.03	0.30	1.39	4.80			N/A	N/A
B	1.12	0.03	0.31	1.91	5.65			N/A	N/A
C	1.47	0.03	0.31	2.59	7.53			N/A	N/A
D	0.92	0.04	0.36	2.23	4.17			N/A	N/A

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	61.62	F

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-12	Arm B	61.62	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2045 + CD	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	678	100.000
B		ONE HOUR	✓	716	100.000
C		ONE HOUR	✓	722	100.000
D		ONE HOUR	✓	769	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	138	423	117
	B	78	0	208	430
	C	366	123	0	233
	D	87	461	221	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	0
	B	2	0	6	1
	C	1	4	0	4
	D	0	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.98	78.33	15.8	61.9	F	622	933
B	1.06	143.27	33.5	80.8	F	657	986
C	0.82	20.48	4.3	21.8	C	663	994
D	0.70	9.70	2.2	5.5	A	706	1058

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	510	128	603	912	0.559	505	397	0.0	1.2	8.743	A
B	539	135	568	876	0.616	533	540	0.0	1.6	10.320	B
C	544	136	465	1074	0.506	540	636	0.0	1.0	6.688	A
D	579	145	423	1346	0.430	576	581	0.0	0.7	4.657	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	610	152	722	848	0.718	605	475	1.2	2.4	14.501	B
B	644	161	680	817	0.788	636	647	1.6	3.4	19.160	C
C	649	162	556	1020	0.636	646	760	1.0	1.7	9.553	A
D	691	173	507	1290	0.536	690	695	0.7	1.1	5.977	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	746	187	881	763	0.979	710	572	2.4	11.6	49.484	E
B	788	197	807	750	1.051	723	783	3.4	19.7	73.344	F
C	795	199	635	973	0.817	786	895	1.7	4.0	18.328	C
D	847	212	611	1222	0.693	842	810	1.1	2.2	9.393	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	746	187	886	760	0.982	730	578	11.6	15.8	78.329	F
B	788	197	824	741	1.063	734	791	19.7	33.5	143.269	F
C	795	199	646	967	0.822	794	912	4.0	4.3	20.484	C
D	847	212	617	1217	0.696	846	823	2.2	2.2	9.698	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	610	152	729	845	0.722	662	494	15.8	2.8	24.522	C
B	644	161	727	793	0.812	755	664	33.5	5.7	93.657	F
C	649	162	649	965	0.673	658	832	4.3	2.1	12.037	B
D	691	173	528	1277	0.541	695	780	2.2	1.2	6.236	A

09:15 - 09:30

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity	RFC	Throughput	Throughput (exit side)	Start queue	End queue	Delay	Unsignalised level of

	(Veh/hr)	(Veh)	(Veh/hr)	(Veh/hr)		(Veh/hr)	(Veh/hr)	(Veh)	(Veh)	(s)	service
A	510	128	608	909	0.561	516	404	2.8	1.3	9.287	A
B	539	135	578	871	0.619	555	547	5.7	1.7	11.972	B
C	544	136	483	1063	0.511	548	650	2.1	1.1	7.038	A
D	579	145	432	1341	0.432	581	599	1.2	0.8	4.749	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.24	0.52	1.17	1.67	1.87			N/A	N/A
B	1.55	0.27	1.37	2.47	2.94			N/A	N/A
C	1.01	0.55	1.00	1.40	1.45			N/A	N/A
D	0.75	0.55	1.00	1.40	1.45			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.42	0.06	0.84	6.43	9.83			N/A	N/A
B	3.38	0.07	1.29	8.98	13.42			N/A	N/A
C	1.70	0.06	0.84	4.13	6.08			N/A	N/A
D	1.14	0.06	0.81	2.33	3.22			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	11.60	0.22	5.81	29.39	40.62			N/A	N/A
B	19.74	2.00	15.26	40.21	50.21			N/A	N/A
C	4.02	0.03	0.35	8.67	21.79			N/A	N/A
D	2.19	0.03	0.28	2.19	5.46			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	15.79	0.16	6.14	42.89	61.87			N/A	N/A
B	33.45	4.90	27.19	65.73	80.78			N/A	N/A
C	4.32	0.03	0.30	4.32	18.84			N/A	N/A
D	2.24	0.03	0.27	2.24	2.72			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.77	0.04	0.38	7.30	14.50			N/A	N/A
B	5.74	0.06	1.15	16.47	26.51			N/A	N/A
C	2.13	0.06	0.82	5.54	8.38			N/A	N/A
D	1.20	0.08	0.96	2.26	2.97			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.31	0.03	0.29	1.45	5.56			N/A	N/A
B	1.68	0.03	0.29	1.68	6.33			N/A	N/A
C	1.06	0.03	0.34	2.51	5.22			N/A	N/A
D	0.77	0.04	0.45	1.62	2.38			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	52.56	F

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-6	Arm A	52.56	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2045 + CD	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	609	100.000
B		ONE HOUR	✓	660	100.000
C		ONE HOUR	✓	982	100.000
D		ONE HOUR	✓	819	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	148	382	79
	B	148	0	345	167
	C	411	219	0	352
	D	94	443	282	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	1	0	1	3
	C	1	3	0	2
	D	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.97	72.91	13.0	55.3	F	559	838
B	0.95	61.32	11.7	54.5	F	606	908
C	0.98	61.87	18.0	74.7	F	901	1352
D	0.83	19.22	4.6	22.7	C	752	1127

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	458	115	706	867	0.529	454	487	0.0	1.1	8.623	A
B	497	124	555	894	0.556	492	605	0.0	1.2	8.852	A
C	739	185	294	1182	0.625	733	753	0.0	1.6	7.904	A
D	617	154	580	1260	0.489	613	446	0.0	0.9	5.529	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	547	137	845	793	0.690	543	583	1.1	2.1	14.182	B
B	593	148	664	837	0.709	589	724	1.2	2.3	14.282	B
C	883	221	352	1147	0.769	877	901	1.6	3.1	13.013	B
D	736	184	695	1183	0.622	734	534	0.9	1.6	7.955	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	671	168	1021	699	0.959	640	695	2.1	9.7	47.016	E
B	727	182	792	769	0.944	700	870	2.3	9.0	41.393	E
C	1081	270	417	1108	0.976	1041	1074	3.1	13.3	39.562	E
D	902	225	825	1096	0.823	891	633	1.6	4.2	16.791	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	671	168	1034	692	0.969	657	708	9.7	13.0	72.909	F
B	727	182	807	761	0.955	716	883	9.0	11.7	61.320	F
C	1081	270	427	1102	0.981	1062	1096	13.3	18.0	61.870	F
D	902	225	842	1084	0.832	900	647	4.2	4.6	19.220	C

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	547	137	871	779	0.703	590	620	13.0	2.5	22.709	C
B	593	148	704	816	0.727	629	757	11.7	2.9	22.353	C
C	883	221	377	1132	0.780	940	956	18.0	3.8	23.145	C
D	736	184	744	1150	0.640	747	572	4.6	1.8	9.167	A

18:15 - 18:30

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity	RFC	Throughput	Throughput (exit side)	Start queue	End queue	Delay	Unsignalised level of

	(Veh/hr)	(Veh)	(Veh/hr)	(Veh/hr)		(Veh/hr)	(Veh/hr)	(Veh)	(Veh)	(s)	service
A	458	115	716	862	0.532	464	497	2.5	1.2	9.158	A
B	497	124	565	889	0.559	503	615	2.9	1.3	9.479	A
C	739	185	300	1178	0.628	748	767	3.8	1.7	8.522	A
D	617	154	593	1252	0.492	620	455	1.8	1.0	5.726	A

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.10	0.53	1.07	1.27	1.64			N/A	N/A
B	1.22	0.55	1.14	1.56	1.79			N/A	N/A
C	1.63	0.55	1.02	2.28	2.74			N/A	N/A
D	0.95	0.55	1.00	1.40	1.45			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.12	0.06	0.78	5.56	8.48			N/A	N/A
B	2.32	0.06	0.93	6.00	9.04			N/A	N/A
C	3.15	0.06	1.00	8.59	13.23			N/A	N/A
D	1.61	0.05	0.61	4.02	6.16			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	9.66	0.14	3.93	25.57	36.43			N/A	N/A
B	8.99	0.10	2.77	24.78	36.61			N/A	N/A
C	13.32	0.18	5.90	35.05	49.52			N/A	N/A
D	4.20	0.03	0.34	8.73	22.72			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	13.05	0.10	3.66	36.84	55.33			N/A	N/A
B	11.74	0.07	1.83	34.22	54.48			N/A	N/A
C	18.03	0.13	5.84	50.50	74.75			N/A	N/A
D	4.60	0.03	0.30	4.60	20.06			N/A	N/A

18:00 - 18:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.52	0.04	0.39	6.71	12.80			N/A	N/A
B	2.85	0.04	0.42	7.88	14.21			N/A	N/A
C	3.83	0.04	0.44	10.68	19.46			N/A	N/A
D	1.82	0.05	0.54	4.77	7.44			N/A	N/A

18:15 - 18:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.16	0.03	0.29	1.40	4.96			N/A	N/A
B	1.30	0.03	0.30	1.51	6.04			N/A	N/A
C	1.73	0.03	0.30	2.04	8.16			N/A	N/A
D	0.98	0.03	0.33	2.25	4.82			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	48.01	E

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-10	Arm B	48.01	E

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D11	2045 + ST	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	637	100.000
B		ONE HOUR	✓	718	100.000
C		ONE HOUR	✓	711	100.000
D		ONE HOUR	✓	769	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	144	381	112
	B	80	0	208	430
	C	355	123	0	233
	D	87	461	221	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	0
	B	2	0	6	1
	C	1	4	0	4
	D	0	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.92	48.74	8.9	46.0	E	585	877
B	1.03	116.54	26.6	74.7	F	659	988
C	0.81	19.79	4.1	20.6	C	652	979
D	0.69	9.56	2.2	5.1	A	706	1058

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	480	120	603	913	0.525	475	390	0.0	1.1	8.147	A
B	541	135	533	894	0.605	535	545	0.0	1.5	9.863	A
C	535	134	463	1075	0.498	531	605	0.0	1.0	6.577	A
D	579	145	417	1350	0.429	576	578	0.0	0.7	4.631	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	573	143	722	849	0.675	569	467	1.1	2.0	12.702	B
B	645	161	639	839	0.770	639	652	1.5	3.1	17.474	C
C	639	160	554	1021	0.626	637	724	1.0	1.6	9.296	A
D	691	173	499	1296	0.534	690	691	0.7	1.1	5.925	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	701	175	881	763	0.919	680	564	2.0	7.5	36.272	E
B	791	198	768	771	1.025	736	793	3.1	16.7	63.610	F
C	783	196	642	969	0.808	774	862	1.6	3.8	17.713	C
D	847	212	602	1227	0.690	843	814	1.1	2.2	9.263	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	701	175	886	760	0.922	696	570	7.5	8.9	48.736	E
B	791	198	782	764	1.035	751	800	16.7	26.6	116.539	F
C	783	196	656	961	0.815	782	877	3.8	4.1	19.793	C
D	847	212	609	1223	0.693	846	828	2.2	2.2	9.559	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	573	143	729	845	0.678	599	484	8.9	2.2	16.089	C
B	645	161	664	826	0.782	735	664	26.6	4.1	56.726	F
C	639	160	628	978	0.654	648	771	4.1	2.0	11.189	B
D	691	173	517	1283	0.539	695	758	2.2	1.2	6.165	A

09:15 - 09:30

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity	RFC	Throughput	Throughput (exit side)	Start queue	End queue	Delay	Unsignalised level of

	(Veh/hr)	(Veh)	(Veh/hr)	(Veh/hr)		(Veh/hr)	(Veh/hr)	(Veh)	(Veh)	(s)	service
A	480	120	608	910	0.527	484	396	2.2	1.1	8.528	A
B	541	135	541	890	0.608	551	551	4.1	1.6	10.920	B
C	535	134	476	1067	0.502	539	616	2.0	1.0	6.862	A
D	579	145	424	1346	0.430	581	592	1.2	0.8	4.716	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.09	0.55	1.04	1.34	1.34			N/A	N/A
B	1.49	0.39	1.35	2.12	2.69			N/A	N/A
C	0.98	0.55	1.00	1.40	1.45			N/A	N/A
D	0.74	0.55	1.00	1.40	1.45			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.99	0.06	0.78	5.11	7.77			N/A	N/A
B	3.09	0.07	1.15	8.25	12.41			N/A	N/A
C	1.63	0.06	0.83	3.91	5.75			N/A	N/A
D	1.13	0.06	0.81	2.29	3.15			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	7.45	0.07	1.28	21.31	33.31			N/A	N/A
B	16.71	1.19	11.72	36.67	47.15			N/A	N/A
C	3.82	0.03	0.34	7.77	20.58			N/A	N/A
D	2.16	0.03	0.28	2.16	5.13			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	8.86	0.05	0.50	25.42	46.00			N/A	N/A
B	26.61	1.51	19.13	58.31	74.73			N/A	N/A
C	4.12	0.03	0.30	4.12	17.35			N/A	N/A
D	2.21	0.03	0.27	2.21	2.59			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.20	0.04	0.39	5.85	11.03			N/A	N/A
B	4.14	0.04	0.44	11.61	21.08			N/A	N/A
C	1.95	0.06	0.73	5.02	7.69			N/A	N/A
D	1.18	0.08	0.96	2.18	2.91			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.14	0.03	0.30	1.47	5.43			N/A	N/A
B	1.59	0.03	0.29	1.59	6.41			N/A	N/A
C	1.02	0.03	0.34	2.44	4.93			N/A	N/A
D	0.76	0.05	0.45	1.59	2.31			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	41.75	E

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-5	Arm A	41.75	E

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2045 + ST	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	588	100.000
B		ONE HOUR	✓	666	100.000
C		ONE HOUR	✓	936	100.000
D		ONE HOUR	✓	819	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	152	357	79
	B	154	0	345	167
	C	365	219	0	352
	D	94	443	282	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	1	0	1	3
	C	1	3	0	2
	D	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.94	57.86	9.8	47.8	F	540	809
B	0.95	57.93	11.1	53.2	F	611	917
C	0.94	41.72	11.2	58.3	E	859	1288
D	0.81	17.10	4.1	20.0	C	752	1127

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	443	111	706	867	0.510	439	458	0.0	1.0	8.317	A
B	501	125	536	904	0.555	497	608	0.0	1.2	8.741	A
C	705	176	298	1179	0.598	699	735	0.0	1.5	7.413	A
D	617	154	551	1280	0.482	613	446	0.0	0.9	5.369	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	529	132	845	793	0.667	525	548	1.0	1.9	13.252	B
B	599	150	642	848	0.706	594	728	1.2	2.3	13.955	B
C	841	210	357	1144	0.736	837	879	1.5	2.7	11.543	B
D	736	184	659	1207	0.610	734	534	0.9	1.5	7.570	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	647	162	1025	697	0.929	624	658	1.9	7.8	40.461	E
B	733	183	770	781	0.939	708	879	2.3	8.7	39.840	E
C	1031	258	425	1103	0.934	1004	1053	2.7	9.2	30.535	D
D	902	225	790	1119	0.806	893	639	1.5	3.8	15.313	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	647	162	1037	691	0.937	639	669	7.8	9.8	57.856	F
B	733	183	784	773	0.948	724	892	8.7	11.1	57.928	F
C	1031	258	435	1097	0.939	1023	1073	9.2	11.2	41.718	E
D	902	225	805	1109	0.813	901	652	3.8	4.1	17.095	C

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	529	132	865	783	0.675	559	573	9.8	2.2	18.054	C
B	599	150	671	833	0.719	632	752	11.1	2.7	20.554	C
C	841	210	380	1130	0.745	874	924	11.2	3.1	15.640	C
D	736	184	691	1185	0.621	746	562	4.1	1.7	8.366	A

18:15 - 18:30

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity	RFC	Throughput	Throughput (exit side)	Start queue	End queue	Delay	Unsignalised level of

	(Veh/hr)	(Veh)	(Veh/hr)	(Veh/hr)		(Veh/hr)	(Veh/hr)	(Veh)	(Veh)	(s)	service
A	443	111	715	863	0.513	447	466	2.2	1.1	8.749	A
B	501	125	545	899	0.558	507	617	2.7	1.3	9.310	A
C	705	176	305	1175	0.600	711	747	3.1	1.5	7.856	A
D	617	154	561	1273	0.484	619	455	1.7	0.9	5.532	A

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.02	0.54	1.02	1.44	1.50			N/A	N/A
B	1.22	0.55	1.13	1.54	1.78			N/A	N/A
C	1.46	0.57	1.36	1.84	1.97			N/A	N/A
D	0.92	0.55	1.00	1.40	1.45			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.92	0.06	0.75	4.90	7.45			N/A	N/A
B	2.28	0.06	0.91	5.92	8.93			N/A	N/A
C	2.66	0.06	0.85	7.18	11.10			N/A	N/A
D	1.53	0.05	0.62	3.80	5.75			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	7.77	0.08	1.88	21.78	32.96			N/A	N/A
B	8.68	0.09	2.39	24.24	36.31			N/A	N/A
C	9.24	0.07	1.57	26.70	42.03			N/A	N/A
D	3.82	0.03	0.33	6.73	20.04			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	9.75	0.06	1.28	28.53	47.76			N/A	N/A
B	11.12	0.07	1.26	32.56	53.17			N/A	N/A
C	11.20	0.05	0.67	32.30	58.32			N/A	N/A
D	4.11	0.03	0.29	4.11	15.79			N/A	N/A

18:00 - 18:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.19	0.04	0.39	5.81	10.96			N/A	N/A
B	2.72	0.04	0.41	7.46	13.65			N/A	N/A
C	3.08	0.04	0.43	8.54	15.42			N/A	N/A
D	1.68	0.05	0.56	4.30	6.63			N/A	N/A

18:15 - 18:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.07	0.03	0.29	1.09	4.88			N/A	N/A
B	1.29	0.03	0.30	1.59	6.08			N/A	N/A
C	1.53	0.03	0.31	2.38	7.68			N/A	N/A
D	0.95	0.03	0.34	2.25	4.50			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 13 - Broad Oak Road_Vauxhall Road.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2\Junction 13 - Broadoak Road_Vauxhall Road
Report generation date: 16/01/2023 09:51:54

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 Base													
Arm A	D7	2.0	9.92	0.67	A	121.39	-18 % [Arm B]	D8	6.1	24.78	0.87	C	27.17	-2 % [Arm C]
Arm B		64.4	264.19	1.16	F				0.5	7.19	0.32	A		
Arm C		3.9	36.90	0.81	E				6.1	38.60	0.88	E		
	2045 + CD													
Arm A	D9	2.2	10.49	0.69	B	130.56	-19 % [Arm B]	D10	6.6	26.56	0.88	D	30.72	-4 % [Arm C]
Arm B		68.9	283.66	1.18	F				0.5	7.36	0.33	A		
Arm C		6.2	53.95	0.89	F				7.5	46.16	0.90	E		
	2045 + ST													
Arm A	D11	0.7	5.54	0.41	A	50.92	-13 % [Arm C]	D12	7.2	28.73	0.89	D	36.54	-7 % [Arm C]
Arm B		9.2	43.38	0.92	E				0.5	7.49	0.34	A		
Arm C		13.6	111.34	0.99	F				10.0	59.17	0.94	F		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	17/01/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2045 Base	AM	ONE HOUR	08:00	09:30	15	✓
D8	2045 Base	PM	ONE HOUR	16:30	18:00	15	✓
D9	2045 + CD	AM	ONE HOUR	08:00	09:30	15	✓
D10	2045 + CD	PM	ONE HOUR	16:30	18:00	15	✓
D11	2045 + ST	AM	ONE HOUR	08:00	09:30	15	✓
D12	2045 + ST	PM	ONE HOUR	16:30	18:00	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	121.39	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-18	Arm B	121.39	F

Arms

Arms

Arm	Name	Description
A	Broad Oak Road (West)	
B	Broad Oak Road (East)	
C	Vauxhall Road	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.30	3.20	4.50	18.4	17.90	18.20	0.0	✓
B	3.10	2.95	5.00	3.9	15.10	12.10	0.0	
C	3.80	3.70	3.80	1.8	17.60	12.50	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.650	1191
B	0.623	841
C	0.627	806

The slope and intercept shown above include any corrections and adjustments.

Arm Capacity Adjustments

Arm	Type	Reason	Direct capacity adjustment (PCU/hr)
B	Direct		250

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2045 Base	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	676	100.000
B		ONE HOUR	✓	742	100.000
C		ONE HOUR	✓	368	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	165	511
	B	479	0	263
	C	310	58	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	3
	B	4	0	3
	C	1	10	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.67	9.92	2.0	4.6	A	620	930
B	1.16	264.19	64.4	111.1	F	681	1021
C	0.81	36.90	3.9	20.6	E	338	507

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	509	127	43	1121	0.454	506	585	0.0	0.8	5.823	A
B	559	140	382	816	0.685	550	166	0.0	2.1	13.186	B
C	277	69	355	561	0.494	273	577	0.0	0.9	12.357	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	608	152	52	1115	0.545	606	698	0.8	1.2	7.059	A
B	667	167	458	769	0.868	654	200	2.1	5.3	28.609	D
C	331	83	422	518	0.638	328	690	0.9	1.7	18.620	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	744	186	63	1107	0.672	741	784	1.2	2.0	9.745	A
B	817	204	560	706	1.158	695	244	5.3	35.8	122.150	F
C	405	101	449	501	0.808	398	807	1.7	3.6	32.429	D

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	744	186	64	1107	0.673	744	794	2.0	2.0	9.924	A
B	817	204	563	704	1.160	702	245	35.8	64.4	264.189	F
C	405	101	453	498	0.813	404	811	3.6	3.9	36.900	E

09:00 - 09:15

Arm	Total Demand	Junction Arrivals	Circulating	Capacity	RFC	Throughput	Throughput (exit side)	Start queue	End queue	Delay (s)	Unsignalised level of

	(Veh/hr)	(Veh)	flow (Veh/hr)	(Veh/hr)		(Veh/hr)	(Veh/hr)	(Veh)	(Veh)		service
A	608	152	53	1114	0.546	611	771	2.0	1.2	7.202	A
B	667	167	462	766	0.870	755	202	64.4	42.5	255.610	F
C	331	83	487	477	0.694	337	729	3.9	2.4	26.653	D

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	509	127	44	1120	0.454	510	701	1.2	0.8	5.921	A
B	559	140	386	813	0.687	719	169	42.5	2.4	77.270	F
C	277	69	464	492	0.563	281	641	2.4	1.3	17.455	C

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.82	0.55	1.00	1.40	1.45			N/A	N/A
B	2.07	0.14	1.04	4.10	5.42			N/A	N/A
C	0.95	0.55	1.00	1.40	1.45			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.18	0.08	0.94	2.21	2.95			N/A	N/A
B	5.32	0.11	2.12	13.60	19.23			N/A	N/A
C	1.67	0.10	1.22	3.43	4.60			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.99	0.03	0.28	1.99	4.63			N/A	N/A
B	35.77	12.47	32.60	58.22	67.30			N/A	N/A
C	3.58	0.04	0.40	9.65	18.69			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.02	0.03	0.27	2.02	2.02			N/A	N/A
B	64.41	28.28	60.56	98.22	111.14			N/A	N/A
C	3.91	0.03	0.33	7.06	20.65			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.22	0.08	0.97	2.35	3.11			N/A	N/A
B	42.49	18.06	39.68	65.17	73.95			N/A	N/A
C	2.44	0.05	0.71	6.59	10.30			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.84	0.05	0.49	1.73	2.50			N/A	N/A
B	2.44	0.03	0.29	2.44	9.54			N/A	N/A
C	1.34	0.04	0.38	3.48	6.34			N/A	N/A

2045 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 86% of the total flow for the roundabout for one or more time segments]
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	27.17	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-2	Arm C	27.17	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2045 Base	PM	ONE HOUR	16:30	18:00	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	855	100.000
B		ONE HOUR	✓	215	100.000
C		ONE HOUR	✓	556	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	365	490
	B	140	0	75
	C	413	143	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	3	0	0
	C	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)

A	0.87	24.78	6.1	31.7	C	785	1177
B	0.32	7.19	0.5	2.0	A	197	296
C	0.88	38.60	6.1	33.6	E	510	765

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	644	161	106	1114	0.578	638	412	0.0	1.3	7.490	A
B	162	40	366	844	0.192	161	379	0.0	0.2	5.262	A
C	419	105	105	729	0.574	413	422	0.0	1.3	11.217	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	769	192	128	1100	0.699	765	494	1.3	2.2	10.643	B
B	193	48	438	799	0.242	193	454	0.2	0.3	5.935	A
C	500	125	126	716	0.698	496	506	1.3	2.2	16.115	C

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	941	235	154	1082	0.870	928	599	2.2	5.7	21.572	C
B	237	59	532	742	0.319	236	550	0.3	0.5	7.110	A
C	612	153	154	698	0.877	599	614	2.2	5.5	32.486	D

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	941	235	157	1080	0.871	939	607	5.7	6.1	24.782	C
B	237	59	538	738	0.321	237	558	0.5	0.5	7.187	A
C	612	153	154	698	0.877	610	621	5.5	6.1	38.605	E

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	769	192	132	1097	0.701	783	508	6.1	2.4	11.998	B
B	193	48	449	793	0.244	194	467	0.5	0.3	6.016	A
C	500	125	126	716	0.698	515	517	6.1	2.5	19.050	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	644	161	109	1112	0.579	648	420	2.4	1.4	7.821	A
B	162	40	371	841	0.193	162	385	0.3	0.2	5.310	A
C	419	105	106	729	0.574	423	428	2.5	1.4	11.925	B

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.34	0.57	1.19	1.63	1.82			N/A	N/A
B	0.24	0.00	0.00	0.24	0.24			N/A	N/A
C	1.31	0.56	1.13	1.50	1.75			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.24	0.06	0.89	5.80	8.74			N/A	N/A
B	0.32	0.00	0.00	0.32	0.32			N/A	N/A

C	2.19	0.08	1.21	5.23	7.44			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.66	0.04	0.41	15.21	30.42			N/A	N/A
B	0.46	0.03	0.25	0.46	0.48			N/A	N/A
C	5.54	0.05	0.53	15.90	27.44			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.13	0.03	0.33	9.98	31.71			N/A	N/A
B	0.47	0.03	0.31	1.39	1.99			N/A	N/A
C	6.15	0.04	0.37	14.67	33.63			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.44	0.04	0.44	6.71	11.58			N/A	N/A
B	0.33	0.00	0.00	0.33	0.33			N/A	N/A
C	2.45	0.04	0.42	6.72	12.05			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.40	0.03	0.33	3.07	7.18			N/A	N/A
B	0.24	0.00	0.00	0.24	0.24			N/A	N/A
C	1.39	0.03	0.33	2.93	7.16			N/A	N/A

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	130.56	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-19	Arm B	130.56	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2045 + CD	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	694	100.000
B		ONE HOUR	✓	743	100.000
C		ONE HOUR	✓	404	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	171	523
	B	480	0	263
	C	346	58	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	3
	B	4	0	3
	C	1	10	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.69	10.49	2.2	6.1	B	637	955
B	1.18	283.66	68.9	115.6	F	682	1023

C	0.89	53.95	6.2	33.2	F	371	556

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	522	131	43	1121	0.466	519	612	0.0	0.9	5.951	A
B	559	140	391	810	0.690	551	171	0.0	2.1	13.480	B
C	304	76	356	561	0.542	300	586	0.0	1.1	13.536	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	624	156	52	1115	0.560	622	730	0.9	1.2	7.286	A
B	668	167	469	762	0.877	654	205	2.1	5.6	30.029	D
C	363	91	423	519	0.700	359	700	1.1	2.2	21.980	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	764	191	62	1108	0.690	761	815	1.2	2.1	10.263	B
B	818	205	573	697	1.173	688	249	5.6	38.0	129.844	F
C	445	111	445	505	0.881	432	817	2.2	5.3	43.324	E

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	764	191	63	1107	0.690	764	827	2.1	2.2	10.490	B
B	818	205	576	696	1.176	694	252	38.0	68.9	283.657	F
C	445	111	449	502	0.886	441	822	5.3	6.2	53.950	F

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	624	156	54	1113	0.560	627	804	2.2	1.3	7.464	A
B	668	167	473	760	0.879	749	208	68.9	48.7	282.600	F
C	363	91	484	480	0.757	374	738	6.2	3.5	36.675	E

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	522	131	45	1120	0.467	524	747	1.3	0.9	6.061	A
B	559	140	395	808	0.692	744	174	48.7	2.6	102.768	F
C	304	76	481	482	0.631	311	658	3.5	1.8	21.792	C

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.86	0.55	1.00	1.40	1.45			N/A	N/A
B	2.12	0.13	1.02	4.36	5.77			N/A	N/A
C	1.14	0.55	1.04	1.28	1.28			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.25	0.07	0.94	2.51	3.40			N/A	N/A
B	5.61	0.12	2.38	14.26	20.04			N/A	N/A
C	2.17	0.09	1.36	4.86	6.70			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.15	0.03	0.28	2.15	6.05			N/A	N/A
B	38.04	14.24	34.97	60.67	69.68			N/A	N/A
C	5.35	0.06	1.11	15.29	24.58			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.19	0.03	0.27	2.19	2.53			N/A	N/A
B	68.93	32.23	65.28	102.83	115.60			N/A	N/A
C	6.19	0.04	0.42	16.89	33.16			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.30	0.07	0.95	2.67	3.66			N/A	N/A
B	48.74	22.78	46.03	72.39	81.33			N/A	N/A
C	3.47	0.05	0.59	9.77	16.05			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.89	0.05	0.47	1.89	2.83			N/A	N/A
B	2.62	0.03	0.29	2.62	10.71			N/A	N/A
C	1.81	0.04	0.37	4.68	9.05			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 86% of the total flow for the roundabout for one or more time segments]
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	30.72	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-4	Arm C	30.72	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2045 + CD	PM	ONE HOUR	16:30	18:00	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	865	100.000
B		ONE HOUR	✓	221	100.000
C		ONE HOUR	✓	569	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	368	497
	B	146	0	75
	C	426	143	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	3	0	0
	C	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)

A	0.88	26.56	6.6	35.4	D	794	1191
B	0.33	7.36	0.5	2.2	A	203	304
C	0.90	46.16	7.5	40.2	E	522	783

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	651	163	106	1114	0.585	646	426	0.0	1.4	7.605	A
B	166	42	371	841	0.198	165	381	0.0	0.2	5.324	A
C	428	107	109	727	0.590	423	427	0.0	1.4	11.651	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	778	194	128	1100	0.707	774	511	1.4	2.3	10.918	B
B	199	50	445	795	0.250	198	457	0.2	0.3	6.029	A
C	512	128	131	713	0.718	508	512	1.4	2.4	17.206	C

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	952	238	153	1083	0.880	937	617	2.3	6.1	22.721	C
B	243	61	539	737	0.330	243	552	0.3	0.5	7.271	A
C	626	157	160	694	0.903	610	621	2.4	6.5	36.974	E

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	952	238	157	1081	0.881	950	627	6.1	6.6	26.556	D
B	243	61	546	733	0.332	243	561	0.5	0.5	7.355	A
C	626	157	161	694	0.903	623	628	6.5	7.5	46.156	E

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	778	194	133	1096	0.710	794	529	6.6	2.5	12.514	B
B	199	50	456	788	0.252	199	471	0.5	0.3	6.122	A
C	512	128	132	712	0.718	531	524	7.5	2.7	21.560	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	651	163	109	1112	0.586	656	435	2.5	1.4	7.964	A
B	166	42	377	837	0.199	167	388	0.3	0.2	5.374	A
C	428	107	110	726	0.590	433	433	2.7	1.5	12.502	B

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.38	0.57	1.24	1.70	1.85			N/A	N/A
B	0.24	0.00	0.00	0.24	0.24			N/A	N/A
C	1.39	0.58	1.26	1.71	1.86			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.32	0.06	0.91	6.04	9.14			N/A	N/A
B	0.33	0.00	0.00	0.33	0.33			N/A	N/A

C	2.39	0.08	1.27	5.82	8.31			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.05	0.04	0.43	16.75	32.03			N/A	N/A
B	0.49	0.03	0.25	0.49	0.49			N/A	N/A
C	6.55	0.06	1.27	18.85	30.33			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.63	0.03	0.34	12.43	35.44			N/A	N/A
B	0.49	0.03	0.31	1.40	2.20			N/A	N/A
C	7.49	0.04	0.43	20.53	40.25			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.55	0.04	0.44	7.00	12.23			N/A	N/A
B	0.34	0.00	0.00	0.34	0.34			N/A	N/A
C	2.72	0.04	0.41	7.46	13.66			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.44	0.03	0.33	3.08	7.46			N/A	N/A
B	0.25	0.00	0.00	0.25	0.25			N/A	N/A
C	1.48	0.03	0.32	2.92	7.71			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	50.92	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-13	Arm C	50.92	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D11	2045 + ST	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	413	100.000
B		ONE HOUR	✓	744	100.000
C		ONE HOUR	✓	409	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	172	241
	B	481	0	263
	C	351	58	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	3
	B	4	0	3
	C	1	10	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.41	5.54	0.7	2.6	A	379	568
B	0.92	43.38	9.2	48.8	E	683	1024

C	0.99	111.34	13.6	48.5	F	375	563

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	311	78	43	1117	0.278	309	619	0.0	0.4	4.449	A
B	560	140	181	941	0.595	554	172	0.0	1.4	9.191	A
C	308	77	358	560	0.550	303	377	0.0	1.2	13.795	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	371	93	52	1111	0.334	371	741	0.4	0.5	4.859	A
B	669	167	216	918	0.728	664	206	1.4	2.5	13.925	B
C	368	92	430	514	0.715	363	451	1.2	2.3	23.125	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	455	114	60	1105	0.411	454	878	0.5	0.7	5.518	A
B	819	205	265	888	0.922	798	249	2.5	7.9	33.586	D
C	450	113	516	460	0.980	422	547	2.3	9.4	68.488	F

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	455	114	61	1104	0.412	455	898	0.7	0.7	5.541	A
B	819	205	265	888	0.922	814	251	7.9	9.2	43.381	E
C	450	113	526	453	0.995	433	553	9.4	13.6	111.342	F

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	371	93	58	1107	0.336	372	801	0.7	0.5	4.905	A
B	669	167	217	918	0.729	694	213	9.2	2.8	17.691	C
C	368	92	449	502	0.732	410	463	13.6	3.1	49.597	E

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	311	78	45	1116	0.279	311	636	0.5	0.4	4.478	A
B	560	140	182	940	0.596	565	174	2.8	1.5	9.747	A
C	308	77	366	555	0.555	315	382	3.1	1.3	15.416	C

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.38	0.00	0.00	0.38	0.38			N/A	N/A
B	1.44	0.58	1.34	1.78	1.91			N/A	N/A
C	1.18	0.55	1.11	1.49	1.75			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.50	0.00	0.00	0.50	0.50			N/A	N/A
B	2.54	0.06	1.07	6.60	9.80			N/A	N/A
C	2.31	0.08	1.23	5.61	7.97			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.69	0.03	0.25	0.69	0.69			N/A	N/A
B	7.95	0.07	1.17	22.93	36.36			N/A	N/A
C	9.39	0.25	5.11	22.85	31.01			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.70	0.03	0.28	0.73	2.60			N/A	N/A
B	9.21	0.05	0.47	25.93	48.80			N/A	N/A
C	13.64	0.22	6.71	34.93	48.48			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.51	0.51	1.00	1.40	1.45			N/A	N/A
B	2.84	0.04	0.41	7.76	14.38			N/A	N/A
C	3.09	0.04	0.43	8.58	15.48			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.39	0.00	0.00	0.39	0.39			N/A	N/A
B	1.51	0.03	0.31	2.64	7.75			N/A	N/A
C	1.29	0.03	0.29	1.29	5.78			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 86% of the total flow for the roundabout for one or more time segments]
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Broad Oak/Vauxhall Road Mini Roundabout	Mini-roundabout		A, B, C	36.54	E

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-7	Arm C	36.54	E

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2045 + ST	PM	ONE HOUR	16:30	18:00	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	876	100.000
B		ONE HOUR	✓	223	100.000
C		ONE HOUR	✓	589	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	369	507
	B	148	0	75
	C	446	143	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	3	0	0
	C	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)

A	0.89	28.73	7.2	39.6	D	804	1206
B	0.34	7.49	0.5	2.3	A	205	307
C	0.94	59.17	10.0	48.8	F	540	811

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	659	165	106	1114	0.592	654	442	0.0	1.4	7.735	A
B	168	42	378	836	0.201	167	382	0.0	0.2	5.373	A
C	443	111	111	726	0.611	437	435	0.0	1.5	12.247	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	788	197	127	1100	0.716	784	530	1.4	2.4	11.238	B
B	200	50	453	790	0.254	200	457	0.2	0.3	6.102	A
C	529	132	133	712	0.744	525	521	1.5	2.7	18.785	C

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	964	241	152	1083	0.890	948	637	2.4	6.5	24.067	C
B	246	61	549	731	0.336	245	551	0.3	0.5	7.398	A
C	648	162	163	693	0.936	626	631	2.7	8.3	43.878	E

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	964	241	156	1081	0.892	962	649	6.5	7.2	28.728	D
B	246	61	557	726	0.338	245	561	0.5	0.5	7.491	A
C	648	162	163	692	0.937	642	639	8.3	10.0	59.170	F

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	788	197	135	1095	0.719	806	555	7.2	2.7	13.174	B
B	200	50	466	782	0.256	201	475	0.5	0.3	6.206	A
C	529	132	133	711	0.745	557	534	10.0	3.2	26.508	D

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	659	165	109	1112	0.593	664	452	2.7	1.5	8.127	A
B	168	42	384	832	0.202	168	389	0.3	0.3	5.424	A
C	443	111	112	725	0.612	450	441	3.2	1.6	13.342	B

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.42	0.58	1.31	1.75	1.88			N/A	N/A
B	0.25	0.00	0.00	0.25	0.25			N/A	N/A
C	1.52	0.59	1.46	1.83	1.94			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.42	0.06	0.93	6.36	9.62			N/A	N/A
B	0.34	0.00	0.00	0.34	0.34			N/A	N/A

C	2.70	0.08	1.36	6.69	9.57			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.53	0.05	0.47	18.50	33.85			N/A	N/A
B	0.50	0.03	0.25	0.50	0.50			N/A	N/A
C	8.26	0.09	2.34	22.93	34.21			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	7.24	0.04	0.36	15.43	39.58			N/A	N/A
B	0.51	0.03	0.31	1.41	2.30			N/A	N/A
C	9.97	0.06	1.30	29.17	48.80			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.68	0.04	0.43	7.42	13.03			N/A	N/A
B	0.35	0.00	0.00	0.35	0.35			N/A	N/A
C	3.17	0.04	0.41	8.67	16.11			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.49	0.03	0.33	3.08	7.74			N/A	N/A
B	0.25	0.00	0.00	0.25	0.25			N/A	N/A
C	1.63	0.03	0.32	2.90	8.41			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.0.2.1574

Filename: Junction 2 - A290_Rough Common Road MITGATION V5.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2\Junction 2 - A290_Rough Common Road_Junctions 10 Report
Report generation date: 16/01/2023 09:54:03

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 + CD													
Arm B	D7	1.8	12.41	0.65	B	19.79	3 % [Arm C]	D8	4.0	20.51	0.81	C	31.72	-5 % [Arm C]
Arm C		6.4	27.57	0.88	D				13.1	55.48	0.96	F		
Arm A		2.5	15.26	0.72	C				1.1	7.23	0.52	A		
	2045 + ST													
Arm B	D9	4.0	23.05	0.81	C	27.11	-1 % [Arm C]	D10	4.5	23.32	0.83	C	89.84	-15 % [Arm C]
Arm C		9.0	37.45	0.92	E				58.2	182.71	1.10	F		
Arm A		2.7	16.16	0.74	C				1.4	8.16	0.58	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A290/Rough Common Road
Location	Rough Common
Site number	
Date	23/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓
D8	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓
D9	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓
D10	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D7 - 2045 + CD, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	19.79	C

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		3	Arm C	19.79	C

Arms

Arms

Arm	Name	Description
B	A290 Whitstable Road South	
C	Rough Common Road	
A	A290 Whitstable Road North	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
B	3.50	3.50	5.70	7.5	13.80	10.10	0.0	✓
C	3.20	3.20	7.10	13.1	14.00	10.30	0.0	✓
A	2.92	2.92	6.00	21.7	17.55	13.20	0.0	✓

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
B	0.555	1090
C	0.577	1137
A	0.579	1221

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	488	100.000
C		ONE HOUR	✓	800	100.000
A		ONE HOUR	✓	559	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	298	190
	C	553	0	247
	A	158	401	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	1	4
	C	0	0	1
	A	4	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.65	12.41	1.8	4.9	B	488	488
C	0.88	27.57	6.4	34.1	D	800	800
A	0.72	15.26	2.5	10.7	C	559	559

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	439	110	359	872	0.503	437	636	0.7	1.0	8.254	A
C	719	180	170	1028	0.700	716	626	1.3	2.2	11.397	B
A	503	126	495	914	0.550	501	391	0.8	1.2	8.672	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	537	134	438	829	0.648	534	771	1.0	1.8	12.092	B
C	881	220	208	1005	0.876	866	764	2.2	5.8	23.743	C
A	615	154	599	855	0.720	611	475	1.2	2.4	14.438	B

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	537	134	441	827	0.650	537	781	1.8	1.8	12.406	B
C	881	220	209	1005	0.877	879	769	5.8	6.4	27.569	D
A	615	154	607	850	0.724	615	480	2.4	2.5	15.256	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	439	110	364	870	0.505	442	651	1.8	1.0	8.477	A
C	719	180	172	1027	0.701	735	634	6.4	2.4	12.946	B
A	503	126	508	907	0.554	508	399	2.5	1.3	9.132	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	0.99	0.09	0.93	1.63	1.95			N/A	N/A
C	2.24	0.06	0.94	5.78	8.64			N/A	N/A
A	1.20	0.07	0.91	2.37	3.19			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.78	0.03	0.28	1.78	4.95			N/A	N/A
C	5.85	0.04	0.44	16.22	30.77			N/A	N/A
A	2.43	0.03	0.30	2.43	10.69			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.82	0.03	0.27	1.82	3.71			N/A	N/A
C	6.36	0.03	0.34	12.05	34.10			N/A	N/A
A	2.54	0.03	0.28	2.54	7.17			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.04	0.07	0.86	1.87	2.57			N/A	N/A
C	2.44	0.04	0.43	6.70	11.76			N/A	N/A
A	1.27	0.06	0.74	2.84	4.06			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D8 - 2045 + CD, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	31.72	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-5	Arm C	31.72	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D8	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	668	100.000
C		ONE HOUR	✓	818	100.000
A		ONE HOUR	✓	484	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	363	305
	C	289	0	529
	A	192	292	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	0	0
	C	0	0	0
	A	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.81	20.51	4.0	20.8	C	668	668

C	0.96	55.48	13.1	61.5	F	818	818
A	0.52	7.23	1.1	2.0	A	484	484

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	601	150	262	942	0.638	598	430	1.1	1.7	10.394	B
C	735	184	273	977	0.753	730	587	1.5	2.9	14.261	B
A	435	109	258	1063	0.409	434	745	0.5	0.7	5.719	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	735	184	321	909	0.809	727	518	1.7	3.8	18.955	C
C	901	225	332	943	0.955	870	716	2.9	10.5	38.764	E
A	533	133	307	1035	0.515	531	895	0.7	1.0	7.135	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	735	184	321	908	0.810	735	526	3.8	4.0	20.505	C
C	901	225	335	941	0.957	890	721	10.5	13.1	55.476	F
A	533	133	314	1031	0.517	533	911	1.0	1.1	7.230	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	601	150	263	941	0.638	609	447	4.0	1.8	11.131	B
C	735	184	278	974	0.755	775	594	13.1	3.3	21.011	C
A	435	109	274	1054	0.413	437	779	1.1	0.7	5.845	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.71	0.06	0.93	4.02	5.84			N/A	N/A
C	2.86	0.06	1.09	7.61	11.43			N/A	N/A
A	0.69	0.12	0.87	1.38	1.44			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.83	0.03	0.34	8.22	20.75			N/A	N/A
C	10.48	0.11	3.47	28.83	42.33			N/A	N/A
A	1.05	0.03	0.26	1.05	1.05			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	4.02	0.03	0.30	4.02	16.91			N/A	N/A
C	13.12	0.07	1.91	38.38	61.54			N/A	N/A
A	1.06	0.03	0.27	1.06	1.95			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.82	0.05	0.46	4.85	7.88			N/A	N/A
C	3.30	0.04	0.41	9.00	16.87			N/A	N/A
A	0.71	0.17	0.91	1.38	1.44			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D9 - 2045 + ST, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	27.11	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-1	Arm C	27.11	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D9	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	598	100.000
C		ONE HOUR	✓	840	100.000
A		ONE HOUR	✓	559	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	413	185
	C	573	0	267
	A	128	431	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	0	4
	C	0	0	1
	A	6	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.81	23.05	4.0	20.6	C	598	598

C	0.92	37.45	9.0	48.9	E	840	840
A	0.74	16.16	2.7	11.7	C	559	559

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	538	134	386	860	0.625	535	627	1.0	1.6	10.983	B
C	755	189	166	1030	0.733	751	756	1.5	2.6	12.664	B
A	503	126	512	902	0.557	501	404	0.8	1.2	8.927	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	658	165	470	813	0.809	650	756	1.6	3.8	20.935	C
C	925	231	201	1009	0.916	904	919	2.6	7.8	29.557	D
A	615	154	617	843	0.730	610	488	1.2	2.6	15.127	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	658	165	474	811	0.811	657	769	3.8	4.0	23.048	C
C	925	231	203	1008	0.918	920	928	7.8	9.0	37.446	E
A	615	154	628	837	0.736	615	496	2.6	2.7	16.158	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	538	134	392	857	0.627	547	648	4.0	1.7	11.917	B
C	755	189	169	1028	0.734	779	769	9.0	2.9	15.717	C
A	503	126	532	891	0.564	508	417	2.7	1.3	9.524	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.62	0.07	0.94	3.75	5.36			N/A	N/A
C	2.61	0.06	1.02	6.87	10.34			N/A	N/A
A	1.23	0.07	0.91	2.50	3.41			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	3.80	0.04	0.35	8.69	20.56			N/A	N/A
C	7.84	0.06	1.25	22.80	37.48			N/A	N/A
A	2.55	0.03	0.30	2.69	11.73			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	4.03	0.03	0.30	4.08	18.37			N/A	N/A
C	8.99	0.04	0.43	24.24	48.94			N/A	N/A
A	2.68	0.03	0.28	2.68	8.25			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.74	0.05	0.46	4.63	7.54			N/A	N/A
C	2.92	0.04	0.42	8.02	14.65			N/A	N/A
A	1.32	0.06	0.72	2.99	4.43			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D10 - 2045 + ST, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		B, C, A	89.84	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Daylight	Dry		-15	Arm C	89.84	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D10	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
B		ONE HOUR	✓	657	100.000
C		ONE HOUR	✓	956	100.000
A		ONE HOUR	✓	547	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		B	C	A
From	B	0	374	283
	C	296	0	660
	A	200	347	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		B	C	A
From	B	0	0	0
	C	0	0	0
	A	0	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B	0.83	23.32	4.5	22.8	C	657	657

C	1.10	182.71	58.2	112.8	F	956	956
A	0.58	8.16	1.4	1.5	A	547	547

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	591	148	311	914	0.646	588	442	1.1	1.8	10.950	B
C	859	215	253	990	0.868	847	646	2.3	5.5	23.236	C
A	492	123	262	1062	0.463	491	838	0.6	0.9	6.292	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	723	181	381	875	0.827	714	511	1.8	4.2	21.123	C
C	1053	263	307	959	1.098	942	787	5.5	33.3	87.905	F
A	602	151	292	1045	0.576	600	957	0.9	1.3	8.059	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	723	181	382	874	0.827	722	515	4.2	4.5	23.315	C
C	1053	263	311	956	1.101	953	793	33.3	58.2	182.708	F
A	602	151	295	1043	0.577	602	969	1.3	1.4	8.162	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B	591	148	313	913	0.647	601	481	4.5	1.9	11.896	B
C	859	215	259	987	0.871	970	655	58.2	30.6	167.572	F
A	492	123	300	1040	0.473	494	929	1.4	0.9	6.610	A

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.77	0.06	0.93	4.26	6.18			N/A	N/A
C	5.54	0.11	2.13	14.33	20.40			N/A	N/A
A	0.85	0.11	0.90	1.47	1.47			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	4.22	0.04	0.37	10.15	22.79			N/A	N/A
C	33.29	8.50	29.15	58.70	69.59			N/A	N/A
A	1.33	0.03	0.26	1.33	1.33			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	4.47	0.03	0.31	5.03	20.95			N/A	N/A
C	58.21	19.18	52.88	97.05	112.84			N/A	N/A
A	1.35	0.03	0.27	1.35	1.54			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B	1.90	0.04	0.45	5.09	8.50			N/A	N/A
C	30.56	8.09	26.86	53.35	63.06			N/A	N/A
A	0.91	0.14	0.95	1.02	1.53			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 9 - Giles Lane_Parkwood Road_MITI.j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2\Junction 9 - Giles Lane_Parkwood Road_Junctions 10 Report
Report generation date: 11/01/2023 10:45:22

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
2045 + CD														
Arm A	D5	23.2	100.91	1.01	F	57.24	-11 % [Arm A]	D6	1.2	9.46	0.55	A	14.73	10 % [Arm B]
Arm B		1.7	11.48	0.63	B				3.9	20.62	0.80	C		
Arm C		0.4	6.05	0.28	A				0.5	7.41	0.33	A		
2045 + ST														
Arm A	D7	6.1	32.19	0.87	D	20.48	1 % [Arm A]	D8	0.9	8.11	0.47	A	11.08	22 % [Arm B]
Arm B		1.8	11.67	0.65	B				2.5	14.34	0.72	B		
Arm C		0.4	6.30	0.30	A				0.4	6.91	0.30	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	o Giles Lane / Parkwood Road – Roundabout junction
Location	University of Kent
Site number	
Date	26/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓
D6	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓
D7	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓
D8	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and B have 85% of the total flow for the roundabout for one or more time segments]
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	57.24	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-11	Arm A	57.24	F

Arms

Arms

Arm	Name	Description
A	Park Wood Road	
B	Giles Lane (East)	
C	Giles Lane (West)	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.50	3.50	4.70	8.6	13.00	9.70	0.0	
B	3.70	3.55	3.55	0.0	16.30	16.50	0.0	✓
C	3.85	3.63	4.50	2.2	12.80	10.30	0.0	✓

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.642	956
B	0.553	961
C	0.520	950

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2045 + CD	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	746	100.000
B		ONE HOUR	✓	486	100.000
C		ONE HOUR	✓	215	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	560	186
	B	199	0	287
	C	38	177	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	3	1
	B	1	0	0
	C	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	1.01	100.91	23.2	72.9	F	685	1027
B	0.63	11.48	1.7	3.6	B	446	669
C	0.28	6.05	0.4	1.6	A	197	296

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	562	140	133	849	0.661	554	177	0.0	1.9	11.906	B
B	366	91	138	881	0.415	363	548	0.0	0.7	6.914	A
C	162	40	149	868	0.186	161	353	0.0	0.2	5.085	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	671	168	159	833	0.805	663	213	1.9	3.7	20.351	C
B	437	109	165	866	0.505	436	657	0.7	1.0	8.343	A
C	193	48	178	853	0.227	193	423	0.2	0.3	5.454	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	821	205	195	810	1.013	773	260	3.7	15.9	60.235	F
B	535	134	193	851	0.629	533	775	1.0	1.6	11.217	B
C	237	59	218	832	0.285	236	507	0.3	0.4	6.040	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	821	205	195	810	1.014	792	261	15.9	23.2	100.906	F
B	535	134	198	848	0.631	535	790	1.6	1.7	11.483	B
C	237	59	219	831	0.285	237	513	0.4	0.4	6.052	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	671	168	159	833	0.806	744	214	23.2	4.8	53.467	F
B	437	109	185	855	0.511	439	718	1.7	1.1	8.716	A
C	193	48	180	852	0.227	194	445	0.4	0.3	5.475	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	562	140	133	849	0.662	573	179	4.8	2.0	13.533	B
B	366	91	143	878	0.417	367	564	1.1	0.7	7.064	A
C	162	40	150	867	0.187	162	360	0.3	0.2	5.109	A

Queue Variation Results for each time segment

07:45 - 08:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.88	0.57	1.27	2.76	3.23			N/A	N/A
B	0.70	0.55	1.00	1.40	1.45			N/A	N/A
C	0.23	0.00	0.00	0.23	0.23			N/A	N/A

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.72	0.09	1.18	9.63	13.90			N/A	N/A
B	1.00	0.10	0.96	1.58	1.90			N/A	N/A
C	0.29	0.00	0.00	0.29	0.29			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	15.91	0.81	10.51	36.23	47.34			N/A	N/A
B	1.64	0.03	0.27	1.64	3.59			N/A	N/A
C	0.39	0.03	0.25	0.46	0.48			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	23.19	0.80	14.54	54.97	72.94			N/A	N/A
B	1.68	0.03	0.27	1.68	2.78			N/A	N/A
C	0.40	0.03	0.31	1.29	1.55			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	4.85	0.05	0.46	13.73	24.72			N/A	N/A
B	1.07	0.08	0.93	1.84	2.44			N/A	N/A
C	0.30	0.00	0.00	0.30	0.30			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.03	0.03	0.30	2.64	9.82			N/A	N/A
B	0.72	0.05	0.49	1.32	1.85			N/A	N/A
C	0.23	0.00	0.00	0.23	0.23			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and B have 83% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	14.73	B

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		10	Arm B	14.73	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2045 + CD	PM	ONE HOUR	16:15	17:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	421	100.000
B		ONE HOUR	✓	642	100.000
C		ONE HOUR	✓	213	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	286	135
	B	402	0	240
	C	54	159	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.55	9.46	1.2	2.2	A	386	579
B	0.80	20.62	3.9	20.1	C	589	884
C	0.33	7.41	0.5	2.1	A	195	293

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	317	79	119	880	0.360	315	340	0.0	0.6	6.348	A
B	483	121	101	905	0.534	479	333	0.0	1.1	8.358	A
C	160	40	300	794	0.202	159	280	0.0	0.3	5.652	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	378	95	143	864	0.438	378	408	0.6	0.8	7.380	A
B	577	144	121	894	0.645	575	399	1.1	1.8	11.174	B
C	191	48	360	763	0.251	191	336	0.3	0.3	6.292	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	464	116	175	844	0.549	462	497	0.8	1.2	9.379	A
B	707	177	148	879	0.804	699	488	1.8	3.7	19.176	C
C	235	59	438	723	0.325	234	409	0.3	0.5	7.357	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	464	116	175	844	0.549	463	502	1.2	1.2	9.465	A
B	707	177	149	879	0.804	706	490	3.7	3.9	20.616	C
C	235	59	442	720	0.326	234	413	0.5	0.5	7.410	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	378	95	143	864	0.438	380	415	1.2	0.8	7.466	A
B	577	144	122	894	0.646	585	402	3.9	1.9	11.952	B
C	191	48	366	760	0.252	192	341	0.5	0.3	6.350	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	317	79	120	879	0.361	318	345	0.8	0.6	6.426	A
B	483	121	102	905	0.534	486	336	1.9	1.2	8.658	A
C	160	40	304	792	0.203	161	284	0.3	0.3	5.708	A

Queue Variation Results for each time segment

16:15 - 16:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.56	0.55	1.00	1.40	1.45			N/A	N/A
B	1.12	0.55	1.00	1.40	1.45			N/A	N/A
C	0.25	0.00	0.00	0.25	0.25			N/A	N/A

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.77	0.14	0.90	1.40	1.46			N/A	N/A
B	1.76	0.07	1.02	4.08	5.84			N/A	N/A
C	0.33	0.00	0.00	0.33	0.33			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.19	0.03	0.26	1.19	1.19			N/A	N/A
B	3.71	0.03	0.34	7.86	20.06			N/A	N/A
C	0.47	0.03	0.25	0.47	0.48			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.21	0.03	0.27	1.21	2.24			N/A	N/A
B	3.89	0.03	0.30	3.89	16.00			N/A	N/A
C	0.48	0.03	0.31	1.38	2.11			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.79	0.10	0.87	1.03	1.03			N/A	N/A
B	1.89	0.05	0.47	5.03	8.20			N/A	N/A
C	0.34	0.00	0.00	0.34	0.34			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.57	0.05	0.51	1.33	1.43			N/A	N/A
B	1.17	0.04	0.36	2.88	5.63			N/A	N/A
C	0.26	0.00	0.00	0.26	0.26			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and B have 84% of the total flow for the roundabout for one or more time segments]
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	20.48	C

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		1	Arm A	20.48	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2045 + ST	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	656	100.000
B		ONE HOUR	✓	516	100.000
C		ONE HOUR	✓	219	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	527	129
	B	227	0	289
	C	41	178	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	1	0	0
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.87	32.19	6.1	33.1	D	602	903
B	0.65	11.67	1.8	4.6	B	473	710
C	0.30	6.30	0.4	1.7	A	201	301

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	494	123	133	868	0.569	489	200	0.0	1.3	9.373	A
B	388	97	96	901	0.431	385	526	0.0	0.7	6.938	A
C	165	41	170	854	0.193	164	312	0.0	0.2	5.208	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	590	147	160	851	0.693	586	240	1.3	2.2	13.430	B
B	464	116	115	891	0.521	463	631	0.7	1.1	8.382	A
C	197	49	204	837	0.235	197	374	0.2	0.3	5.621	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	722	181	196	828	0.873	709	294	2.2	5.6	27.551	D
B	568	142	139	877	0.648	565	765	1.1	1.8	11.429	B
C	241	60	249	813	0.297	241	456	0.3	0.4	6.282	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	722	181	196	827	0.873	720	295	5.6	6.1	32.193	D
B	568	142	142	876	0.648	568	775	1.8	1.8	11.670	B
C	241	60	250	813	0.297	241	460	0.4	0.4	6.298	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	590	147	160	850	0.694	605	242	6.1	2.4	15.440	C
B	464	116	119	889	0.522	467	646	1.8	1.1	8.586	A
C	197	49	205	836	0.236	197	380	0.4	0.3	5.643	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	494	123	134	867	0.570	498	202	2.4	1.4	9.855	A
B	388	97	98	900	0.431	390	534	1.1	0.8	7.072	A
C	165	41	172	853	0.193	165	316	0.3	0.2	5.232	A

Queue Variation Results for each time segment

07:45 - 08:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.29	0.56	1.11	1.46	1.73			N/A	N/A
B	0.75	0.55	1.00	1.40	1.45			N/A	N/A
C	0.24	0.00	0.00	0.24	0.24			N/A	N/A

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.16	0.07	1.07	5.35	7.77			N/A	N/A
B	1.07	0.10	0.97	1.77	2.21			N/A	N/A
C	0.31	0.00	0.00	0.31	0.31			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.55	0.05	0.46	15.70	28.59			N/A	N/A
B	1.78	0.03	0.28	1.78	4.58			N/A	N/A
C	0.42	0.03	0.25	0.46	0.48			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.08	0.04	0.35	12.83	33.12			N/A	N/A
B	1.81	0.03	0.27	1.81	2.88			N/A	N/A
C	0.42	0.03	0.31	1.32	1.74			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.37	0.04	0.42	6.51	11.53			N/A	N/A
B	1.11	0.07	0.91	1.99	2.78			N/A	N/A
C	0.31	0.00	0.00	0.31	0.31			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.35	0.03	0.33	2.87	6.96			N/A	N/A
B	0.77	0.05	0.48	1.54	2.10			N/A	N/A
C	0.24	0.00	0.00	0.24	0.24			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and B have 82% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C	11.08	B

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		22	Arm B	11.08	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2045 + ST	PM	ONE HOUR	16:15	17:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	364	100.000
B		ONE HOUR	✓	591	100.000
C		ONE HOUR	✓	203	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	265	99
	B	360	0	231
	C	45	158	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.47	8.11	0.9	2.5	A	334	501
B	0.72	14.34	2.5	10.7	B	542	813
C	0.30	6.91	0.4	1.8	A	186	279

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	274	69	118	880	0.311	272	302	0.0	0.4	5.905	A
B	445	111	74	920	0.484	441	316	0.0	0.9	7.462	A
C	153	38	269	810	0.189	152	247	0.0	0.2	5.458	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	327	82	142	865	0.378	327	363	0.4	0.6	6.679	A
B	531	133	89	912	0.583	530	380	0.9	1.4	9.367	A
C	182	46	323	782	0.233	182	296	0.2	0.3	5.994	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	401	100	174	845	0.474	400	443	0.6	0.9	8.068	A
B	651	163	109	901	0.722	646	465	1.4	2.5	13.890	B
C	224	56	394	745	0.300	223	361	0.3	0.4	6.885	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	401	100	174	844	0.475	401	446	0.9	0.9	8.112	A
B	651	163	109	901	0.722	650	466	2.5	2.5	14.338	B
C	224	56	396	744	0.300	223	363	0.4	0.4	6.913	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	327	82	142	865	0.378	328	367	0.9	0.6	6.725	A
B	531	133	89	912	0.583	536	381	2.5	1.4	9.684	A
C	182	46	326	781	0.234	183	299	0.4	0.3	6.028	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	274	69	119	880	0.312	275	306	0.6	0.5	5.956	A
B	445	111	75	920	0.484	447	319	1.4	1.0	7.644	A
C	153	38	272	809	0.189	153	249	0.3	0.2	5.493	A

Queue Variation Results for each time segment

16:15 - 16:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.45	0.00	0.00	0.45	0.45			N/A	N/A
B	0.92	0.55	1.00	1.40	1.45			N/A	N/A
C	0.23	0.00	0.00	0.23	0.23			N/A	N/A

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.60	0.13	0.89	1.38	1.44			N/A	N/A
B	1.36	0.08	1.01	2.77	3.77			N/A	N/A
C	0.30	0.00	0.00	0.30	0.30			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.89	0.03	0.26	0.89	0.89			N/A	N/A
B	2.47	0.03	0.30	2.47	10.65			N/A	N/A
C	0.42	0.03	0.25	0.46	0.48			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.90	0.03	0.28	0.90	2.54			N/A	N/A
B	2.53	0.03	0.28	2.53	5.72			N/A	N/A
C	0.43	0.03	0.31	1.34	1.77			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.62	0.10	0.84	1.37	1.43			N/A	N/A
B	1.43	0.06	0.75	3.37	4.90			N/A	N/A
C	0.31	0.00	0.00	0.31	0.31			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.46	0.04	0.38	1.21	1.35			N/A	N/A
B	0.95	0.04	0.41	2.29	3.70			N/A	N/A
C	0.23	0.00	0.00	0.23	0.23			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Junction 10 - St Stephen's Hill_Giles Lane Mini Roundabout MITIGATION v5.j10
Path: \\?\UNC\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2\Junction 10 - St Stephen's Hill_Giles Lane Mini Roundabout_Junctions 10 Report
Report generation date: 13/01/2023 16:19:37

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045+CD													
Arm A	D7	11.0	41.80	0.94	E	28.22	-2 % [Arm A]	D8	0.7	5.90	0.43	A	57.59	-8 % [Arm C]
Arm B		0.0	0.00	0.00	A				0.0	23.12	0.04	C		
Arm C		4.2	21.92	0.82	C				20.8	76.55	0.99	F		
Arm D		1.8	11.86	0.65	B				11.5	65.14	0.95	F		
	2045+ST													
Arm A	D9	13.9	49.31	0.96	E	33.34	-4 % [Arm A]	D10	0.6	5.33	0.37	A	28.36	-1 % [Arm C]
Arm B		0.0	0.00	0.00	A				0.0	18.31	0.03	C		
Arm C		4.5	23.56	0.83	C				9.0	36.69	0.92	E		
Arm D		0.8	7.68	0.46	A				4.6	30.97	0.84	D		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	St Stephens Hill/Giles Lane Mini Roundabout
Location	
Site number	
Date	17/01/2022
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS												

9	5.75	✓				✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045+CD	AM	ONE HOUR	07:45	09:15	15	✓	✓
D8	2045+CD	PM	ONE HOUR	16:15	17:45	15	✓	✓
D9	2045+ST	AM	ONE HOUR	07:45	09:15	15	✓	✓
D10	2045+ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045+CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 75% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D7 - 2045+CD, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	28.22	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-2	Arm A	28.22	D

Arms

Arms

Arm	Name	Description
A	St Stephen's Hill (north)	
B	Giles Lane (Private Road)	
C	St Stephen's Hill (south)	
D	Giles Lane	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.00	3.00	6.20	20.9	10.80	6.20	0.0	✓
B	2.00	2.00	3.00	1.1	14.00	8.99	0.0	
C	2.50	2.50	6.70	11.6	16.60	13.00	0.0	✓
D	3.45	3.40	5.05	3.1	15.15	10.10	0.0	✓

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.561	1193
B	0.563	641
C	0.543	1078
D	0.519	1022

The slope and intercept shown above include any corrections and adjustments.

Arm Capacity Adjustments

Arm	Type	Reason	Direct capacity adjustment (PCU/hr)
A	Direct	To macth observed queue	100

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D7	2045+CD	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)

✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	923	100.000
B		ONE HOUR	✓	5	100.000
C		ONE HOUR	✓	661	100.000
D		ONE HOUR	✓	511	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	1	614	308
	B	1	0	2	2
	C	268	1	0	392
	D	182	2	327	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	0	0	0	0
	C	1	0	0	1
	D	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.94	41.80	11.0	57.6	E	923	923
B	0.00	0.00	0.0	~1	A	0	0
C	0.82	21.92	4.2	21.6	C	661	661
D	0.65	11.86	1.8	4.7	B	511	511

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	830	207	296	1122	0.739	825	403	1.5	2.7	11.911	B
B	0	0	1117	9	0.000	0	4	0.0	0.0	0.000	A
C	594	149	275	922	0.645	592	842	1.1	1.8	10.815	B
D	459	115	241	894	0.514	458	626	0.7	1.0	8.226	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1016	254	361	1085	0.936	990	491	2.7	9.3	31.291	D
B	0	0	1347	0	0.000	0	4	0.0	0.0	0.000	A
C	728	182	330	892	0.816	719	1016	1.8	4.0	19.835	C
D	563	141	293	867	0.649	560	757	1.0	1.8	11.584	B

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service

A	1016	254	363	1084	0.937	1009	495	9.3	11.0	41.799	E
B	0	0	1368	0	0.000	0	4	0.0	0.0	0.000	A
C	728	182	337	888	0.819	727	1031	4.0	4.2	21.924	C
D	563	141	296	866	0.650	562	768	1.8	1.8	11.856	B

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	830	207	299	1121	0.740	862	409	11.0	3.0	15.448	C
B	0	0	1157	0	0.000	0	4	0.0	0.0	0.000	A
C	594	149	288	915	0.649	604	869	4.2	1.9	11.878	B
D	459	115	246	892	0.515	462	646	1.8	1.1	8.439	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.71	0.06	0.89	7.28	11.20			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	1.76	0.06	0.96	4.18	6.01			N/A	N/A
D	1.04	0.09	0.95	1.72	2.08			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	9.35	0.08	1.72	26.89	42.00			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	3.97	0.04	0.35	8.95	21.55			N/A	N/A
D	1.78	0.03	0.28	1.78	4.71			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	11.04	0.05	0.62	31.79	57.64			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	4.24	0.03	0.30	4.24	18.88			N/A	N/A
D	1.82	0.03	0.27	1.82	3.19			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.01	0.04	0.41	8.20	15.27			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	1.92	0.05	0.47	5.13	8.37			N/A	N/A
D	1.08	0.07	0.89	1.94	2.69			N/A	N/A

2045+CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms C and D have 78% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D8 - 2045+CD, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	57.59	F

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-8	Arm C	57.59	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D8	2045+CD	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	415	100.000
B		ONE HOUR	✓	6	100.000
C		ONE HOUR	✓	903	100.000
D		ONE HOUR	✓	608	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	2	285	128
	B	2	0	3	1
	C	571	2	0	330
	D	242	2	364	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.43	5.90	0.7	2.7	A	415	415
B	0.04	23.12	0.0	0.5	C	6	6
C	0.99	76.55	20.8	76.2	F	903	903
D	0.95	65.14	11.5	52.7	F	608	608

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	373	93	328	1107	0.337	373	726	0.4	0.5	4.899	A
B	5	1	695	249	0.022	5	5	0.0	0.0	14.780	B
C	812	203	118	1014	0.800	805	583	1.9	3.7	16.614	C
D	547	137	512	756	0.723	542	410	1.3	2.5	16.439	C

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	457	114	390	1072	0.426	456	858	0.5	0.7	5.833	A
B	7	2	839	168	0.039	7	6	0.0	0.0	22.332	C
C	994	249	144	1000	0.994	949	702	3.7	15.1	48.022	E
D	669	167	604	709	0.945	644	488	2.5	8.8	44.246	E

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	457	114	399	1067	0.428	457	879	0.7	0.7	5.896	A
B	7	2	849	162	0.041	7	7	0.0	0.0	23.124	C
C	994	249	144	1000	0.994	971	711	15.1	20.8	76.552	F
D	669	167	619	701	0.955	659	497	8.8	11.5	65.143	F

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	373	93	351	1094	0.341	374	787	0.7	0.5	5.004	A
B	5	1	719	235	0.023	5	6	0.0	0.0	15.662	C
C	812	203	118	1014	0.801	877	607	20.8	4.5	34.295	D
D	547	137	558	732	0.746	580	437	11.5	3.2	27.516	D

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.50	0.50	1.00	1.40	1.45			N/A	N/A
B	0.02	0.02	0.25	0.45	0.48			N/A	N/A
C	3.69	0.07	1.43	9.79	14.48			N/A	N/A
D	2.45	0.07	1.12	6.24	9.15			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.73	0.03	0.25	0.73	0.73			N/A	N/A
B	0.04	0.03	0.25	0.45	0.48			N/A	N/A
C	15.10	0.35	8.53	37.04	50.15			N/A	N/A
D	8.78	0.11	2.84	24.06	35.35			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

A	0.74	0.03	0.28	0.74	2.74			N/A	N/A
B	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C	20.82	0.25	9.93	54.44	76.22			N/A	N/A
D	11.48	0.08	1.94	33.35	52.66			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.52	0.52	1.00	1.40	1.45			N/A	N/A
B	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C	4.49	0.04	0.44	12.53	23.08			N/A	N/A
D	3.20	0.05	0.45	8.94	15.61			N/A	N/A

2045+ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 81% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D9 - 2045+ST, AM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	33.34	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-4	Arm A	33.34	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D9	2045+ST	AM	ONE HOUR	07:45	09:15	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	977	100.000
B		ONE HOUR	✓	5	100.000
C		ONE HOUR	✓	653	100.000
D		ONE HOUR	✓	358	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	1	634	342
	B	1	0	2	2
	C	271	1	0	381
	D	93	2	263	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	0	0	0	0
	C	1	0	0	1
	D	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.96	49.31	13.9	66.9	E	977	977
B	0.00	0.00	0.0	~1	A	0	0
C	0.83	23.56	4.5	22.5	C	653	653
D	0.46	7.68	0.8	2.7	A	358	358

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	878	220	239	1154	0.761	873	326	1.6	3.0	12.545	B
B	0	0	1108	15	0.000	0	4	0.0	0.0	0.000	A
C	587	147	306	904	0.649	584	802	1.1	1.8	11.163	B
D	322	80	243	892	0.361	321	646	0.4	0.6	6.298	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1076	269	292	1124	0.957	1043	397	3.0	11.3	34.820	D
B	0	0	1330	0	0.000	0	4	0.0	0.0	0.000	A
C	719	180	365	872	0.825	709	965	1.8	4.2	21.015	C
D	394	99	296	865	0.456	393	779	0.6	0.8	7.614	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1076	269	293	1124	0.957	1065	400	11.3	13.9	49.309	E
B	0	0	1354	0	0.000	0	4	0.0	0.0	0.000	A
C	719	180	373	868	0.829	718	981	4.2	4.5	23.561	C
D	394	99	299	863	0.457	394	792	0.8	0.8	7.676	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	878	220	240	1153	0.761	920	332	13.9	3.4	17.856	C
B	0	0	1157	0	0.000	0	4	0.0	0.0	0.000	A
C	587	147	322	895	0.656	597	834	4.5	2.0	12.466	B
D	322	80	249	889	0.362	323	671	0.8	0.6	6.368	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.02	0.06	0.98	8.17	12.58			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	1.79	0.06	0.96	4.30	6.21			N/A	N/A
D	0.56	0.55	1.00	1.40	1.45			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	11.29	0.11	3.51	31.40	46.51			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	4.16	0.04	0.36	9.93	22.53			N/A	N/A
D	0.82	0.03	0.26	0.82	0.82			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker

A	13.92	0.07	1.67	40.92	66.89			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	4.48	0.03	0.31	5.12	21.08			N/A	N/A
D	0.83	0.03	0.28	0.83	2.70			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.40	0.04	0.41	9.26	17.41			N/A	N/A
B	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C	1.98	0.05	0.46	5.33	8.74			N/A	N/A
D	0.57	0.09	0.81	1.36	1.43			N/A	N/A

2045+ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms A and C have 70% of the total flow for the roundabout for one or more time segments][Arms C and D have 78% of the total flow for the roundabout for one or more time segments]
Warning	Demand Sets	D10 - 2045+ST, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		A, B, C, D	28.36	D

Junction Network

Driving side	Lighting	Road surface	In London	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		-1	Arm C	28.36	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Results for central hour only	Run automatically
D10	2045+ST	PM	ONE HOUR	16:15	17:45	15	✓	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	366	100.000
B		ONE HOUR	✓	6	100.000
C		ONE HOUR	✓	862	100.000
D		ONE HOUR	✓	510	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	1	295	70
	B	2	0	3	1
	C	611	2	0	249
	D	167	2	341	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.37	5.33	0.6	2.7	A	366	366
B	0.03	18.31	0.0	0.5	C	6	6
C	0.92	36.69	9.0	49.3	E	862	862
D	0.84	30.97	4.6	24.0	D	510	510

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	329	82	308	1117	0.295	329	697	0.3	0.4	4.563	A
B	5	1	633	284	0.019	5	4	0.0	0.0	12.914	B
C	775	194	66	1043	0.743	770	572	1.6	2.7	12.994	B
D	458	115	550	737	0.622	456	286	0.9	1.6	12.685	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	403	101	373	1081	0.373	402	841	0.4	0.6	5.297	A
B	7	2	770	207	0.032	7	5	0.0	0.0	17.979	C
C	949	237	80	1035	0.917	928	696	2.7	8.0	29.303	D
D	562	140	662	678	0.828	551	346	1.6	4.1	26.446	D

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	403	101	379	1078	0.374	403	855	0.6	0.6	5.333	A
B	7	2	776	203	0.033	7	5	0.0	0.0	18.309	C
C	949	237	80	1034	0.917	945	702	8.0	9.0	36.693	E
D	562	140	674	672	0.835	560	351	4.1	4.6	30.969	D

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	329	82	318	1112	0.296	330	722	0.6	0.4	4.607	A
B	5	1	643	278	0.019	5	5	0.0	0.0	13.192	B
C	775	194	66	1042	0.743	799	582	9.0	3.1	16.051	C
D	458	115	570	726	0.631	470	295	4.6	1.8	14.570	B

Queue Variation Results for each time segment

16:30 - 16:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.41	0.00	0.00	0.41	0.41			N/A	N/A
B	0.02	0.02	0.25	0.45	0.48			N/A	N/A
C	2.75	0.06	1.09	7.22	10.80			N/A	N/A
D	1.59	0.07	0.96	3.64	5.13			N/A	N/A

16:45 - 17:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.59	0.03	0.25	0.59	0.59			N/A	N/A
B	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C	7.95	0.06	1.25	23.15	38.09			N/A	N/A
D	4.11	0.04	0.39	10.89	21.94			N/A	N/A

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.59	0.03	0.29	1.24	2.72			N/A	N/A
B	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C	9.04	0.04	0.42	24.20	49.32			N/A	N/A
D	4.56	0.03	0.33	8.09	24.00			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.42	0.00	0.00	0.42	0.42			N/A	N/A
B	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C	3.06	0.04	0.42	8.46	15.44			N/A	N/A
D	1.78	0.04	0.44	4.76	7.90			N/A	N/A

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.0.2.1574

For sales and distribution information, program advice and maintenance, contact TRL Software:
+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

Filename: Junction 12 - Kingsmead Road_Broad Oak Road MITIGATION (Correct Geometry).j10
Path: \\uk.wspgroup.com\central data\Projects\70080xxx\70080896 - University of Kent\03 WIP\TP Transport Planning\Junctions 10\PTAv2\Junction 12 - Kingsmead Road_Broad Oak Road
Report generation date: 13/01/2023 11:56:42

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2045 + CD													
Arm A	D7	16.2	79.98	0.98	F	34.71	-7 % [Arm A]	D8	12.7	71.02	0.97	F	35.58	-6 % [Arm A]
Arm B		8.3	40.78	0.91	E				4.3	22.16	0.82	C		
Arm C		1.6	7.49	0.62	A				2.9	9.84	0.75	A		
Arm D		3.5	15.21	0.78	C				12.1	51.25	0.95	F		
	2045 + ST													
Arm A	D9	9.0	49.72	0.92	E	25.63	-3 % [Arm A]	D10	9.6	56.85	0.94	F	29.34	-5 % [Arm A]
Arm B		7.0	34.23	0.89	D				4.2	21.49	0.82	C		
Arm C		1.6	7.31	0.61	A				2.5	8.76	0.72	A		
Arm D		3.4	14.84	0.78	B				9.3	39.78	0.92	E		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	B2248 / Kingsmead Road / Broad Oak Road / St Stephens Road – Roundabout junction
Location	Canterbury
Site number	
Date	26/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	70080896
Enumerator	CORP\UKWGF001
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75	✓			✓	✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2045 + CD	AM	ONE HOUR	08:00	09:30	15	✓
D8	2045 + CD	PM	ONE HOUR	17:00	18:30	15	✓
D9	2045 + ST	AM	ONE HOUR	08:00	09:30	15	✓
D10	2045 + ST	PM	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2045 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	34.71	D

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-7	Arm A	34.71	D

Arms

Arms

Arm	Name	Description	No give-way line
A	St Stephens Road North		
B	Broad Oak Road		
C	Kingsmead Road		
D	St Stepehns Road South		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	3.28	6.60	9.0	14.8	33.0	68.0		
B	3.10	7.20	10.8	18.0	33.0	58.0		
C	3.25	7.12	25.9	22.8	33.0	34.0		
D	3.08	6.30	10.8	37.6	33.0	20.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.514	1237
B	0.551	1347
C	0.665	1764
D	0.634	1513

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2045 + CD	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	678	100.000
B		ONE HOUR	✓	716	100.000
C		ONE HOUR	✓	722	100.000
D		ONE HOUR	✓	769	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	138	423	117
	B	78	0	208	430
	C	366	123	0	233
	D	87	461	221	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	0
	B	2	0	6	1
	C	1	4	0	4
	D	0	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.98	79.98	16.2	62.4	F	622	933
B	0.91	40.78	8.3	45.1	E	657	986
C	0.62	7.49	1.6	1.9	A	663	994
D	0.78	15.21	3.5	16.5	C	706	1058

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	510	128	602	906	0.563	505	398	0.0	1.3	8.870	A
B	539	135	568	1002	0.538	534	540	0.0	1.1	7.626	A
C	544	136	466	1416	0.384	541	636	0.0	0.6	4.105	A
D	579	145	425	1206	0.480	575	583	0.0	0.9	5.671	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	610	152	722	844	0.722	605	476	1.3	2.5	14.751	B
B	644	161	680	941	0.684	640	647	1.1	2.1	11.815	B
C	649	162	558	1355	0.479	648	761	0.6	0.9	5.081	A
D	691	173	509	1154	0.599	689	698	0.9	1.5	7.710	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	746	187	879	761	0.980	709	580	2.5	11.7	50.063	F
B	788	197	806	872	0.905	769	782	2.1	6.9	30.574	D
C	795	199	668	1283	0.619	792	907	0.9	1.6	7.287	A
D	847	212	620	1083	0.781	839	840	1.5	3.3	14.311	B

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	746	187	886	758	0.985	729	584	11.7	16.2	79.979	F
B	788	197	824	862	0.915	783	791	6.9	8.3	40.784	E
C	795	199	681	1275	0.624	795	925	1.6	1.6	7.493	A
D	847	212	624	1081	0.783	846	852	3.3	3.5	15.214	C

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	610	152	731	839	0.726	663	482	16.2	2.9	25.704	D
B	644	161	729	914	0.704	667	665	8.3	2.5	15.810	C
C	649	162	588	1336	0.486	652	808	1.6	1.0	5.280	A
D	691	173	514	1150	0.601	699	725	3.5	1.5	8.109	A

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	510	128	608	903	0.565	517	401	2.9	1.3	9.450	A
B	539	135	578	996	0.541	544	546	2.5	1.2	8.051	A
C	544	136	475	1410	0.386	545	647	1.0	0.6	4.170	A
D	579	145	428	1204	0.481	581	592	1.5	0.9	5.801	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.26	0.52	1.18	1.70	1.89			N/A	N/A
B	1.14	0.55	1.06	1.14	1.55			N/A	N/A
C	0.62	0.55	1.00	1.40	1.45			N/A	N/A
D	0.91	0.55	1.00	1.40	1.45			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.46	0.06	0.87	6.54	9.96			N/A	N/A
B	2.08	0.06	0.80	5.41	8.19			N/A	N/A
C	0.91	0.07	0.83	1.52	1.90			N/A	N/A
D	1.46	0.06	0.73	3.50	5.10			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	11.75	0.23	5.98	29.60	40.77			N/A	N/A
B	6.94	0.06	1.05	20.13	33.42			N/A	N/A
C	1.59	0.03	0.27	1.59	1.59			N/A	N/A
D	3.34	0.03	0.31	4.64	16.48			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	16.18	0.17	6.62	43.59	62.45			N/A	N/A

B	8.34	0.04	0.44	22.84	45.06			N/A	N/A
C	1.63	0.03	0.27	1.63	1.63			N/A	N/A
D	3.47	0.03	0.28	3.47	10.73			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.85	0.04	0.39	7.55	14.86			N/A	N/A
B	2.50	0.04	0.44	6.88	11.91			N/A	N/A
C	0.96	0.13	0.97	1.32	1.71			N/A	N/A
D	1.54	0.05	0.57	3.84	5.85			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.33	0.03	0.29	1.47	5.66			N/A	N/A
B	1.20	0.03	0.31	1.85	5.97			N/A	N/A
C	0.63	0.05	0.54	1.13	1.13			N/A	N/A
D	0.94	0.04	0.36	2.29	4.21			N/A	N/A

2045 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	35.58	E

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-6	Arm A	35.58	E

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2045 + CD	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	609	100.000
B		ONE HOUR	✓	660	100.000
C		ONE HOUR	✓	982	100.000
D		ONE HOUR	✓	819	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	148	382	79
	B	148	0	345	167
	C	411	219	0	352
	D	94	443	282	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	1	0	1	3
	C	1	3	0	2
	D	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.97	71.02	12.7	54.7	F	559	838
B	0.82	22.16	4.3	21.1	C	606	908
C	0.75	9.84	2.9	9.5	A	901	1352
D	0.95	51.25	12.1	58.9	F	752	1127

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	458	115	706	863	0.532	454	489	0.0	1.1	8.720	A
B	497	124	554	1022	0.486	493	605	0.0	0.9	6.759	A
C	739	185	294	1537	0.481	736	753	0.0	0.9	4.471	A
D	617	154	583	1124	0.549	612	447	0.0	1.2	6.970	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	547	137	844	790	0.693	543	585	1.1	2.1	14.332	B
B	593	148	663	962	0.617	591	724	0.9	1.6	9.625	A
C	883	221	352	1498	0.589	881	902	0.9	1.4	5.810	A
D	736	184	698	1051	0.701	732	536	1.2	2.3	11.155	B

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	671	168	1012	703	0.953	642	711	2.1	9.3	45.584	E
B	727	182	786	895	0.812	717	867	1.6	3.9	19.355	C
C	1081	270	426	1450	0.746	1076	1078	1.4	2.8	9.479	A
D	902	225	851	953	0.946	872	650	2.3	9.7	35.704	E

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	671	168	1031	693	0.967	657	717	9.3	12.7	71.024	F
B	727	182	804	885	0.821	725	883	3.9	4.3	22.161	C
C	1081	270	431	1446	0.748	1081	1098	2.8	2.9	9.840	A
D	902	225	856	950	0.950	892	656	9.7	12.1	51.250	F

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	547	137	884	770	0.711	588	596	12.7	2.6	23.519	C
B	593	148	712	936	0.634	603	760	4.3	1.8	11.132	B
C	883	221	364	1491	0.592	888	951	2.9	1.5	6.035	A
D	736	184	705	1046	0.704	775	547	12.1	2.5	15.025	C

18:15 - 18:30

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity	RFC	Throughput	Throughput (exit side)	Start queue	End queue	Delay	Unsignalised level of

	(Veh/hr)	(Veh)	(Veh/hr)	(Veh/hr)		(Veh/hr)	(Veh/hr)	(Veh)	(Veh)	(s)	service
A	458	115	716	857	0.535	464	494	2.6	1.2	9.287	A
B	497	124	565	1016	0.489	500	614	1.8	1.0	7.020	A
C	739	185	299	1534	0.482	741	767	1.5	0.9	4.554	A
D	617	154	588	1120	0.550	622	453	2.5	1.2	7.286	A

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.11	0.54	1.07	1.29	1.65			N/A	N/A
B	0.93	0.55	1.00	1.40	1.45			N/A	N/A
C	0.92	0.55	1.00	1.40	1.45			N/A	N/A
D	1.20	0.54	1.13	1.55	1.79			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.15	0.06	0.83	5.59	8.47			N/A	N/A
B	1.57	0.06	0.82	3.74	5.47			N/A	N/A
C	1.41	0.05	0.65	3.41	5.03			N/A	N/A
D	2.25	0.05	0.58	6.04	9.58			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	9.28	0.12	3.48	24.93	35.97			N/A	N/A
B	3.89	0.03	0.35	8.59	21.08			N/A	N/A
C	2.82	0.03	0.29	2.82	9.51			N/A	N/A
D	9.73	0.10	2.70	27.28	40.89			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	12.71	0.10	3.29	36.11	54.72			N/A	N/A
B	4.26	0.03	0.31	4.49	19.60			N/A	N/A
C	2.90	0.03	0.27	2.90	3.46			N/A	N/A
D	12.08	0.06	1.13	35.51	58.90			N/A	N/A

18:00 - 18:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.63	0.04	0.41	7.15	13.21			N/A	N/A
B	1.79	0.05	0.50	4.69	7.35			N/A	N/A
C	1.48	0.07	0.94	3.28	4.64			N/A	N/A
D	2.49	0.04	0.39	6.61	12.75			N/A	N/A

18:15 - 18:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.17	0.03	0.29	1.48	5.13			N/A	N/A
B	0.97	0.03	0.33	2.23	4.75			N/A	N/A
C	0.94	0.04	0.42	2.22	3.57			N/A	N/A
D	1.25	0.03	0.29	1.28	5.66			N/A	N/A

2045 + ST, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	25.63	D

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-3	Arm A	25.63	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2045 + ST	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	637	100.000
B		ONE HOUR	✓	718	100.000
C		ONE HOUR	✓	711	100.000
D		ONE HOUR	✓	769	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	144	381	112
	B	80	0	208	430
	C	355	123	0	233
	D	87	461	221	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	0
	B	2	0	6	1
	C	1	4	0	4
	D	0	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.92	49.72	9.0	46.7	E	585	877
B	0.89	34.23	7.0	38.6	D	659	988
C	0.61	7.31	1.6	1.8	A	652	979
D	0.78	14.84	3.4	15.8	B	706	1058

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	480	120	602	907	0.529	475	391	0.0	1.1	8.258	A
B	541	135	533	1021	0.529	536	544	0.0	1.1	7.358	A
C	535	134	464	1417	0.378	533	605	0.0	0.6	4.064	A
D	579	145	418	1211	0.478	575	579	0.0	0.9	5.636	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	573	143	722	844	0.678	569	468	1.1	2.0	12.896	B
B	645	161	638	963	0.670	642	652	1.1	2.0	11.082	B
C	639	160	556	1356	0.471	638	724	0.6	0.9	5.003	A
D	691	173	500	1159	0.597	689	694	0.9	1.4	7.630	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	701	175	879	762	0.921	679	571	2.0	7.5	36.663	E
B	791	198	767	893	0.885	774	792	2.0	6.1	27.145	D
C	783	196	669	1282	0.610	780	872	0.9	1.5	7.132	A
D	847	212	611	1089	0.777	839	839	1.4	3.3	14.004	B

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	701	175	886	758	0.925	695	574	7.5	9.0	49.716	E
B	791	198	781	885	0.893	787	800	6.1	7.0	34.232	D
C	783	196	681	1275	0.614	783	887	1.5	1.6	7.314	A
D	847	212	614	1087	0.779	846	850	3.3	3.4	14.844	B

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	573	143	731	840	0.682	600	474	9.0	2.2	16.551	C
B	645	161	665	949	0.680	665	666	7.0	2.2	13.457	B
C	639	160	578	1342	0.476	642	752	1.6	0.9	5.157	A
D	691	173	506	1156	0.598	699	714	3.4	1.5	8.006	A

09:15 - 09:30

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity	RFC	Throughput	Throughput (exit side)	Start queue	End queue	Delay	Unsignalised level of

	(Veh/hr)	(Veh)	(Veh/hr)	(Veh/hr)		(Veh/hr)	(Veh/hr)	(Veh)	(Veh)	(s)	service
A	480	120	608	904	0.531	484	394	2.2	1.2	8.663	A
B	541	135	542	1016	0.532	545	551	2.2	1.2	7.700	A
C	535	134	472	1411	0.379	536	614	0.9	0.6	4.119	A
D	579	145	421	1208	0.479	581	587	1.5	0.9	5.760	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.10	0.55	1.05	1.43	1.43			N/A	N/A
B	1.11	0.55	1.03	1.11	1.11			N/A	N/A
C	0.60	0.55	1.00	1.40	1.45			N/A	N/A
D	0.91	0.55	1.00	1.40	1.45			N/A	N/A

08:15 - 08:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.02	0.06	0.80	5.20	7.86			N/A	N/A
B	1.96	0.06	0.77	5.01	7.62			N/A	N/A
C	0.88	0.08	0.83	1.41	1.81			N/A	N/A
D	1.45	0.06	0.74	3.45	5.00			N/A	N/A

08:30 - 08:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	7.54	0.07	1.37	21.50	33.45			N/A	N/A
B	6.09	0.05	0.49	17.47	30.98			N/A	N/A
C	1.54	0.03	0.27	1.54	1.54			N/A	N/A
D	3.27	0.03	0.31	4.26	15.83			N/A	N/A

08:45 - 09:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	9.04	0.05	0.59	26.08	46.68			N/A	N/A
B	7.04	0.04	0.38	16.90	38.58			N/A	N/A
C	1.57	0.03	0.27	1.57	1.57			N/A	N/A
D	3.39	0.03	0.28	3.39	10.03			N/A	N/A

09:00 - 09:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.25	0.04	0.39	5.98	11.29			N/A	N/A
B	2.21	0.04	0.43	6.02	10.54			N/A	N/A
C	0.92	0.14	0.95	1.13	1.59			N/A	N/A
D	1.52	0.05	0.60	3.78	5.72			N/A	N/A

09:15 - 09:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.15	0.03	0.30	1.50	5.52			N/A	N/A
B	1.16	0.03	0.31	2.00	5.86			N/A	N/A
C	0.62	0.05	0.54	1.38	1.49			N/A	N/A
D	0.93	0.04	0.36	2.27	4.11			N/A	N/A

2045 + ST, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	29.34	D

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	-5	Arm A	29.34	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2045 + ST	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	588	100.000
B		ONE HOUR	✓	666	100.000
C		ONE HOUR	✓	936	100.000
D		ONE HOUR	✓	819	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	152	357	79
	B	154	0	345	167
	C	365	219	0	352
	D	94	443	282	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	1	0
	B	1	0	1	3
	C	1	3	0	2
	D	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.94	56.85	9.6	47.2	F	540	809
B	0.82	21.49	4.2	20.8	C	611	917
C	0.72	8.76	2.5	5.8	A	859	1288
D	0.92	39.78	9.3	49.9	E	752	1127

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	443	111	706	863	0.513	439	459	0.0	1.0	8.408	A
B	501	125	536	1032	0.486	498	608	0.0	0.9	6.690	A
C	705	176	299	1533	0.460	701	735	0.0	0.8	4.309	A
D	617	154	553	1143	0.540	612	447	0.0	1.2	6.727	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	529	132	845	790	0.669	525	549	1.0	1.9	13.385	B
B	599	150	641	974	0.615	596	728	0.9	1.6	9.460	A
C	841	210	358	1494	0.563	840	880	0.8	1.3	5.486	A
D	736	184	662	1073	0.686	732	536	1.2	2.1	10.447	B

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	647	162	1018	700	0.924	625	668	1.9	7.5	39.519	E
B	733	183	766	906	0.809	724	877	1.6	3.8	18.922	C
C	1031	258	433	1444	0.714	1026	1057	1.3	2.4	8.512	A
D	902	225	808	980	0.920	878	651	2.1	8.0	30.144	D

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	647	162	1035	692	0.936	639	674	7.5	9.6	56.851	F
B	733	183	783	897	0.818	732	891	3.8	4.2	21.488	C
C	1031	258	439	1441	0.715	1030	1076	2.4	2.5	8.763	A
D	902	225	812	978	0.922	896	657	8.0	9.3	39.783	E

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	529	132	875	775	0.682	558	558	9.6	2.3	18.591	C
B	599	150	677	955	0.627	608	756	4.2	1.7	10.673	B
C	841	210	368	1487	0.566	846	917	2.5	1.3	5.654	A
D	736	184	669	1069	0.689	764	546	9.3	2.3	12.830	B

18:15 - 18:30

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity	RFC	Throughput	Throughput (exit side)	Start queue	End queue	Delay	Unsignalised level of

	(Veh/hr)	(Veh)	(Veh/hr)	(Veh/hr)		(Veh/hr)	(Veh/hr)	(Veh)	(Veh)	(s)	service
A	443	111	715	858	0.516	447	463	2.3	1.1	8.865	A
B	501	125	546	1027	0.488	504	617	1.7	1.0	6.930	A
C	705	176	303	1530	0.460	707	747	1.3	0.9	4.378	A
D	617	154	557	1140	0.541	621	452	2.3	1.2	6.999	A

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.03	0.55	1.02	1.45	1.50			N/A	N/A
B	0.93	0.55	1.00	1.40	1.45			N/A	N/A
C	0.84	0.55	1.00	1.40	1.45			N/A	N/A
D	1.15	0.55	1.08	1.33	1.67			N/A	N/A

17:15 - 17:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.94	0.06	0.79	4.92	7.45			N/A	N/A
B	1.55	0.06	0.81	3.71	5.42			N/A	N/A
C	1.27	0.06	0.72	2.86	4.14			N/A	N/A
D	2.11	0.05	0.58	5.64	8.84			N/A	N/A

17:30 - 17:45

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	7.54	0.08	1.66	21.33	32.65			N/A	N/A
B	3.83	0.03	0.34	8.26	20.76			N/A	N/A
C	2.41	0.03	0.28	2.41	5.84			N/A	N/A
D	7.96	0.06	1.42	23.05	37.20			N/A	N/A

17:45 - 18:00

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	9.59	0.06	1.18	28.00	47.25			N/A	N/A
B	4.18	0.03	0.30	4.18	18.79			N/A	N/A
C	2.47	0.03	0.27	2.47	2.47			N/A	N/A
D	9.31	0.05	0.45	25.90	49.94			N/A	N/A

18:00 - 18:15

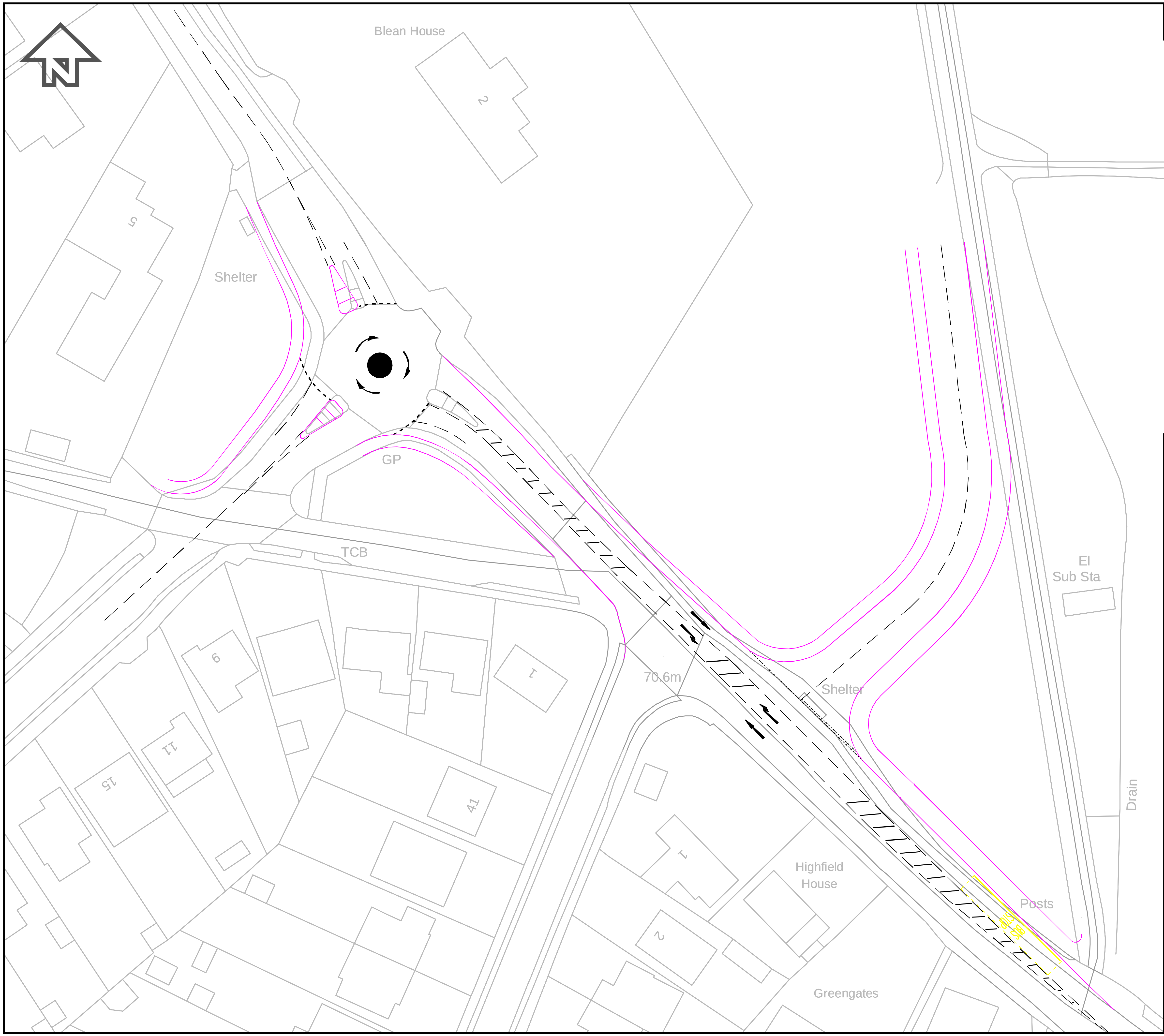
Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.26	0.04	0.40	6.09	11.24			N/A	N/A
B	1.73	0.05	0.49	4.54	7.13			N/A	N/A
C	1.32	0.08	1.00	2.65	3.59			N/A	N/A
D	2.30	0.04	0.40	6.18	11.53			N/A	N/A

18:15 - 18:30

Arm	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.09	0.03	0.30	1.21	5.01			N/A	N/A
B	0.97	0.03	0.34	2.25	4.71			N/A	N/A
C	0.86	0.05	0.46	1.86	2.81			N/A	N/A
D	1.20	0.03	0.30	1.64	5.80			N/A	N/A

Appendix D

Site Access and Mitigation Drawings



DO NOT SCALE

KEY

Proposed Kerb Line

Proposed Road Marking

DRAWING STATUS:

wsp

Mountbatten House, Basing View, Basingstoke, RG21 4HJ, UK
T+ 44 (0) 1256 318 800, F+ 44 (0) 1256 318 700
wsp.com

CLIENT:
University of Kent

ARCHITECT:
PRP

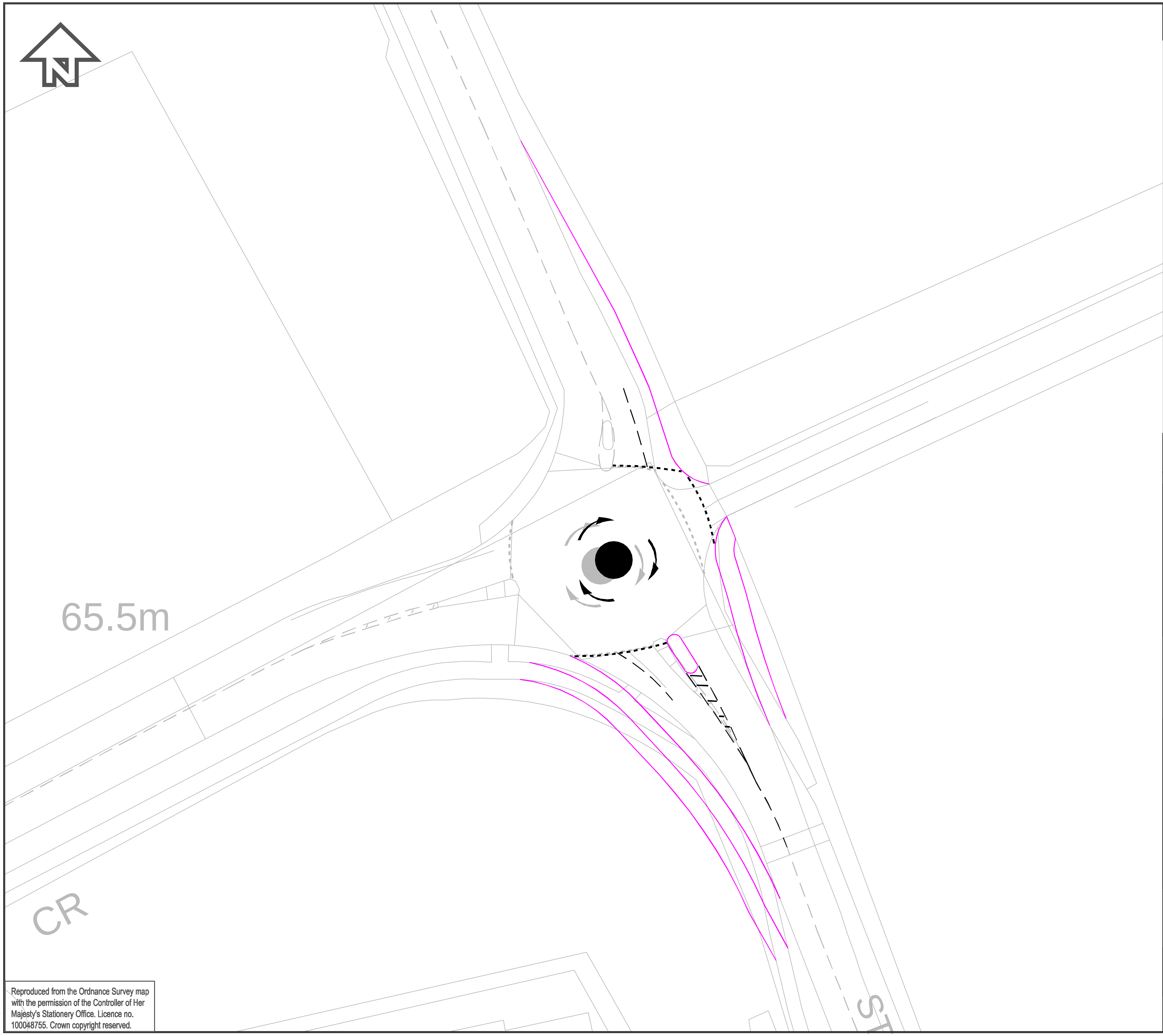
PROJECT:
University of Kent, Canterbury

TITLE:
Preliminary Transport Appraisal
Staggered Priority Junction Mitigation
Junction Geometry Measurements

SCALE @ A3:	CHECKED:		APPROVED:
NTS	JS		AA
PROJECT No:	DESIGNED:	DRAWN:	DATE:
70080896	JS	JS	January 2023

DRAWING No:	REV:
70080896-XX-XX-TP-016	P01

File name \\UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\70080XXX\70080896 - UNIVERSITY OF KENT\03 WIP\TP TRANSPORT PLANNING\DRAWINGS\PTA V2 PDFS\J2\70080896-XX-XX-TP-016 SITE ACCESS MITIGATION AND MEASUREMENTS.DWG, printed on 16 January 2023 12:13:37, by Duce, Callum



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KEY

- Proposed Kerb Line
- Proposed Road Marking

DRAWING STATUS:

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T+ 44 (0) 1256 318 800, F+ 44 (0) 1256 318 700
wsp.com

CLIENT: University of Kent

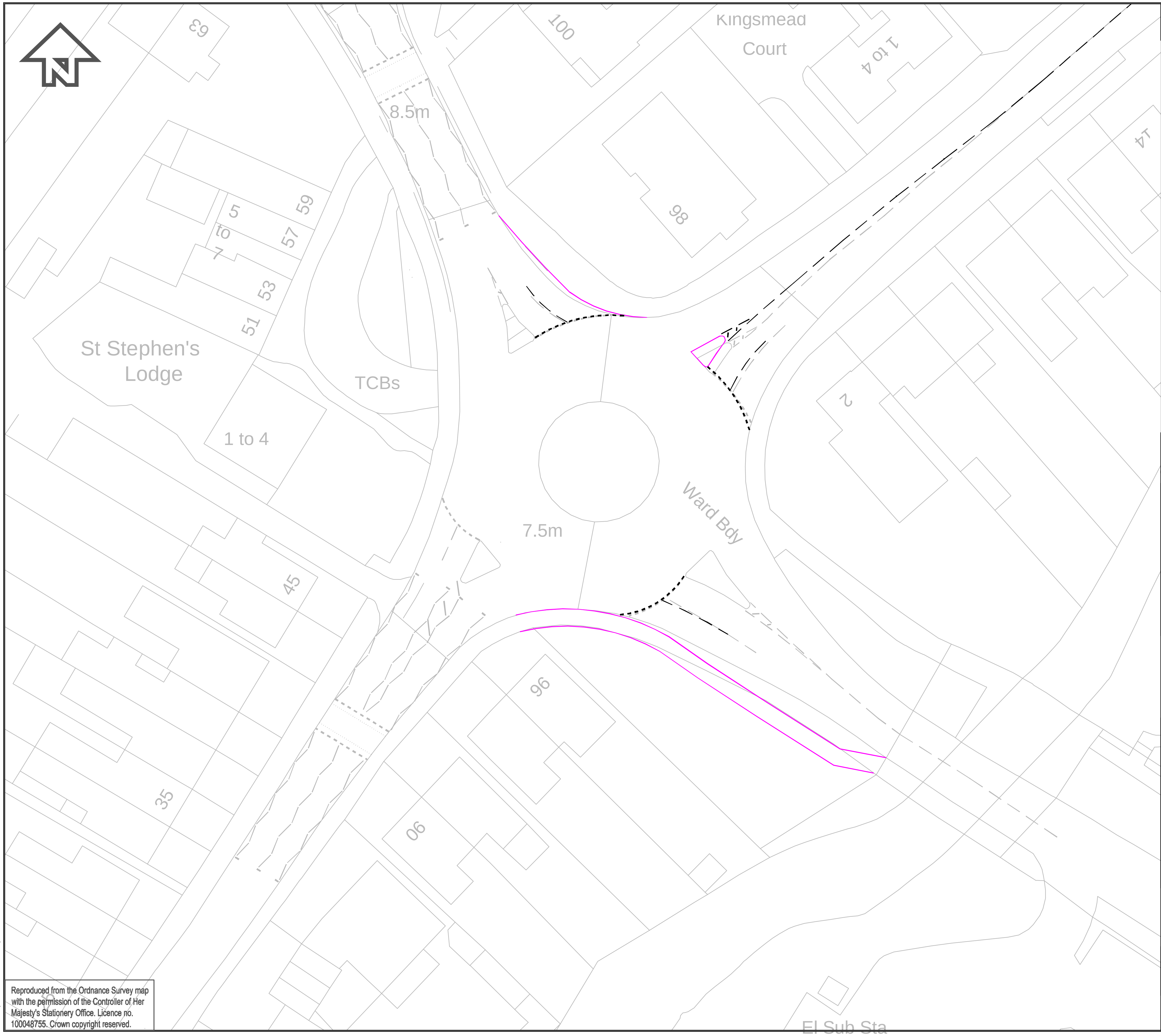
ARCHITECT: PRP

PROJECT: University of Kent, Canterbury

TITLE: Preliminary Transport Appraisal
J10 Giles Lane Mitigation Proposals

SCALE @ A3:	CHECKED:		APPROVED:
NTS	JS		AA
PROJECT No: 70080896	DESIGNED: JS	DRAWN: JS	DATE: January 2023

DRAWING No:	REV:
70080896-XX-XX-TP-017	P01



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KEY

- Proposed Kerb Line
- Proposed Road Marking

DRAWING STATUS:	
CLIENT:	University of Kent
ARCHITECT:	PRP
PROJECT:	University of Kent, Canterbury
TITLE:	Preliminary Transport Appraisal J12 Broad Oak Road Mitigation

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Mountbatten House, Basing View, Basingstoke, RG21 4HJ, UK
T+ 44 (0) 1256 318 800, F+ 44 (0) 1256 318 700
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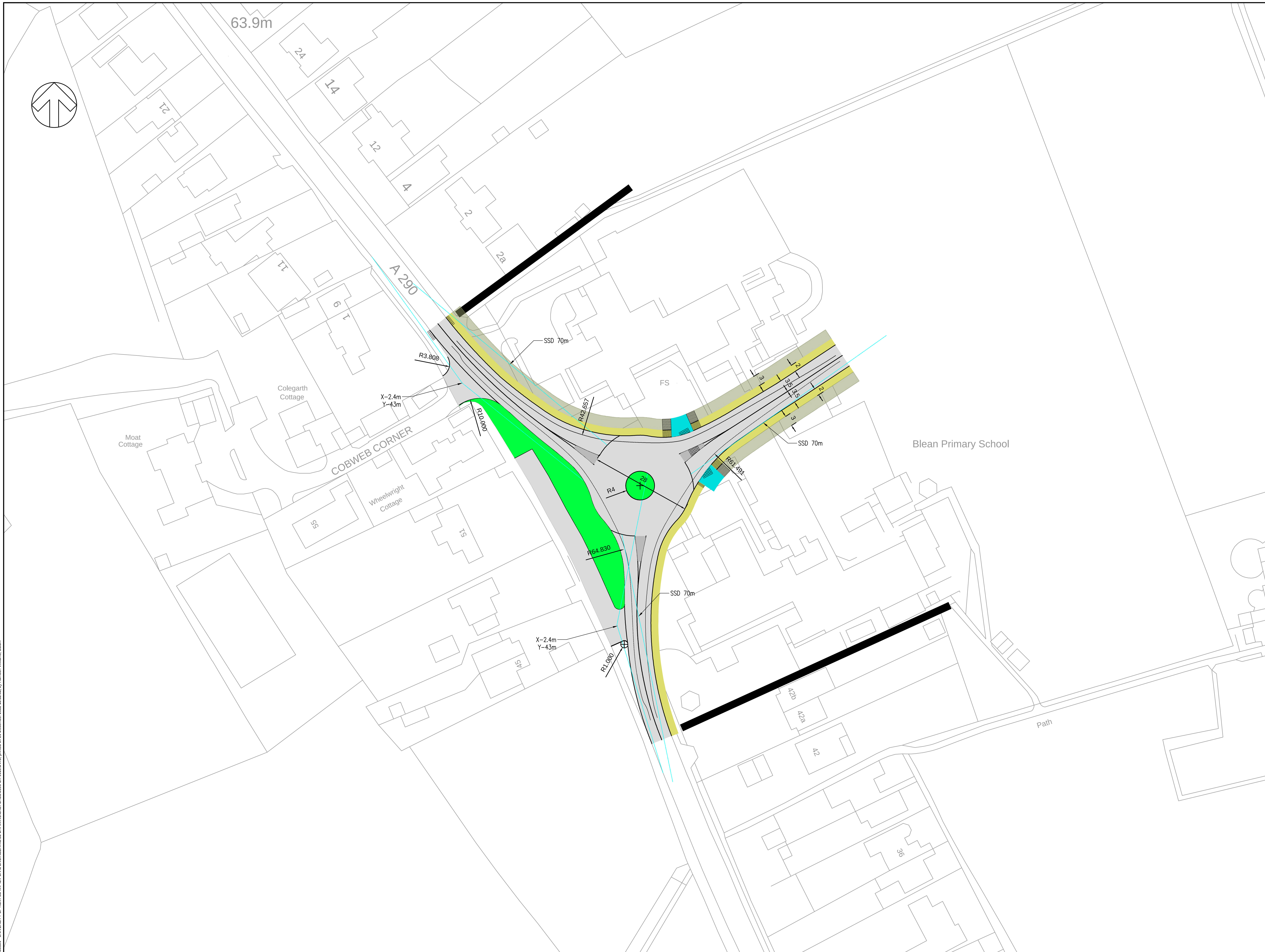
SCALE @ A3:	CHECKED:		APPROVED:
NTS	JS		AA
PROJECT No:	DESIGNED:	DRAWN:	DATE:
70080896	JS	JS	January 2023

DRAWING No:	REV:
7008096-XX-XX-TP-018	P01

File name \\UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\70080XXX\70080896 - UNIVERSITY OF KENT\03 WIP\TP TRANSPORT PLANNING\DRAWINGS\PTA\V2 PDFS\J12\70080896-XX-XX-TP-018 J12 BROAD OAK ROAD MITIGATION AND MEASUREMENTS.DWG, printed on 16 January 2023 12:11:51, by Duce, Callum



DO NOT SCALE

KEY

- CARRIAGEWAY
- FOOTWAY
- CYCLEWAY
- VERGE
- SHARED SURFACE
- VISIBILITY LINES

REV	DATE	BY	DESCRIPTION	CHK	APP
P01	20/12/2022	CHW	FIRST ISSUE	DB	DB

DRAWING STATUS: S0 - WORK IN PROGRESS

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T+ 44 (0) 1992 526 000, F+ 44 (0) 1992 526 001
wsp.com

CLIENT: UNIVERSITY OF KENT

ARCHITECT:

SITE/PROJECT: UNIVERSITY OF KENT CANTERBURY CAMPUS

TITLE: BLEAN PRIMARY SCHOOL 28m ICD ROUNDABOUT

SCALE @ A1: 1:500	CHECKED: DB		APPROVED: DB
PROJECT NO: 70080896	DESIGNED: CHW	DRAWN: CHW	DATE: December 22

DRAWING No:	REV:
70080896-XX-XX-TP-024	P01

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DO NOT SCALE

KEY

- CARRIAGEWAY
- SHARED SURFACE
- FOOTWAY
- CYCLEWAY
- CENTRAL ISLAND
- TRAFFIC SIGNAL

REV	DATE	BY	DESCRIPTION	CHK	APP
P01	20/12/2022	CHW	FIRST ISSUE	DB	DB

DRAWING STATUS:
S0 - WORK IN PROGRESS

Unit 9 The Chase, John Tate Road, Foxholes Business Park, Hertford, SG13 7NN, UK
T+ 44 (0) 1992 526 000, F+ 44 (0) 1992 526 001
wsp.com

CLIENT:
UNIVERISTY OF KENT

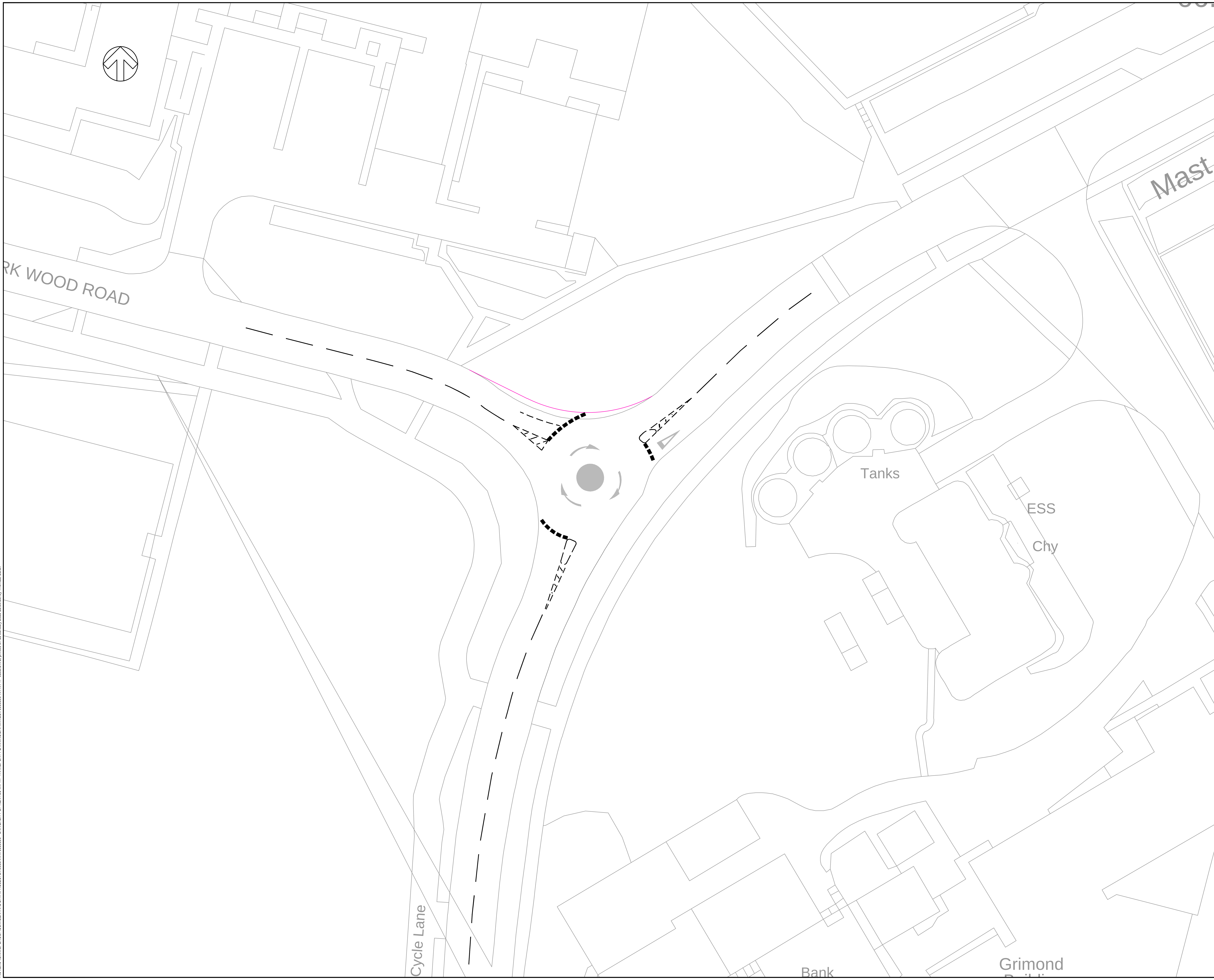
ARCHITECT:

SITE/PROJECT:
UNIVERSITY OF KENT
CANTERBURY CAMPUS

TITLE:
BLEAN PRIMARY SCHOOL
JUNCTION DESIGN

SCALE @ A1:	CHECKED:		APPROVED:
1:500	DB		DB
PROJECT NO: 70080896	DESIGNED: CHW	DRAWN: CHW	DATE: December 22

DRAWING No: 70080896-XX-XX-TP-025
REV: P01



DO NOT SCALE

KEY

Proposed Kerb Line

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REV	DATE	BY	DESCRIPTION	CHK	APP
P01	11/01/2023	ST	FIRST ISSUE	DD	JS

DRAWING STATUS:
S0 - WORK IN PROGRESS

wsp

2 London Square, Cross Lanes, Guildford, GU1 1UN, UK
T+ 44 (0) 1483 528 400
wsp.com

CLIENT: UNIVERSITY OF KENT

ARCHITECT: PRP

SITE/PROJECT: UNIVERSITY OF KENT, CANTERBURY

TITLE: PRELIMINARY TRANSPORT APPRAISAL
J9 GILES LANE / PARK WOOD ROAD MITIGATION

SCALE @ A1: 1:250	CHECKED: DD	APPROVED: JS
PROJECT NO:	DESIGNED: ST / DRAWN: ST	DATE: January 23

DRAWING No: 70080896-XX-XX-TP-026 | REV: P01

Appendix E

Rough Common Road Study

Public

TECHNICAL NOTE 1

DATE:	30 December 2022	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent - Rough Common Road		
PROJECT:	70080896	**AUTHOR:**	Callum Duce
CHECKED:	David Dixon	**APPROVED:**	Justin Sherlock

INTRODUCTION

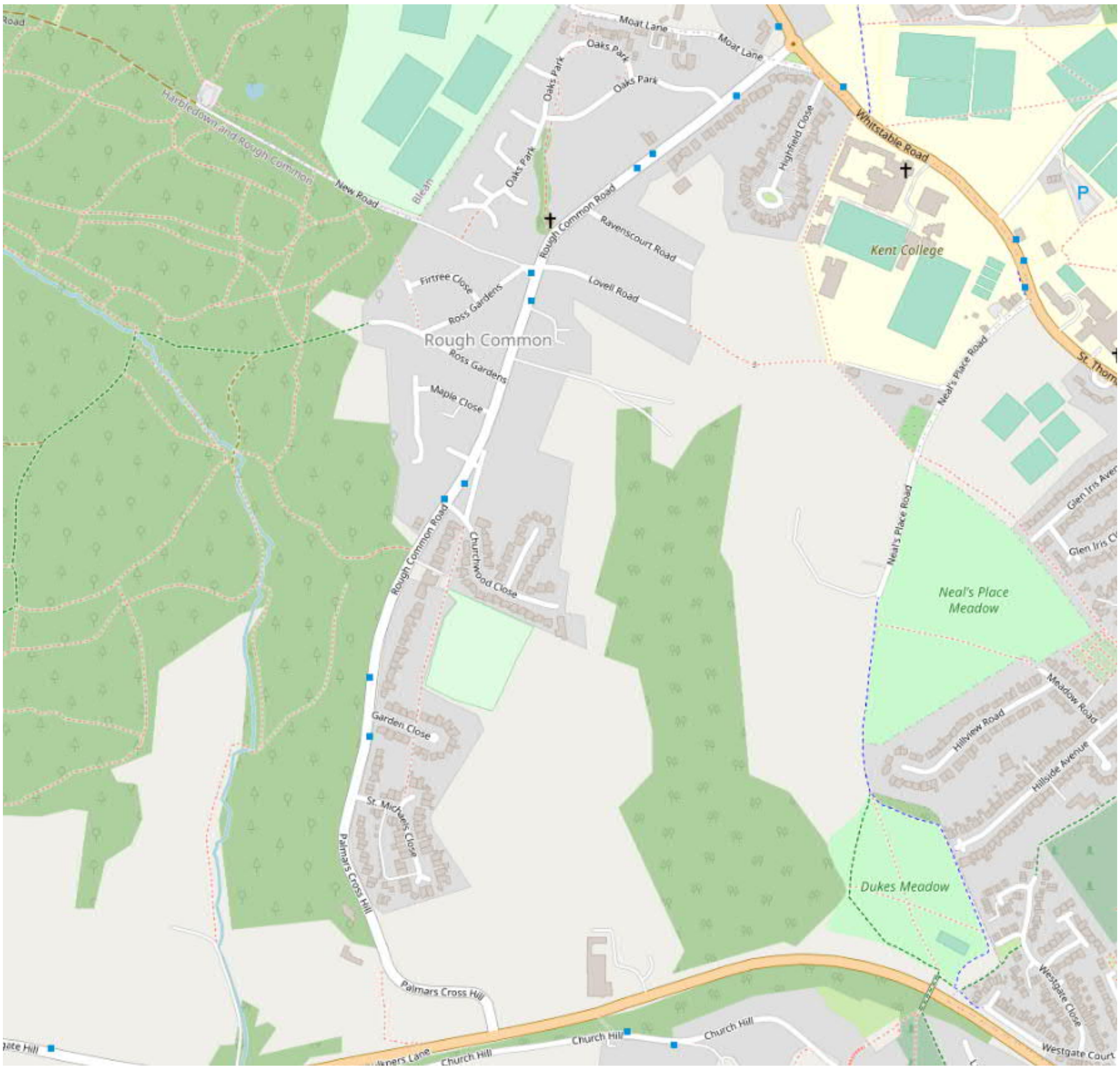
WSP have been commissioned by the University of Kent (UoK) to provide transport and environmental advice for the development of proposals at various sites in and around their Canterbury Campus. As part of discussions regarding Sites BCD Kent County Council (KCC) as highway authority requested that a study be undertaken to review the ability of Rough Common Road to accommodate additional traffic in the future associated with Canterbury City Council's Local Plan and more specifically the Proposed Development known as Sites BCD on land owned by the UoK.

More specifically the purpose of the study was to:

- Understand existing conditions on Rough Common Road in relation to traffic flow, public transport provision, accidents, and parking
- Identify through use of a parking survey the current on-street parking arrangements and their usage during the weekday peak periods to determine if parking would constrain future traffic growth
- Identify through a site visit any geometric constraints that would affect the ability of Rough Common Road to accommodate additional traffic; and
- Make recommendations for improvements to Rough Common Road that could be considered to accommodate future traffic growth along this link.

Study Area

Figure 1: Study Area

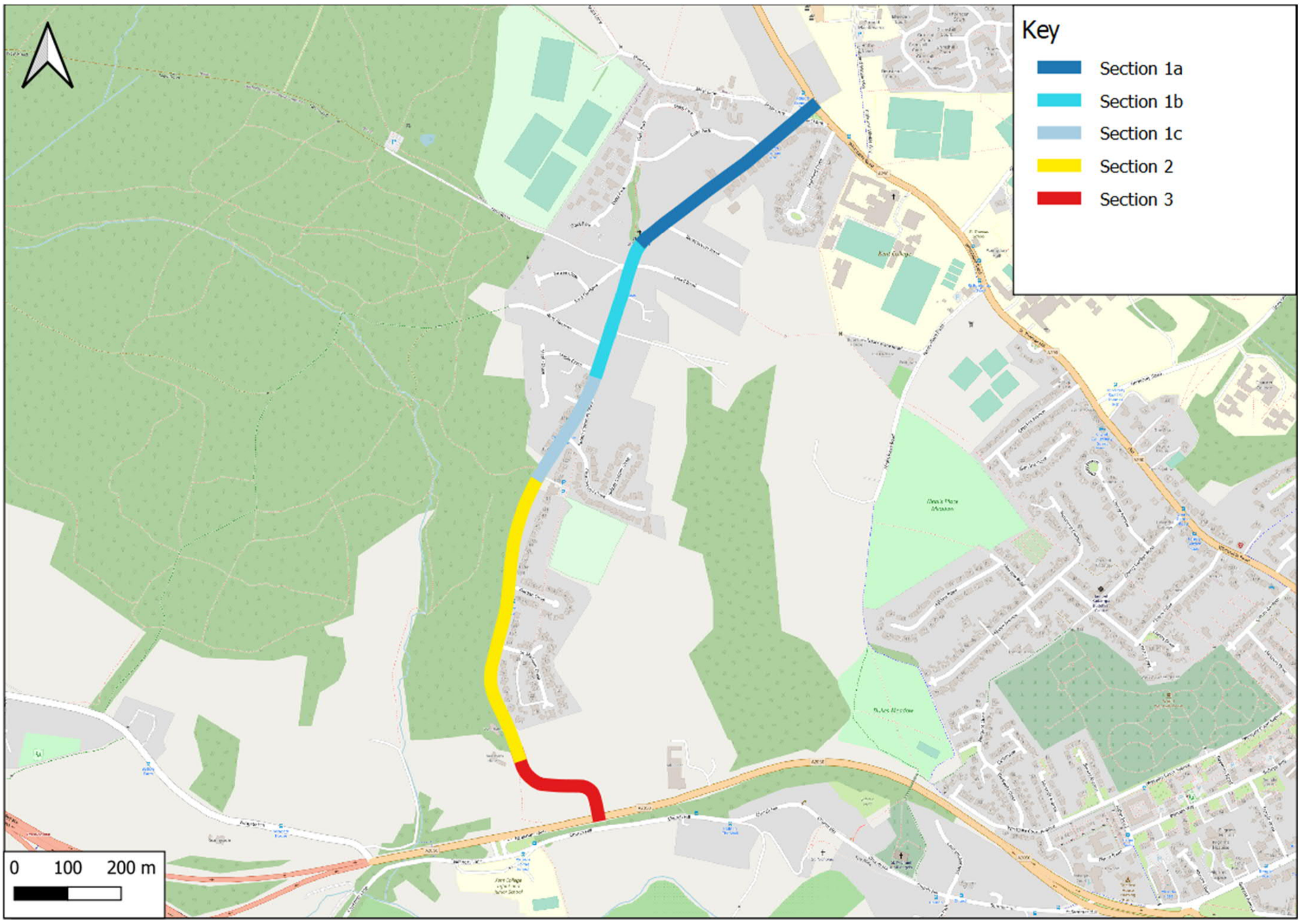


Rough Common Road (Figure 1) is a two-way single carriageway road with one lane running in each direction that spans 1.65km, connecting the A2050 in the south and the A290 Whitstable Road to the north. The road is street lit and for the majority of its length is subject to a 30mph speed limit. The road can be split broadly into three main character areas:

- Section 1 – between Whitstable Road and Rough Common Village Hall where the road passes through the built-up area of Rough Common
- Section 2 – between the Village Hall and the speed limit change where the road only features frontage access on the eastern side
- Section 3 – the southern end of the road on the approach to the traffic signal junction with A2050.

These sections are shown spatially on Figure 2.

Figure 2: Rough Common Road Subsections



Section 1

Section 1 can be broadly sub-divided into three sub-sections. Section 1a runs between the mini-roundabout junction with Whitstable Road and St Gabriel's Church. In Section 1a Rough Common Road features a carriageway which varies in width between approximately 6m and 6.5m. Footways of approximately 1.8m width line both sides of the carriageway with verges separating the carriageway and footways (Figure 3).

This Section of road is characterised by properties which feature their own driveways. As such, limited evidence of on-street parking is present. Two inset parking bays have been provided along this Section with capacity for approximately two vehicles each (Figure 4). Signage instructs motorists not to park on the verge (Figure 5).

Figure 3: Section 1a of Rough Common Road

Figure 4: Inset Parking Bays

Figure 5: Parking Restriction

Section 1b runs between St Gabriel's Church and Maple Close. This section features a carriageway width of approximately 6.2m. Footways (which vary in width) line both sides of the carriageway but there is no verge separating the two making it feel noticeably narrower than Section 1a. An inset parking bay (Figure 6) is provided with capacity for approximately four vehicles near the access to Maple House, an assisted living unit. Around Rough Common Stores some properties do not feature off-street parking and as such some parking, which cannot be accomodated within the inset parking bay provided, is located on carriageway (Figure 7). This parking reduces the carriageway to a single lane and acts as an informal priority working system.

Figure 6: Inset Parking Bay

Figure 7: Parking on-street

Section 1c runs betweeen Maple Close and the Rough Common Village Hall. This sub-section features a carriageway width of approximately 6.3m. An inset parking bay is provided outside of properties 95-101 (Figure 8). A separate unpaved service road then feeds properties behind a small green area adjacent to the junction with Church Wood Close.

Figure 8: Inset parking bay

Section 2

In this Section Rough Common Road features a carriageway width of between 7.8-6.8m. A footway of approximately 1.6m width is provided on the eastern side of the carriageway only which is located adjacent to the carriageway (i.e. there is no verge) (Figure 9). To the west is the Blean Woods SPA. A bus stop is located on the western side of the carriageway.

Figure 9: Properties on one side on the carriageway

Section 3

Unlike the remaining sections of Rough Common Road this section features a 50mph speed limit. The road is noticably wider than the other sections at approximately 7.8m width. However, the steep gradient and tight geometry as the road descends towards the A2050 means that veicle speeds are constrained (Figure 10).

This section features a verge and footway on the eastern side of the carriageway only and is characterised by a more rural feel.

Figure 10: Section C

Current Usage of Rough Common Road

Function

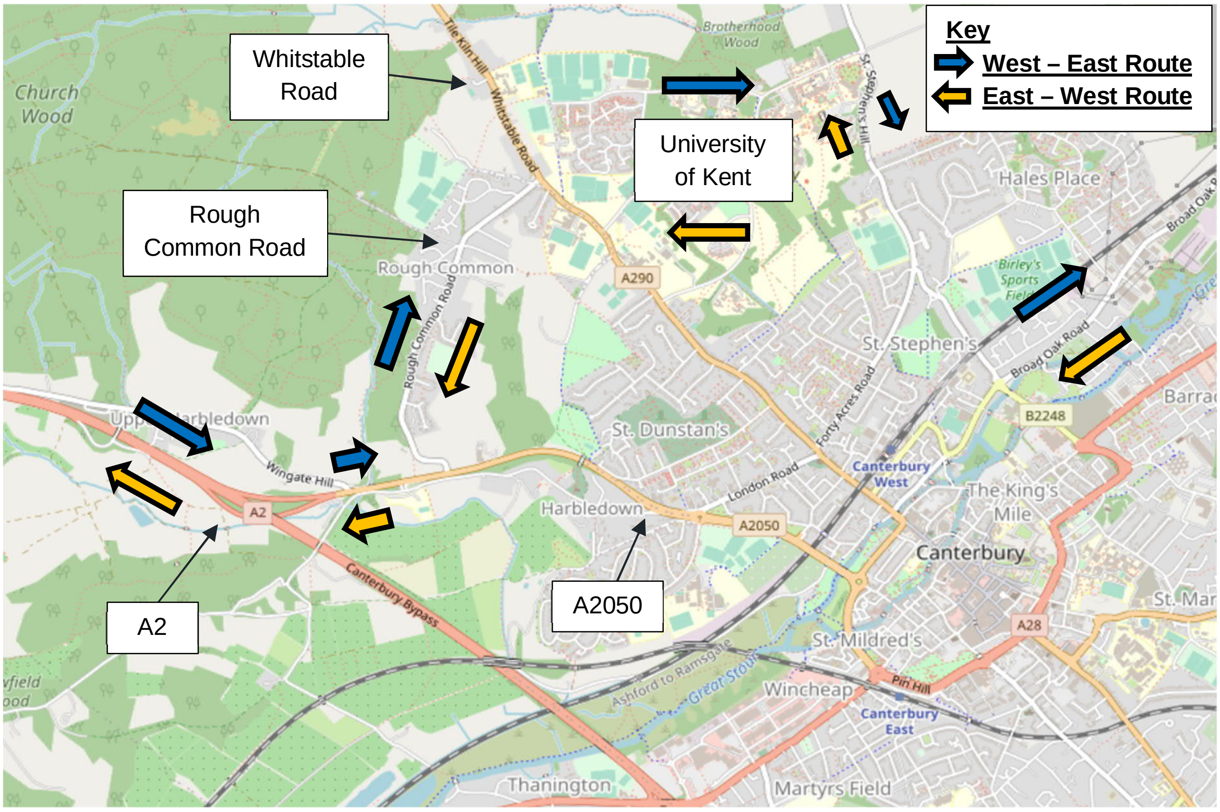
The road is mostly located within the residential area of Rough Common, however it serves as a vital transport link for Canterbury, facilitating traffic movements between the A2 to the west of Canterbury, the University and northern Canterbury to the north. Due to the historic nature of Canterbury City Centre and limited routes available to motorists, traffic travelling to the east of Canterbury also uses Rough Common Road to avoid congestion in the City Centre.

A study undertaken by the University in 2018 identified that on the University Campus (which lies immediately to the east of the study area) 17% of traffic in the AM peak period (07:30-09:30) and 43% of traffic in the PM peak period (16:30-19:30) was through traffic. Whilst this does not confirm what proportion of traffic is then using Rough Common Road, because of the limited number of routes for traffic travelling between the A2 and A28 to the east of Canterbury it seems likely that Rough Common Road acts as part of an alternative east-west cross-city route (Figure 11).

![WSP logo]

TECHNICAL NOTE

Figure 11: Rough Common Road Local Context



Traffic Volumes

Table 1 shows traffic flows for Rough Common Road as identified from the traffic surveys undertaken in 2021. It then provides an estimate of the traffic flows for the peak hours for the 2045 future forecast year including the traffic associated with Sites BCD as identified in the Preliminary Transport Appraisal.

Table 1: 2021 and 2045 Base + Development Flows along Rough Common RoadYear	Time Period	Northbound		Southbound		Two-way	
		All traffic	% HGV	All traffic	% HGV	All traffic	% HGV
2021	AM Peak	599	1	437	2	1036	1
	PM Peak	401	0	416	1	817	0
	Daily	4864	1	4149	1	9013	1
2045 + Development	AM Peak	840	1	821	1	1661	1
	PM Peak	818	0	612	1	1430	0
	Daily	-	-	-	-	-	-

To identify the capacity of this link road, TA79/99 – Capacity of Urban Roads has been considered. It should be noted that TA79/99 has now been withdrawn, however it has been used in this study as a means to identify at a high level the capacity of the Rough Common Road.

Table 2: TA79/99 Capacities of Urban Road

		Two-way Single Carriageway- Busiest direction flow (Assumes a 60/40 directional split)									Dual Carriageway			
		Total number of Lanes									Number of Lanes in each direction			
		2				2-3	3	3-4	4	4+	2		3	4
Carriageway width		6.1m	6.75m	7.3m	9.0m	10.0m	12.3m	13.5m	14.6m	18.0m	6.75m	7.3m	11.0m	14.6m
Road type	UM	Not applicable										4000	5600	7200
	UAP1	1020	1320	1590	1860	2010	2550	2800	3050	3300	3350	3600	5200	*
	UAP2	1020	1260	1470	1550	1650	1700	1900	2100	2700	2950	3200	4800	*
	UAP3	900	1110	1300	1530	1620	*	*	*	*	2300	2600	3300	*
	UAP4	750	900	1140	1320	1410	*	*	*	*	*	*	*	*

Table 2 shows the capacities of urban roads based on carriageway width. The carriageway width along the Rough Common Road Study Area is between 6.1m – 6.75m and is considered to be classed as “UAP3” being a “variable standard road carrying mixed traffic with frontage access and more than two side roads per km”. These factors give the road a capacity of between 900-1110 vehicles in the busiest direction during a peak period which is greater than that predicted for 2045. Based upon TA79/99 Rough Common Road is identified as operating within capacity in both the existing and future forecast years including Sites BCD.

Public Transport

Rough Common Road is served by a number of bus routes that provide connections to a variety of destinations. All of the routes that operate along the whole road’s length are school bus services, notably the 903, 904, 905 and 906 services between Herne Bay and a number of Canterbury schools including St Anselm’s School, Simon Langton Boys’ School, Barton Court School and Simon Langton Girl’s School respectfully. The 913 service to and from Yorkletts serves a number of schools within Canterbury including St Anselm’s School, Simon Langton Boys’ School and Simon Langton Girl’s School.

Further afield buses serving the general public can be accessed at the Rough Common Turn bus stop located on Whitstable Road to the north of the study area.

Table 3 shows the services that are available.

Table 3: Bus Services

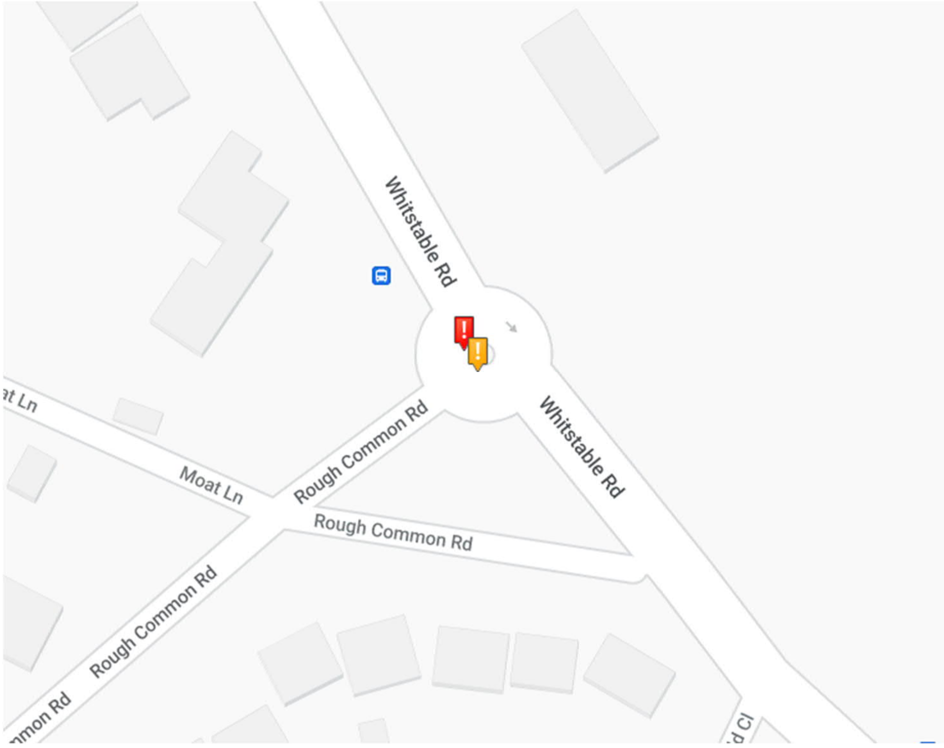
Service	Route	Weekday Frequency (buses/hr)	
		AM Peak (08-00-0900)	PM Peak (1700-1800)
4	Canterbury - Greenhill	2	2
4	Greenhill - Canterbury	1	1
903, 904, 905, 906	Herne Bay – Canterbury Schools	One service in the morning	
903, 904, 905, 906	Canterbury Schools – Herne Bay	One service in the afternoon	
913	Yorkletts – Canterbury Schools	One service in the morning	
913	Canterbury Schools - Yorkletts	One service in the morning	
Triangle	Canterbury – Whitstable – Herne Bay	3	3
Triangle	Herne Bay – Whitstable - Canterbury	3	3

Accident Record

A review of the Crashmap database was undertaken to understand whether there was an existing pattern of collisions that could be exacerbated by future increases in traffic volume along Rough Common Road.

Data provided by CrashMap reveals that only 6 collisions occurred within the study area across a 3-year period between 2019 and 2021, with 5 being slight and 1 incident being serious. The serious incident occurred at the A290 Whitstable Road/Rough Common Road roundabout in October 2019. There does not seem to be any noticeable trend that is impacted by the parked vehicles along this corridor. The accident locations are set out in Figures 12-14 below.

Figure 12: Whitstable Road/Rough Common Road Roundabout CrashMap data



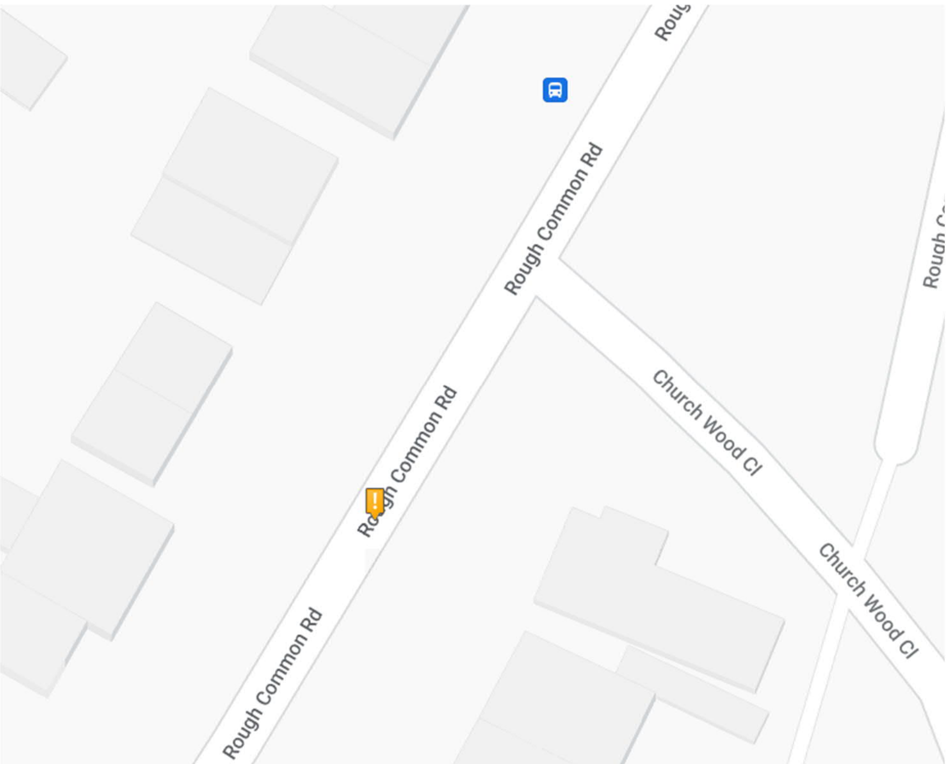


Figure 13: Rough Common Road CrashMap Data

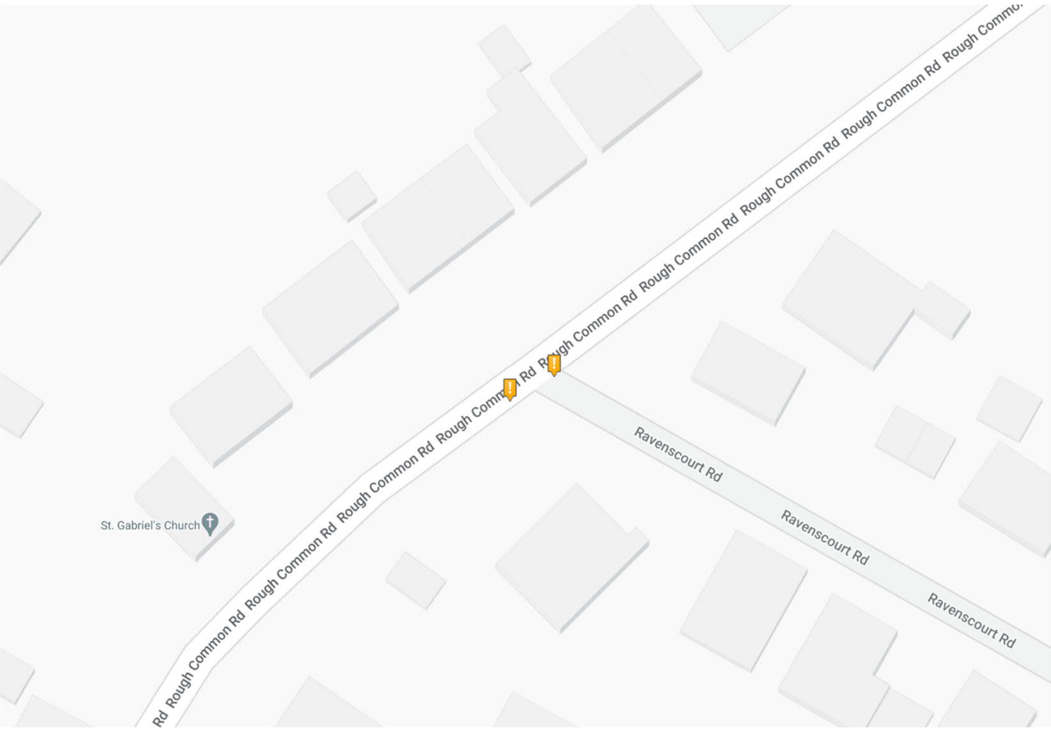
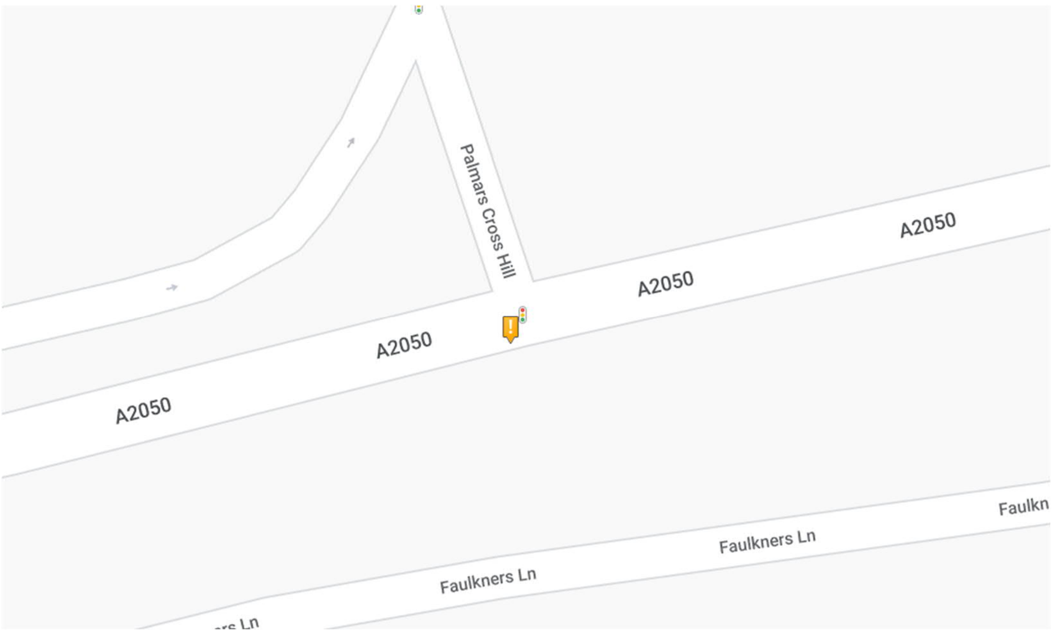


Figure 14: A2050/Palmars Cross Hill Junction CrashMap data



Parking Survey

A parking survey was undertaken on Wednesday 6th July and Thursday 7th July 2022. The following time periods were surveyed:

- 07:00-10:00 on Wednesday 6th July 2022
- 07:00-10:00 on Thursday 7th July 2022
- 16:00-19:00 on Thursday 7th July 2022

During these time periods the quantum, type and length of stay of parked vehicles was noted using a 30-minute parking beat survey.

Full parking survey results are shown in **Appendix A** split down by 30 minute time period. A summary of the results are provided by survey period below.

Wednesday 6th July 2022 – 07:00-10:00

- Section 1a – vehicles were noted parking within the designated inset parking bays. One vehicle was parked on the carriageway for one of the parking best surveys (08:00) only
- Section 1b – five vehicles were parked in the lay-by adjacent to the access to Maple House throughout the parking survey. Two vehicles were also noted parked on carriageway outside of property 81 at the start of the survey. This increased to three vehicles at 08:00 and decreased to one by 09:00.
- Section 1c – three vehicles were noted parked in the layby outside property 97. One vehicle was noted parked outside of property 100 on carriageway between 07:00-09:00.
- Section 2 – a vehicle was noted parked on carriageway outside of property 159b between 07:00-09:00.
- Section 3 – no vehicles were noted parked in this section

Thursday 7th July 2022 – 07:00-10:00

- Section 1a – vehicles were noted parking within the designated inset parking bays only.
- Section 1b – between three and four vehicles were noted to be parked in the layby adjacent to the access to Maple House throughout the parking survey. A vehicle was noted to be parked on carriageway outside of property 81 at the start of the survey. This steadily increased to up to five vehicles parked between property 81 and Maple Close by 10:00.
- Section 1c – between one and three vehicles were parked in the lay-by outside of property 97.
- Section 2 – a vehicle was noted parked on carriageway outside of property 159b throughout the survey. A vehicle was noted parking on carriageway outside of property 169 between 08:00-10:00
- Section 3 – between one and two vehicles were noted parked in the layby near the speed limit threshold throughout the duration of the survey

Thursday 7th July 2022 – 16:00-19:00

- Section 1a – vehicles were noted parking within the designated inset parking bays only.

- Section 1b – between three and four vehicles were noted to be parked in the layby adjacent to the access to Maple House throughout the parking survey. A vehicle was noted to be parked on carriageway outside of property 89 (near Maple Close) throughout the parking survey.
- Section 1c – between zero and two vehicles were parked in the lay-by outside of property 97. A vehicle was also noted parking on carriageway outside of property 102 at 16:30
- Section 2 – a vehicle was noted parked on carriageway outside of property 159b throughout the survey. A vehicle was noted parking on carriageway outside of property 153 between 16:00-17:00
- Section 3 – between one and two vehicles were noted parked in the layby near the speed limit threshold throughout the duration of the survey

Recommendations

The main issues identified as affecting the free flow of traffic on Rough Common Road from the parking survey conducted were;

- Vehicles parked on the eastern side of the carriageway between Ross Gardens and Maple Close where properties generally have no off-street parking facilities
- Vehicles parked in Section 2 of the study area despite appearing to have off-street parking available

It is evident that the parking constraints on Rough Common Road are an existing issue that would need to be considered further by KCC as highway authority, noting the likely increase in traffic even without the University of Kent land promotion site. As such, the most appropriate way forward would be for parking restrictions to be included as part of the wider Canterbury Transport Strategy, and where necessary additional parking for residents and/or parking controls (restricted to peak hours) are introduced. The development at the University of Kent could contribute to this wider strategy.

However, to show how improvements could be delivered to help improve the existing situation, WSP have suggested increases in the existing layby provision that can be undertaken within the existing adopted highway.

Figure 15 and Figure 16 show where laybys could be increased in length to accommodate further spaces.

Figure 15: Maple Close/Rough Common Road parking recommendations

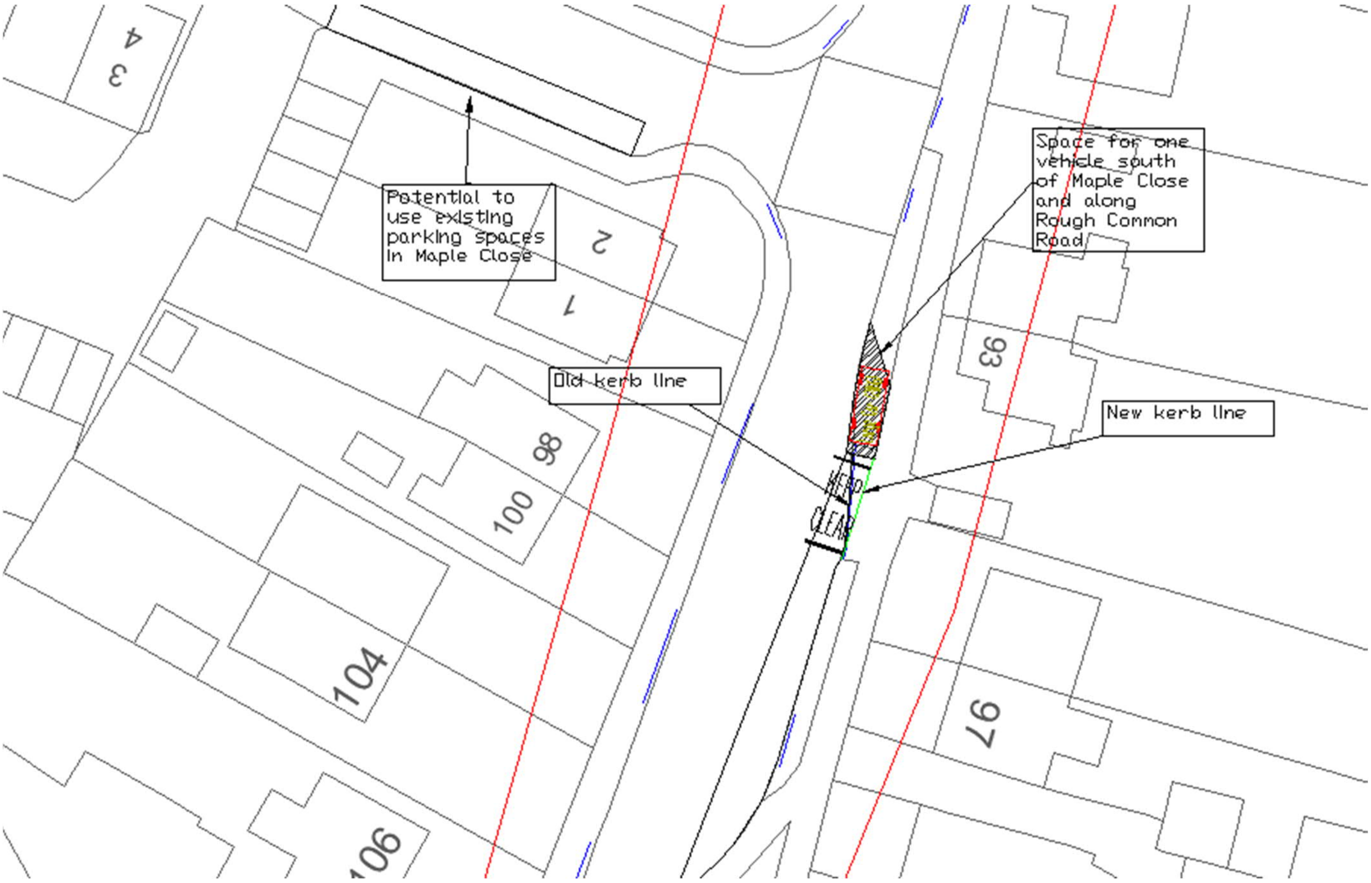


Figure 15 shows the potential for an additional off street parking space being provided north of the existing layby and outside property 93. It is anticipated that a new Keep Clear sign is located between properties 95 and 93 to enable access to the existing driveways.

Figure 16: Section 1b Rough Common Road parking recommendations

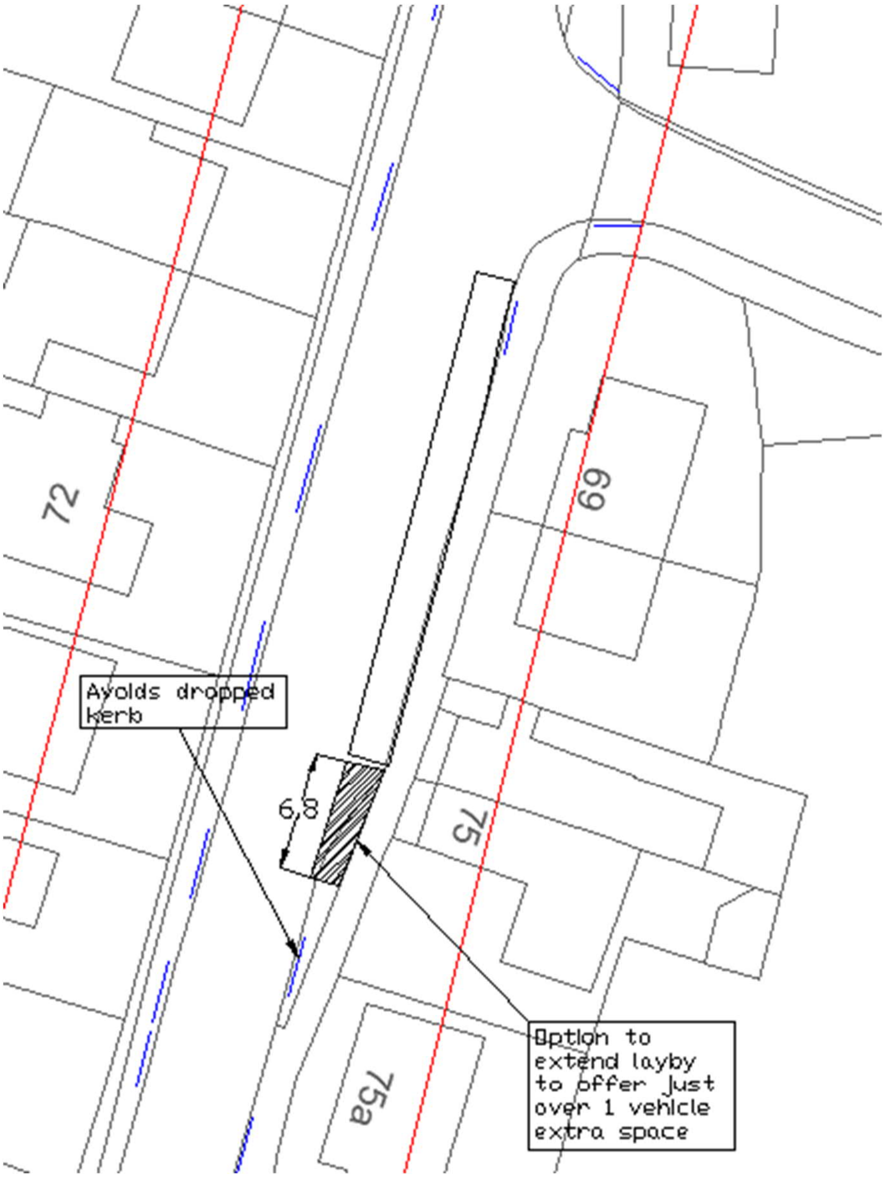


Figure 16 shows the potential for an additional space to be located outside properties 69-75a. The additional space could be delivered by extending the parking bay by circa 6-7m south of the existing boundary. This could accommodate an additional vehicle off street.

The two above schemes would enable 2 additional vehicles to park off street which would significantly improve the situation on this section of Rough Common Road and significantly improve movements along this corridor.

SUMMARY

WSP was commissioned to undertake a study of Rough Common Road to identify potential for improving the free flow of traffic and ensuring it would be suitable for increased traffic volumes associated with local plan growth and more specifically Sites BCD.

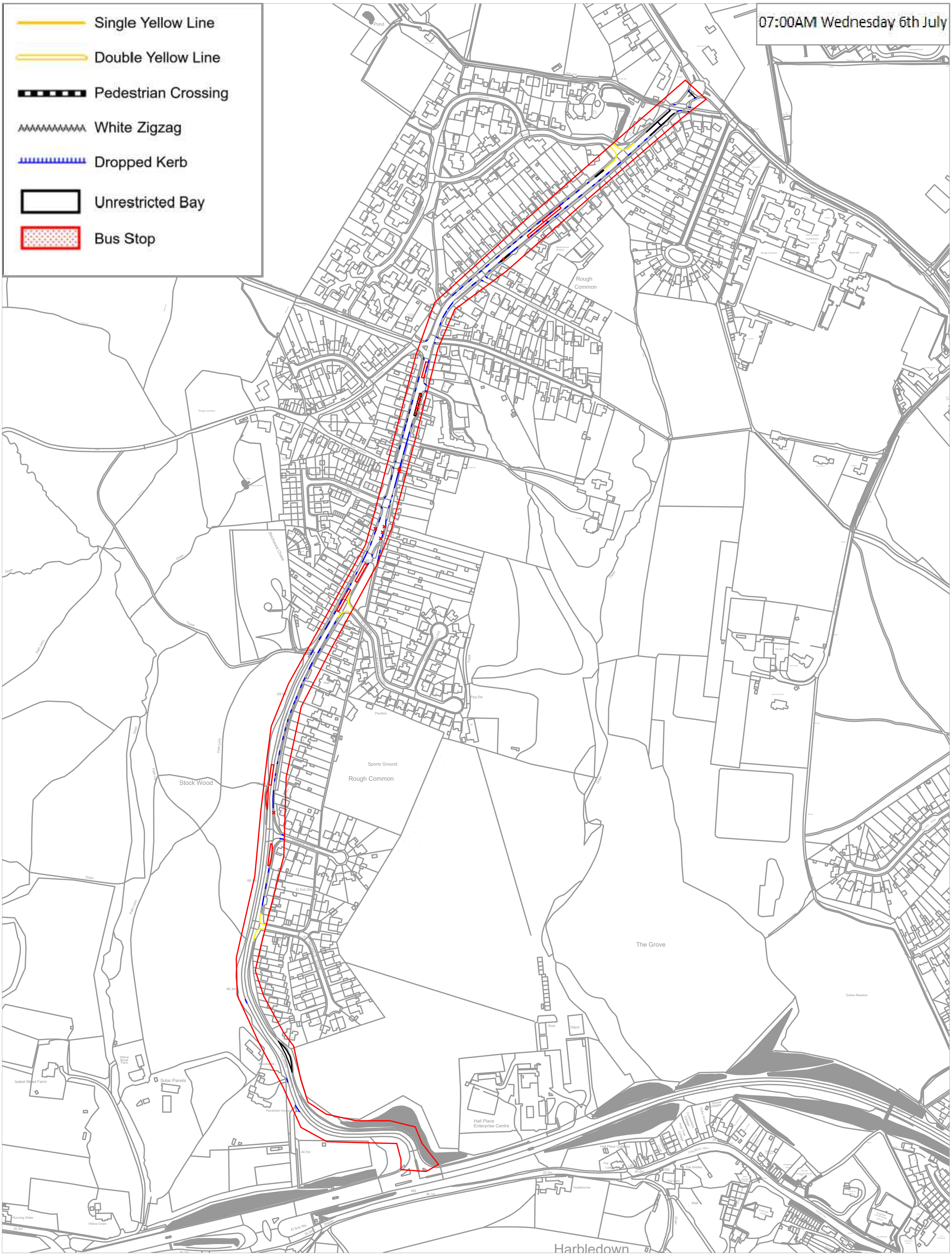
A review of the existing condition of Rough Common Road identified that it is currently suitable for the volume and type of traffic that it carries with no specific accident record identified. Having reviewed the future year flows within Table 1, the 2045 + increase in traffic is still well below link capacity of Rough Common Road therefore there are no constraints associated with the development.

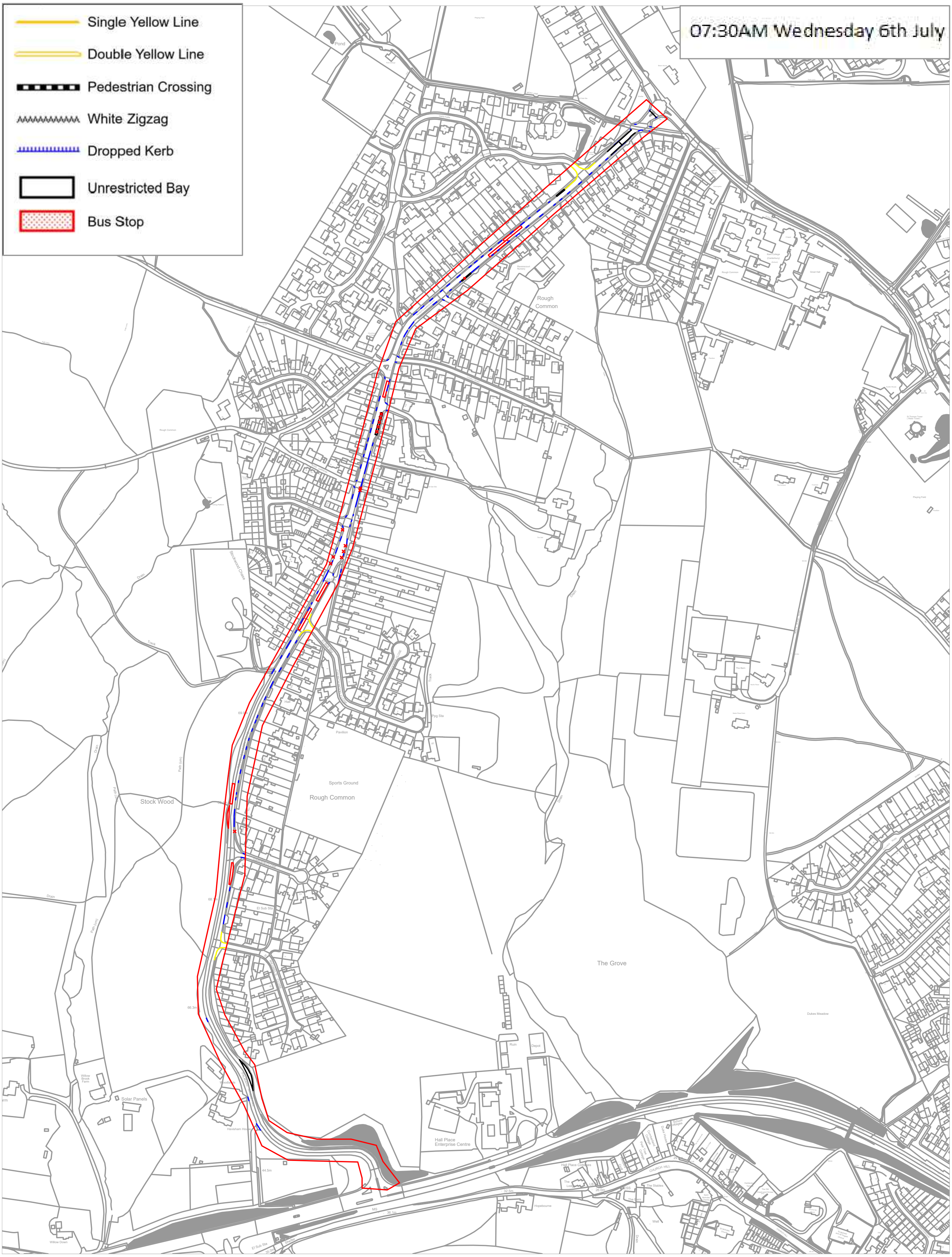
The parking survey indicates that the free flow of traffic is restricted during peak periods by on-street parking that occurs in section 1b and 2. To address this, proposals have been put forward that could increase the off street provision by 2 parking spaces which would improve throughput in this location (subject to KCC consideration). This could be coupled with the introduction of peak period parking restrictions to safeguard the free flow of traffic, reducing the current constraints during the peak periods.

Notwithstanding the above, the parking on Rough Common Road is an existing constraint and an issue that would need to be considered further by KCC without the UoK allocation with increases in vehicle movements expected in the future due to the wider growth in the town. As such, it is suggested that improvements along this corridor are considered as part of the wider Canterbury Transport Strategy, whereby more significant improvements could be considered by KCC (including the provision of more off street parking using land outside of the adopted highway) and where appropriate the Proposed UoK allocation could contribute too.

The review has shown that the existing road can accommodate the future forecast traffic flows and improvements to the existing parking constraints can be forthcoming, and that subject to continued review with KCC, a wider mitigation package for this corridor should be pursued.

Appendix A


Single Yellow Line
Double Yellow Line
Pedestrian Crossing
White Zigzag
Dropped Kerb
Unrestricted Bay
Bus Stop
07:00AM Wednesday 6th July
Rough Common
Sports Ground
Rough Common
Pavilion
Stock Wood
The Grove
Solar Panels
Hall Place Enterprise Centre
Harbledown


07:30AM Wednesday 6th July
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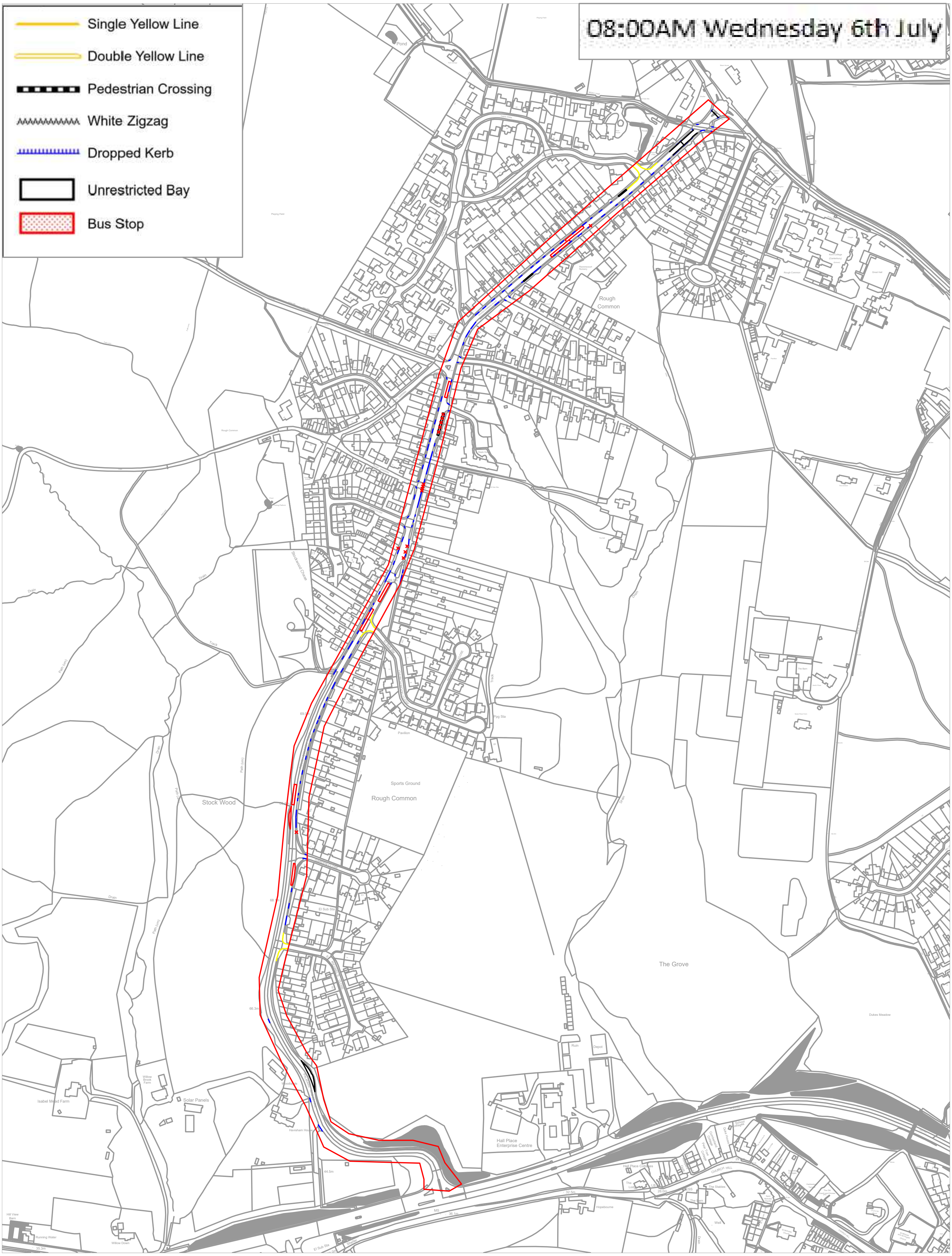
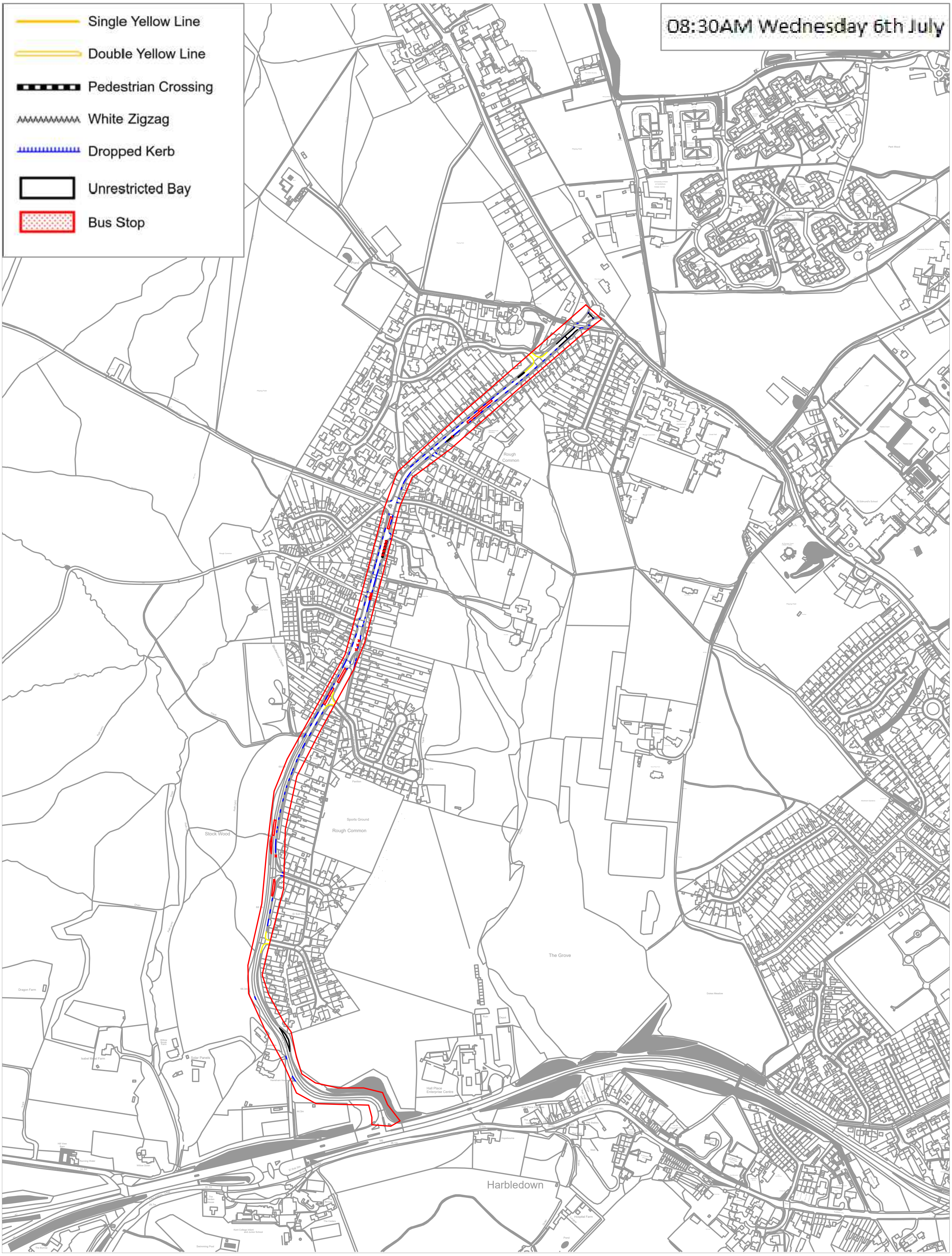
Double Yellow Line
Pedestrian Crossing
White Zigzag
Dropped Kerb
Unrestricted Bay
Bus Stop
Pond
Rough Common
Stock Wood
Pavilion
Sports Ground
Rough Common
The Grove
Solar Panels
Hall Place Enterprise Centre



Single Yellow Line
Double Yellow Line
Pedestrian Crossing
White Zigzag
Dropped Kerb
Unrestricted Bay
Bus Stop
08:00AM Wednesday 6th July
Rough Common
Sports Ground
Rough Common
Stock Wood
The Grove
Hall Place Enterprise Centre
Pond
Pavilion
Solar Panels
Isabel Mead Farm



Single Yellow Line
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Pedestrian Crossing
White Zigzag
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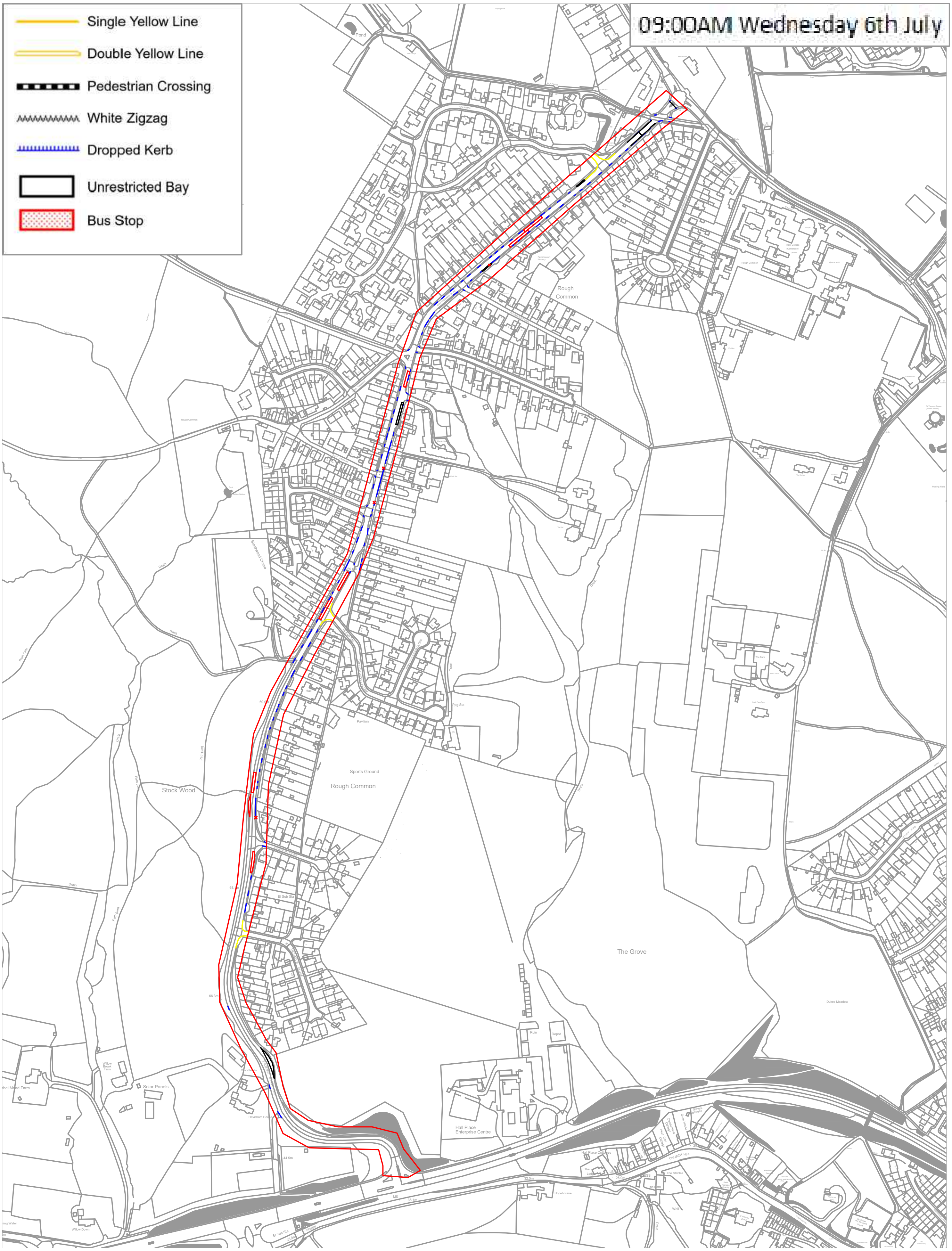
Bus Stop
08:30AM Wednesday 6th July
Rough Common
Sports Ground
Rough Common
Stock Wood
The Grove
Harbledown


09:00AM Wednesday 6th July
Single Yellow Line
Double Yellow Line
Pedestrian Crossing
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Unrestricted Bay
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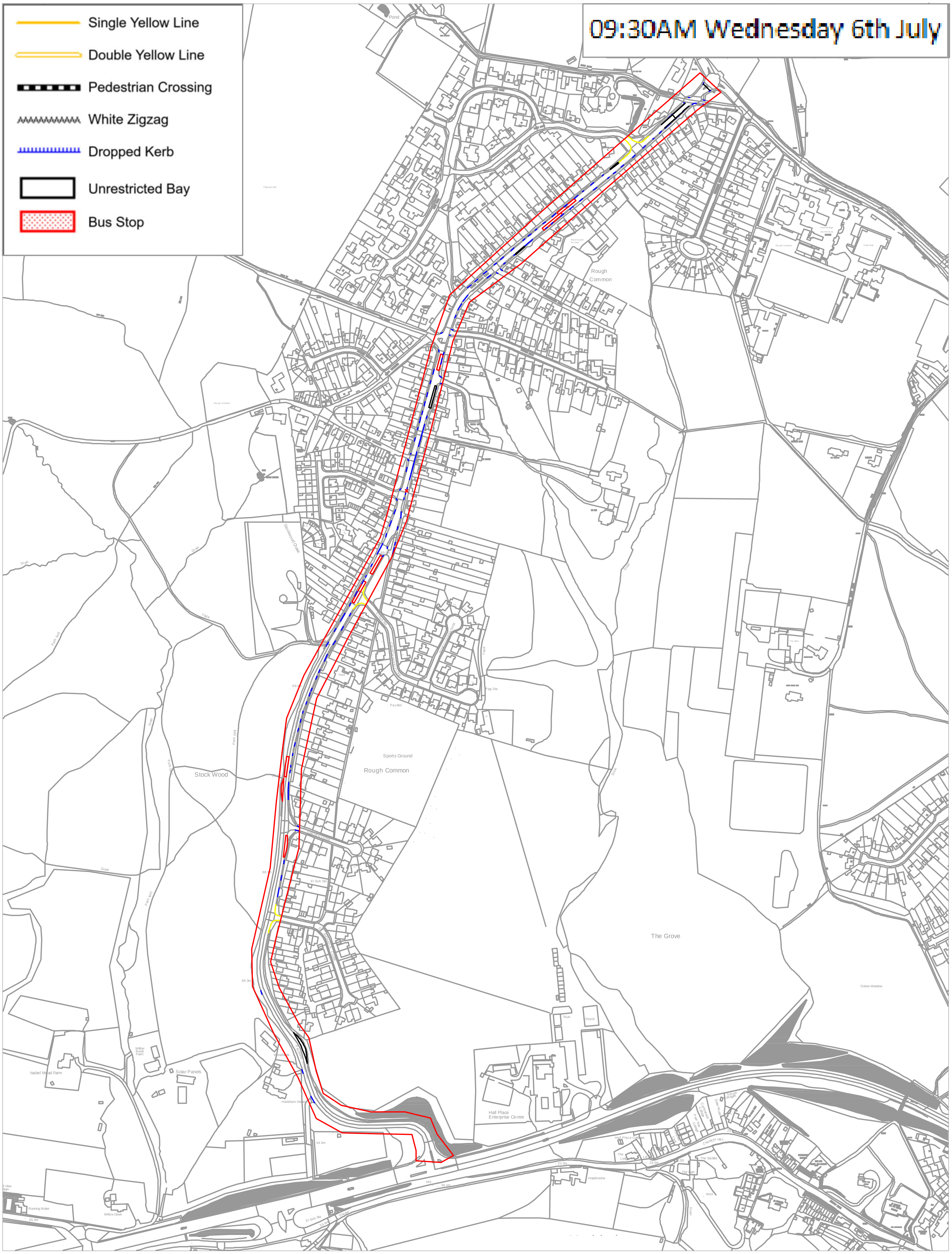
Sports Ground
Rough Common
The Grove
Hall Place Enterprise Centre
Solar Panels



Single Yellow Line
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Pedestrian Crossing
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Bus Stop
09:30AM Wednesday 6th July
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Sports Ground
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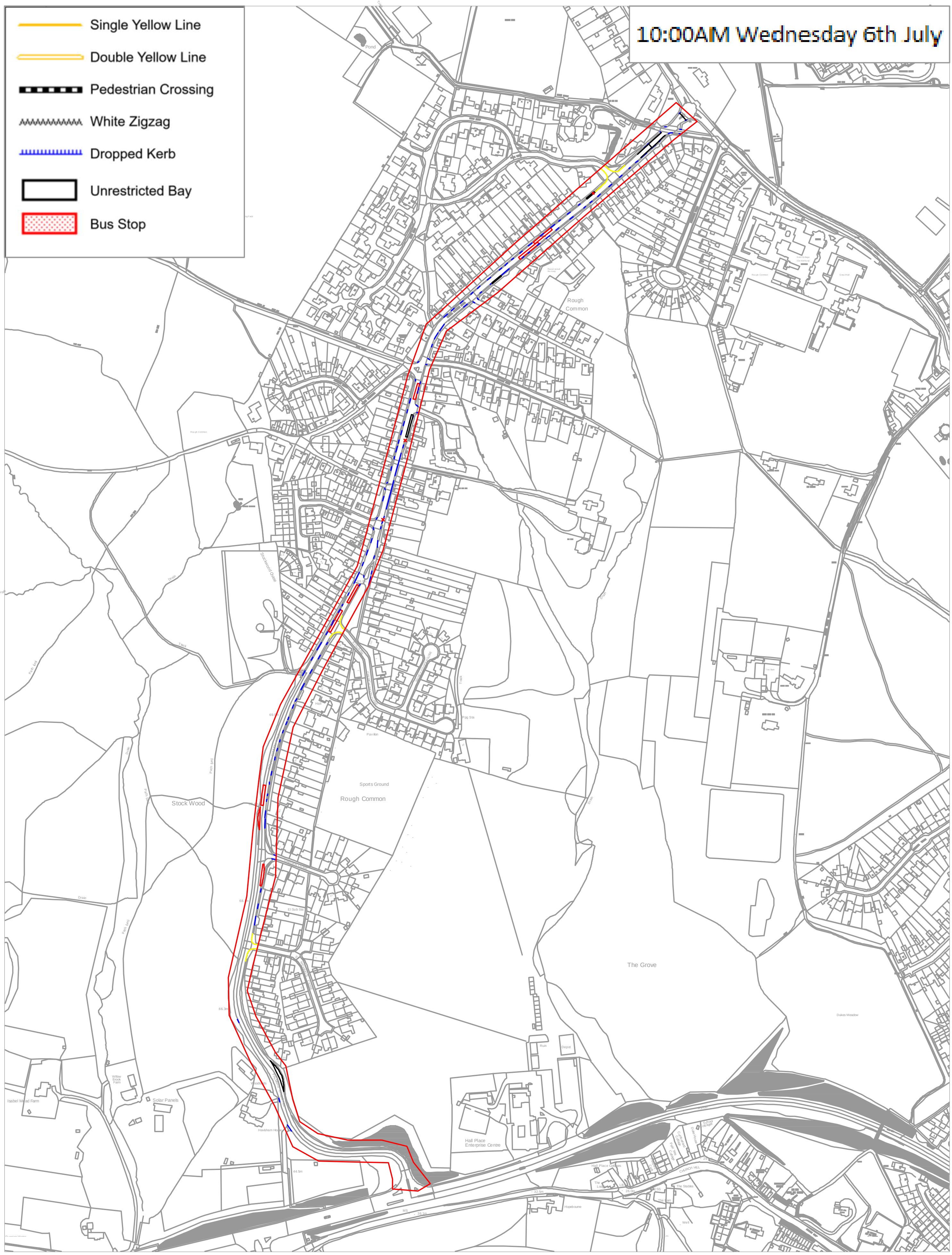
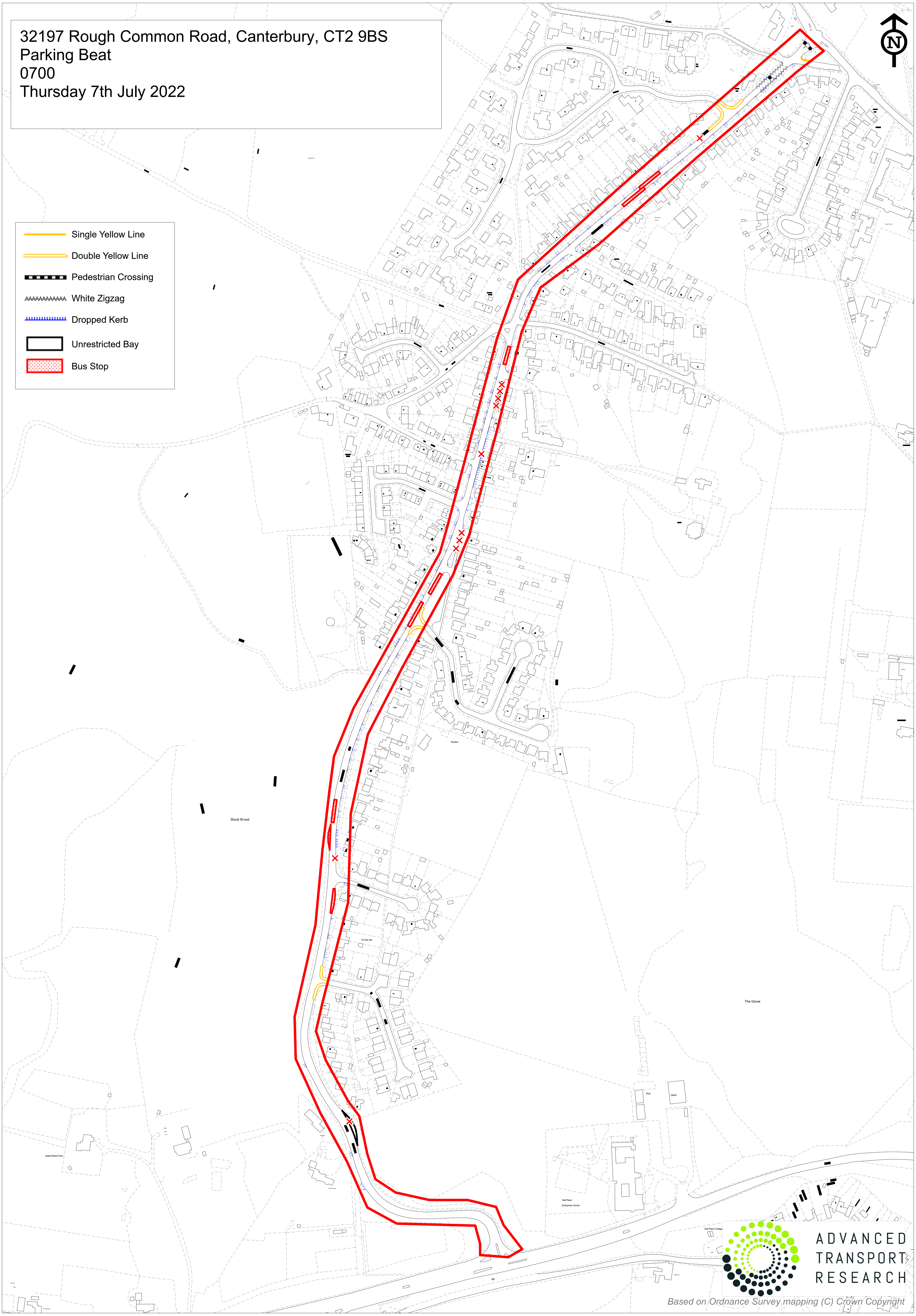
The Grove
Hall Place Enterprise Centre
Isabel Mead Farm
Solar Panels


Single Yellow Line
Double Yellow Line
Pedestrian Crossing
White Zigzag
Dropped Kerb
Unrestricted Bay
Bus Stop
10:00AM Wednesday 6th July
Rough Common
Stock Wood
Sports Ground
Rough Common
The Grove
Hall Place Enterprise Centre
Solar Panels
Pond

32197 Rough Common Road, Canterbury, CT2 9BS
Parking Beat
0700
Thursday 7th July 2022



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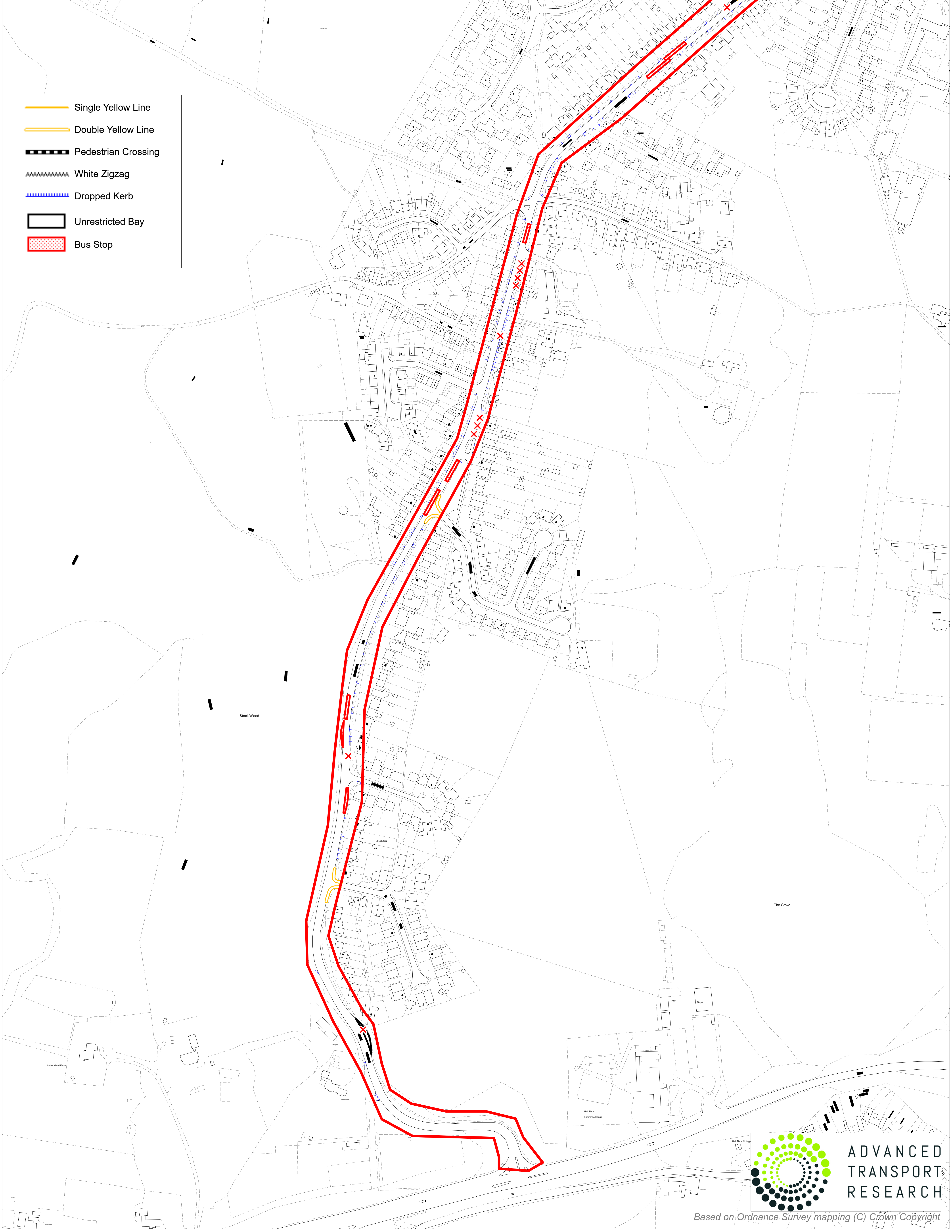

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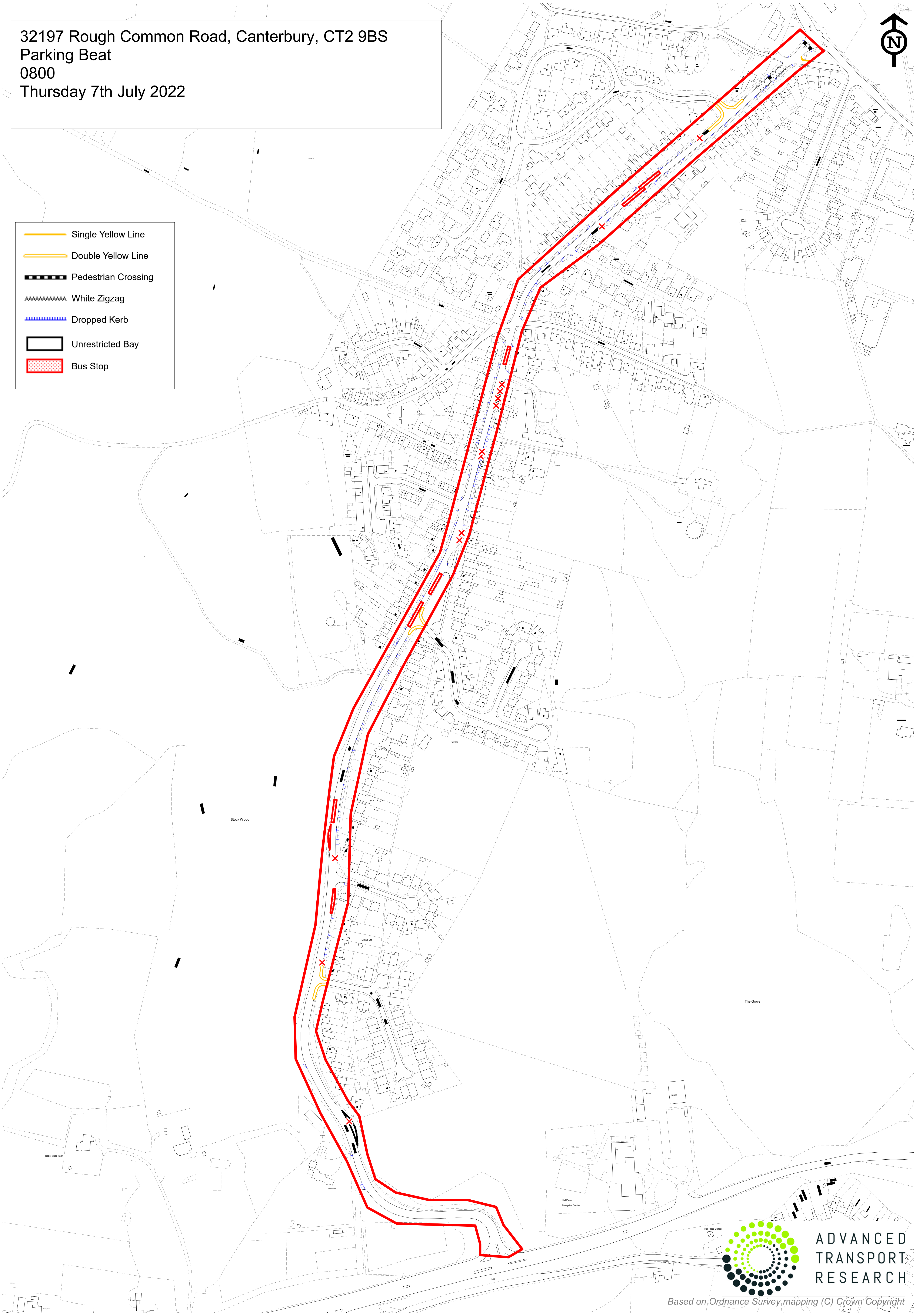

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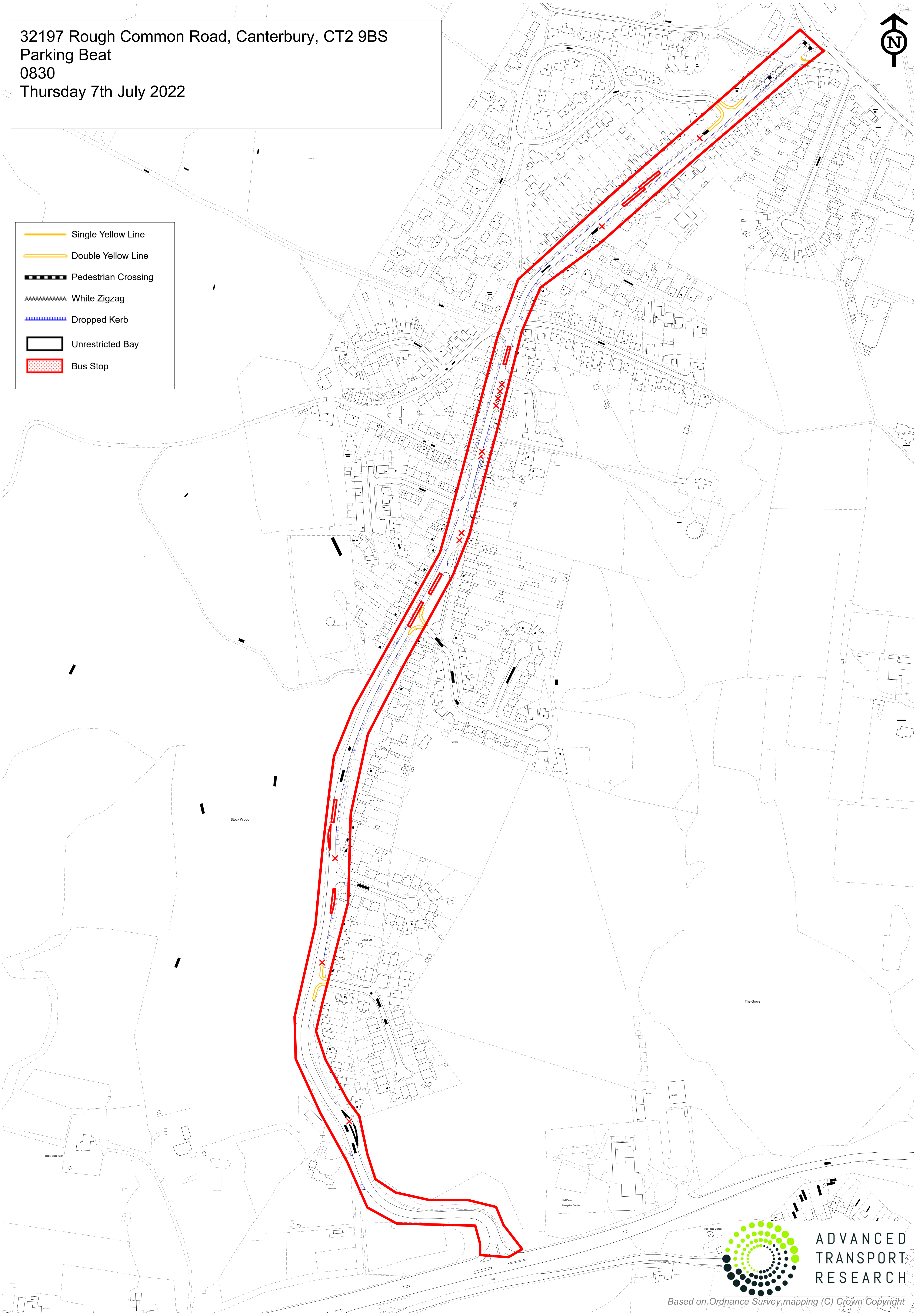

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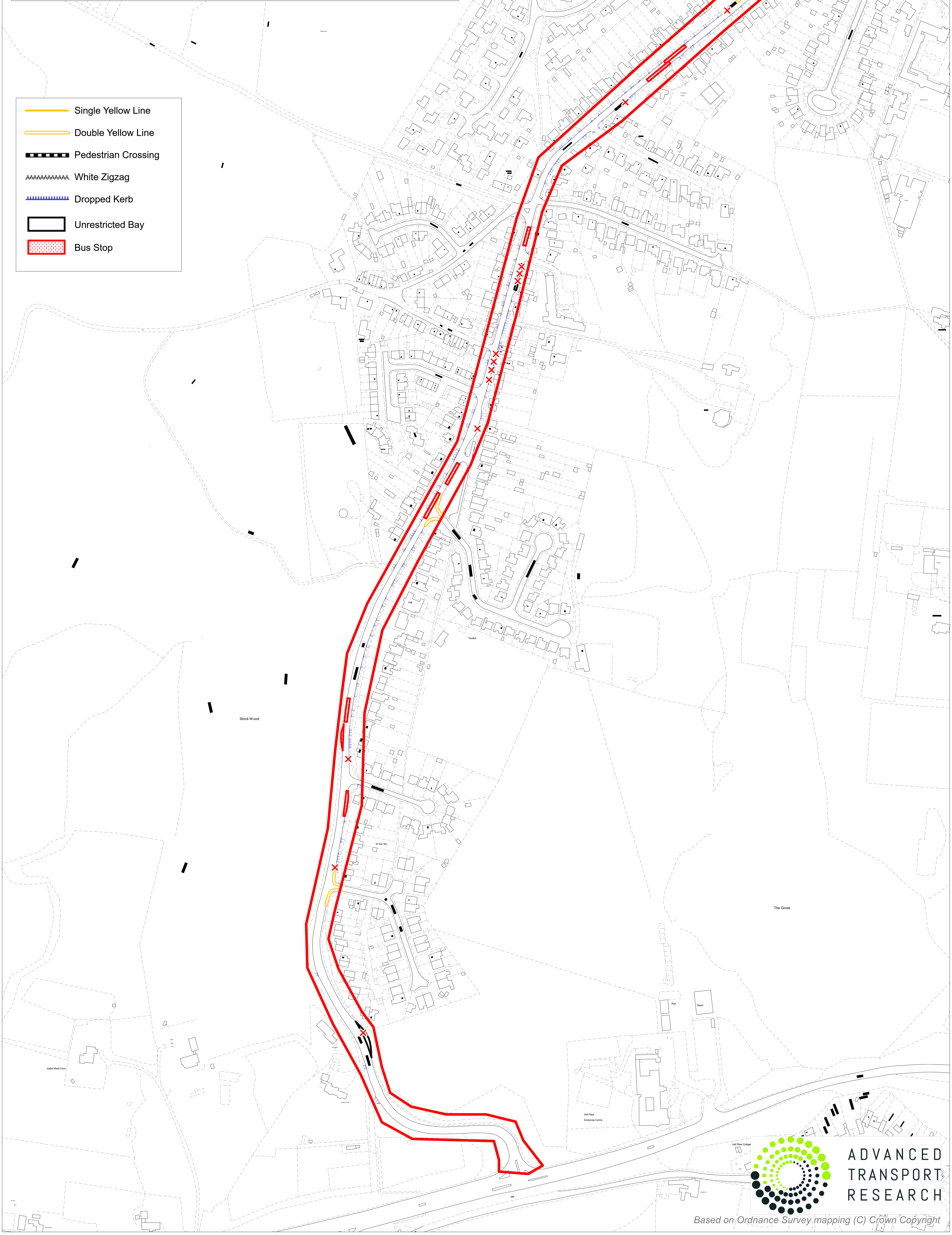

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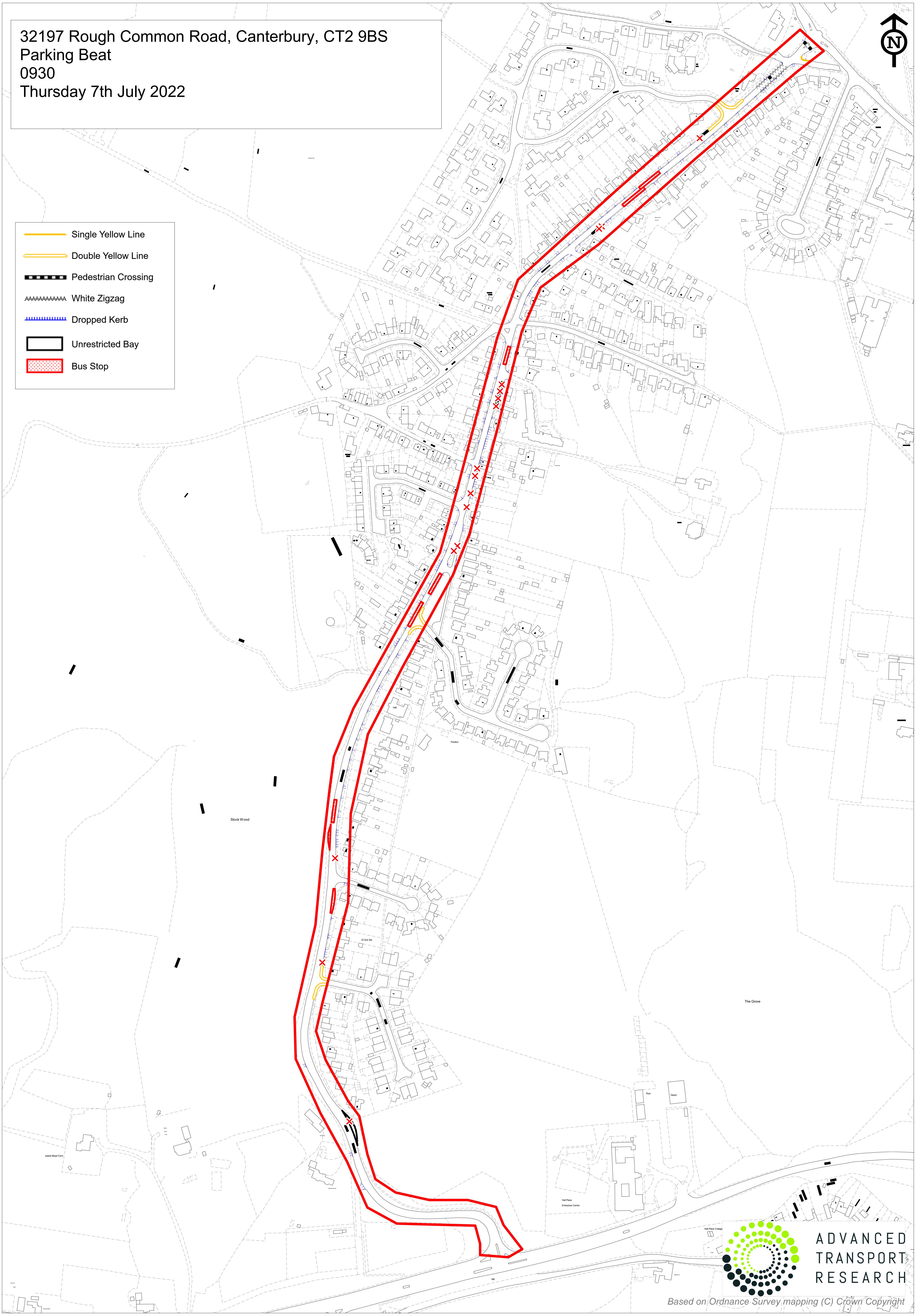

- Single Yellow Line
- Double Yellow Line
- Pedestrian Crossing
- White Zigzag
- Dropped Kerb
- Unrestricted Bay
- Bus Stop

ADVANCED TRANSPORT RESEARCH

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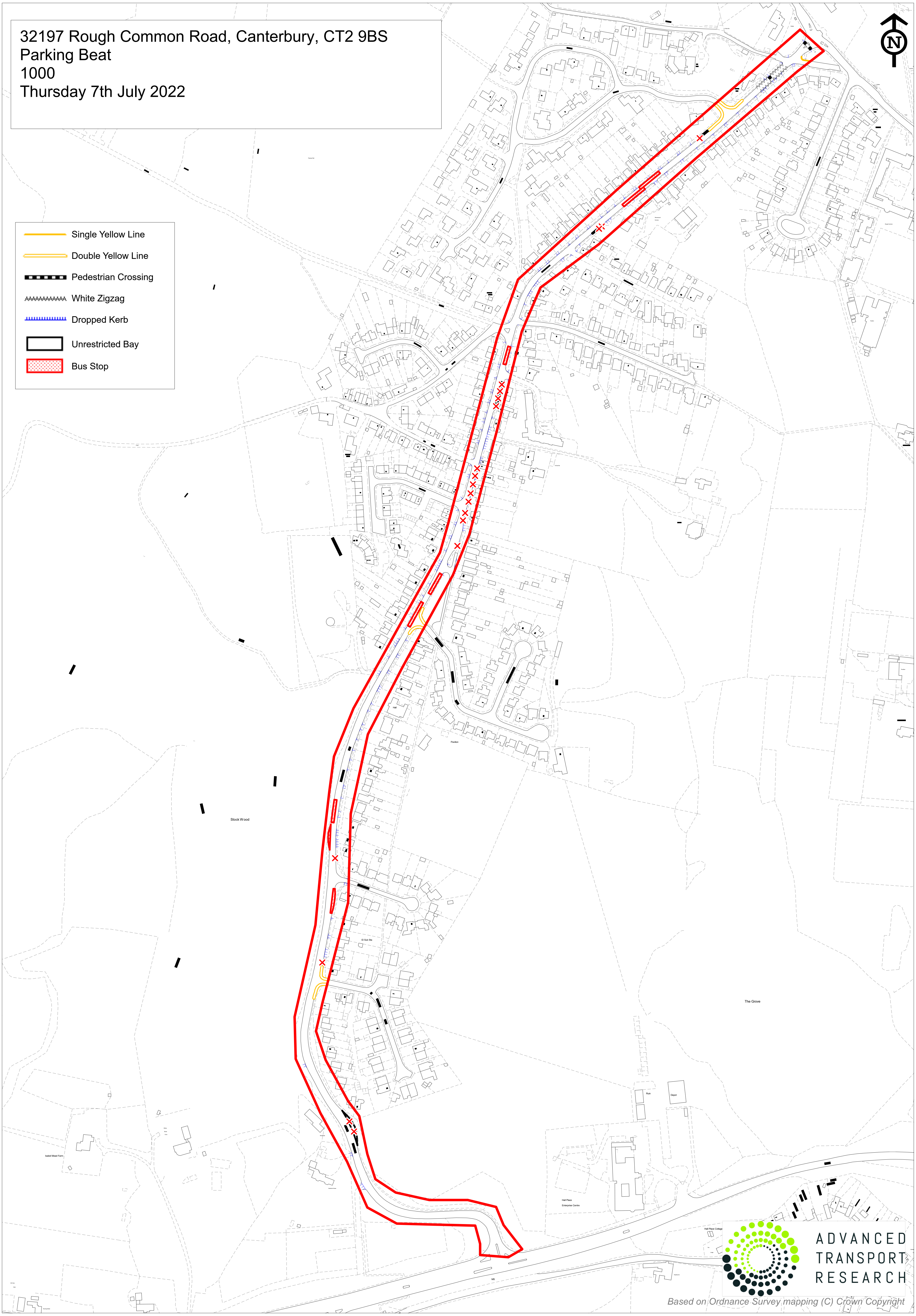

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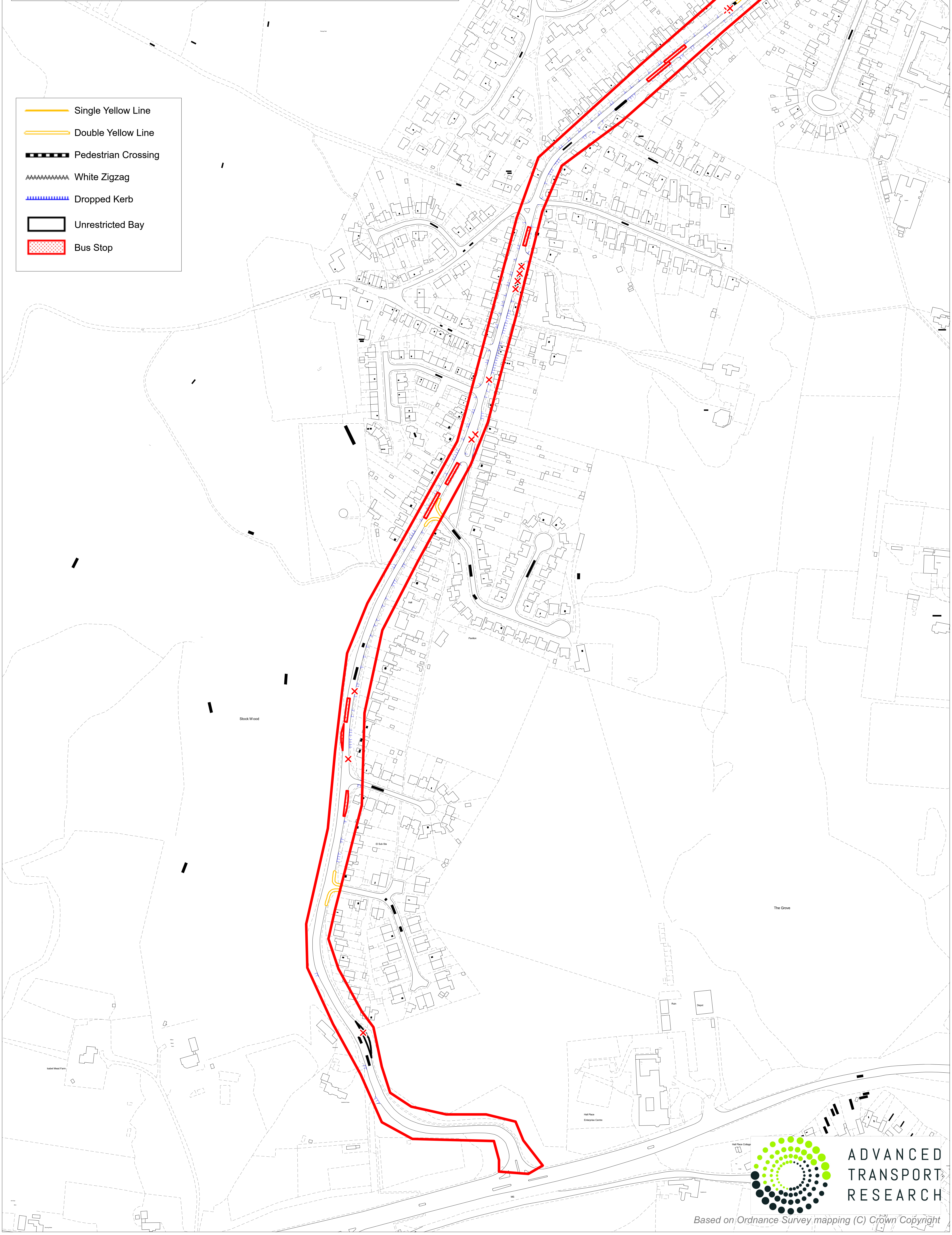

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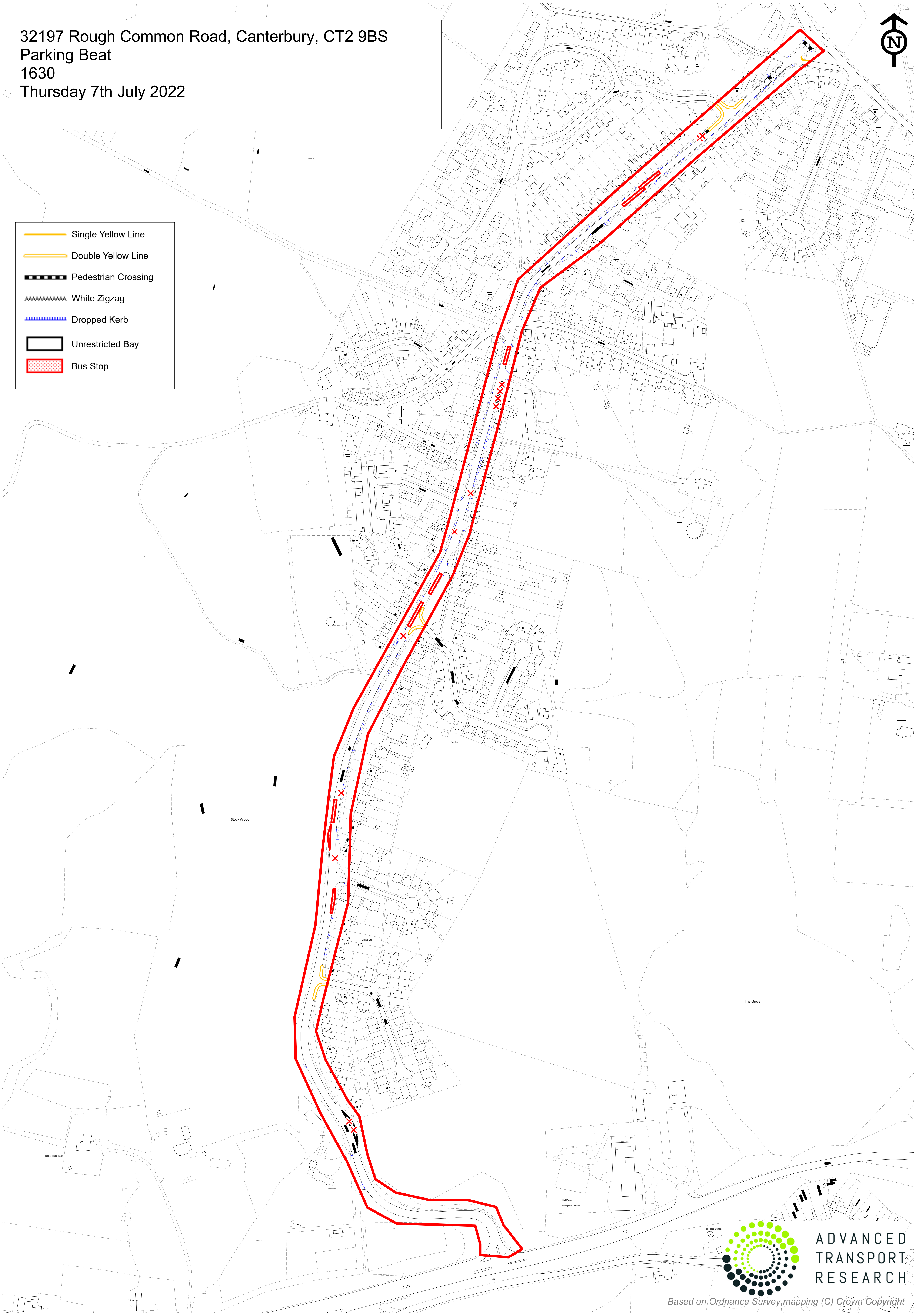

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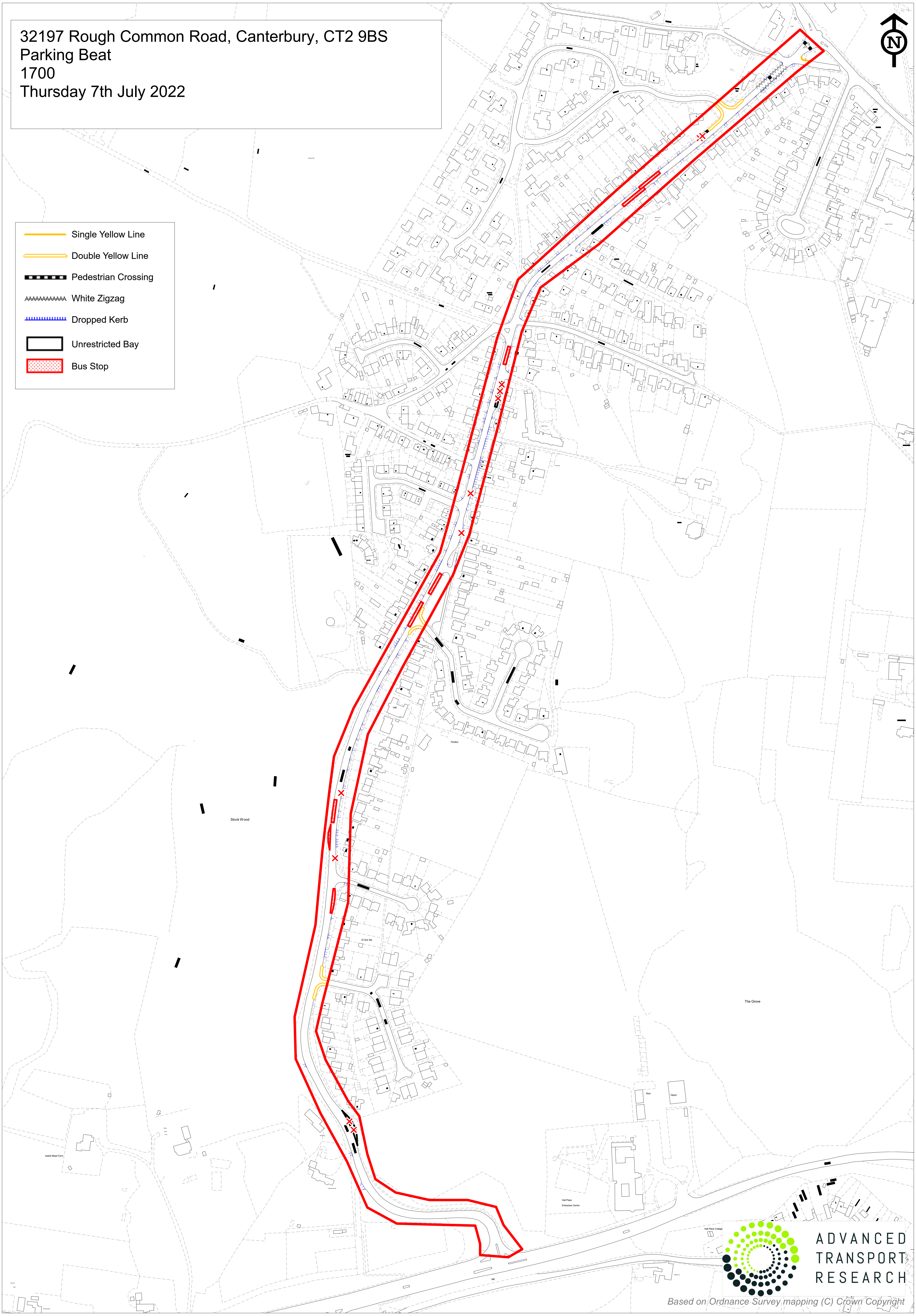

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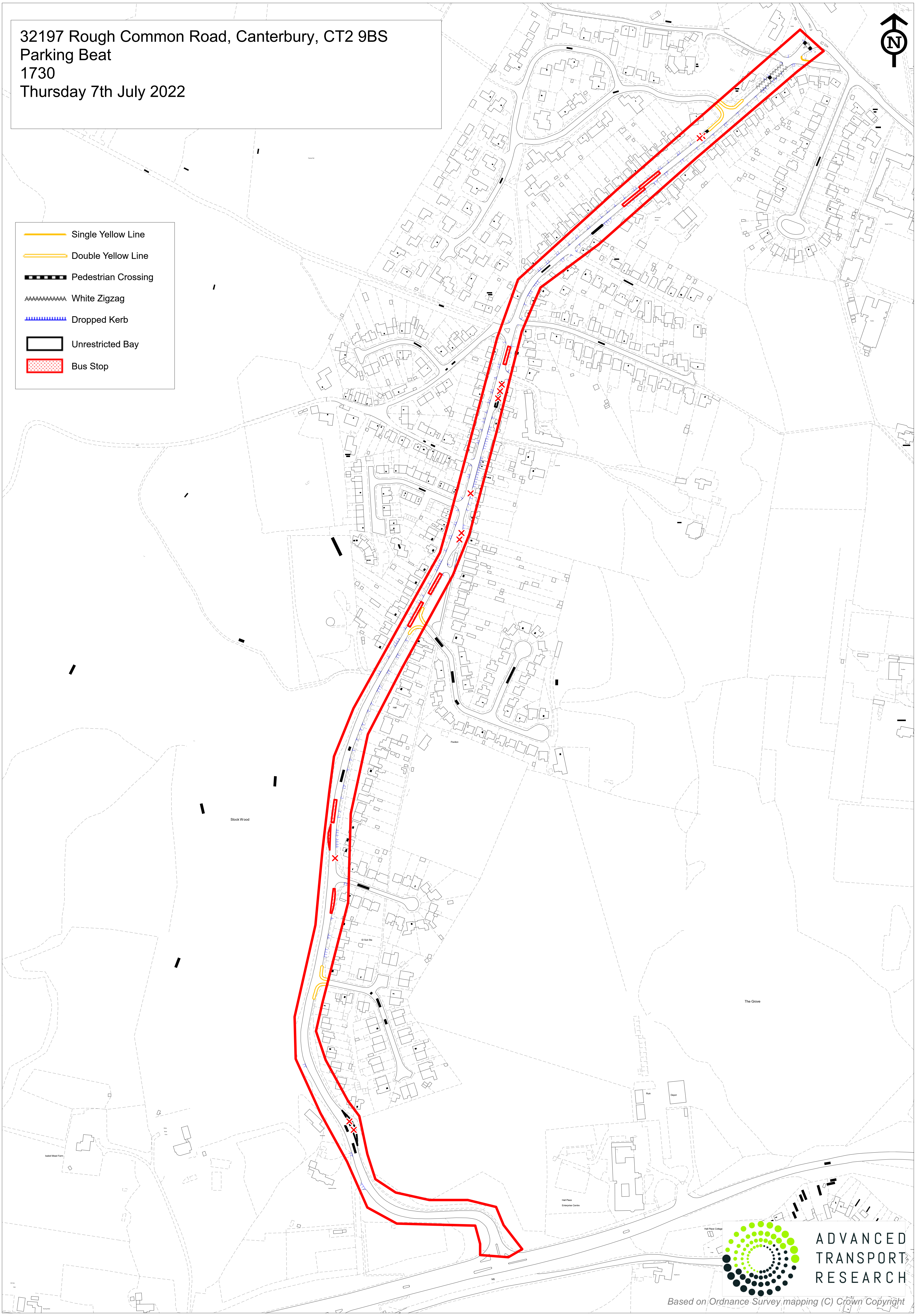

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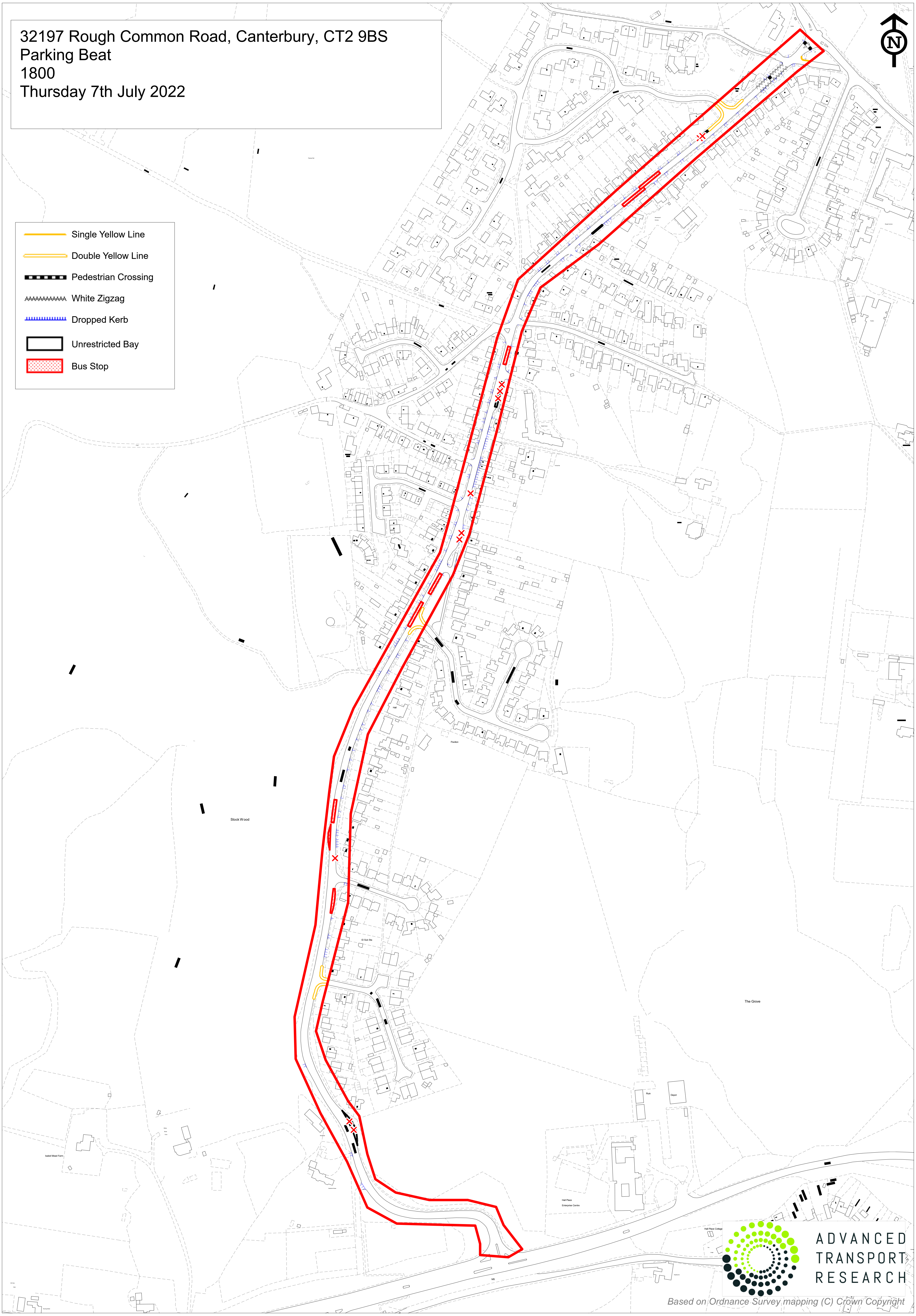

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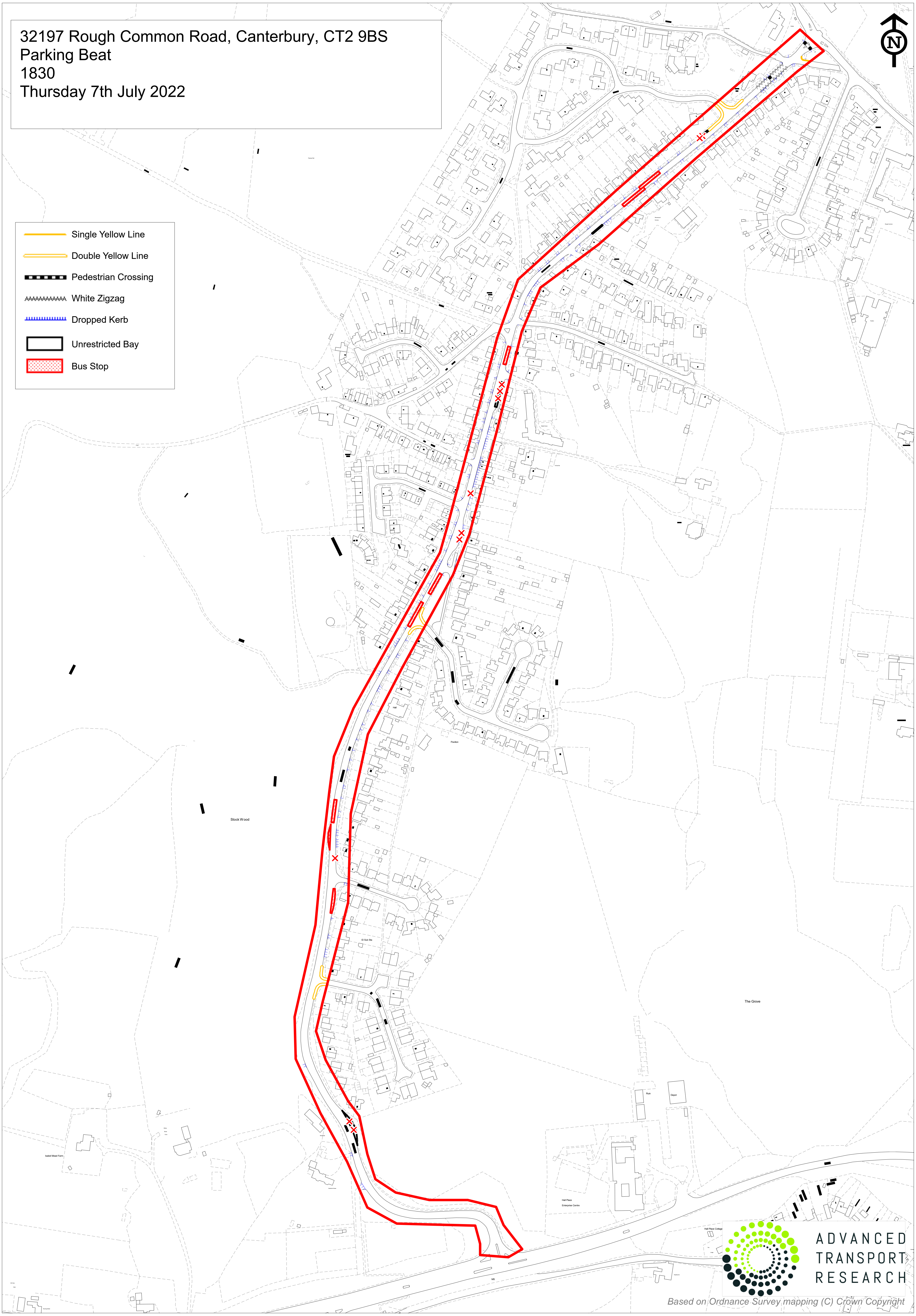

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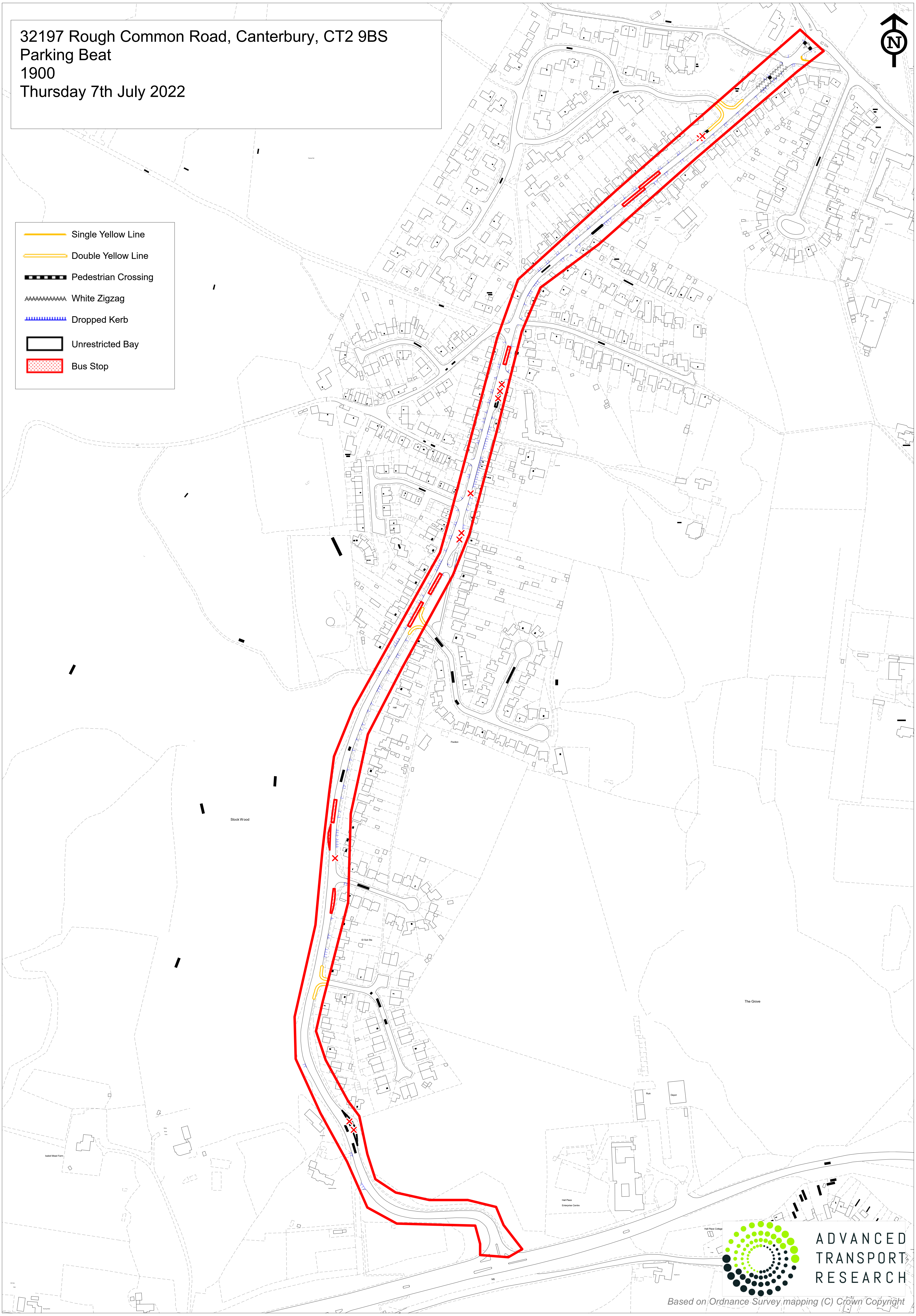

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Cross Lanes
Guildford, Surrey
GU1 1UN

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Appendix D

2023 Transport Strategy Summary

University of Kent Transport Strategy Summary

DATE:	20 November 2023	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent Canterbury Disposal Sites BCD: Transport Strategy Summary		
PROJECT:	70080896	**AUTHOR:**	Gideon Gasinu
CHECKED:	David Dixon	**APPROVED:**	Justin Sherlock

1. INTRODUCTION

1.1 INTRODUCTION

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.

This Transport Strategy Note (TSN) has been prepared to provide a summary of the transport strategy for the Proposed Allocation site referred to as Sites BCD and how this aligns with the work that is understood to have been commissioned by Canterbury City Council (CCC) to deliver a public transport led transport strategy for the Local Plan.

1.2 BACKGROUND

UoK originally submitted representations in support of an allocation for Sites BCD to (CCC) in August 2021 as part of the preferred options Local Plan Consultation. Included as part of this submission was a Transport Strategy[1] that identified how land to the north of the University's Campus could be unlocked to facilitate a residential led new community.

Kent County Council (KCC), as highway authority reviewed the Transport Strategy and requested further information regarding the likely impacts of the Proposed Development on the transport network with a focus on likely highway impacts.

To understand the deliverability of the Proposed Development a Preliminary Transport Appraisal (PTA)[2] was prepared and submitted to KCC in February 2022. Following feedback from KCC the PTA was updated to include the outputs from a micro-simulation model developed for the road network immediately surrounding the site which was submitted in January 2023[3].

The PTA demonstrated that the Proposed Development sites benefit from access by a range of modes of transport and provisional strategies for access by sustainable modes would deliver a sustainable development which would benefit from the critical mass afforded by the neighbouring University Campus.

[1] University of Kent, Canterbury Campus: Transport Strategy August 2021
[2] University of Kent, Preliminary Transport Appraisal: Disposal Sites BCD, February 2022
[3] University of Kent, Preliminary Transport Appraisal: Disposal Site BCD, January 2023

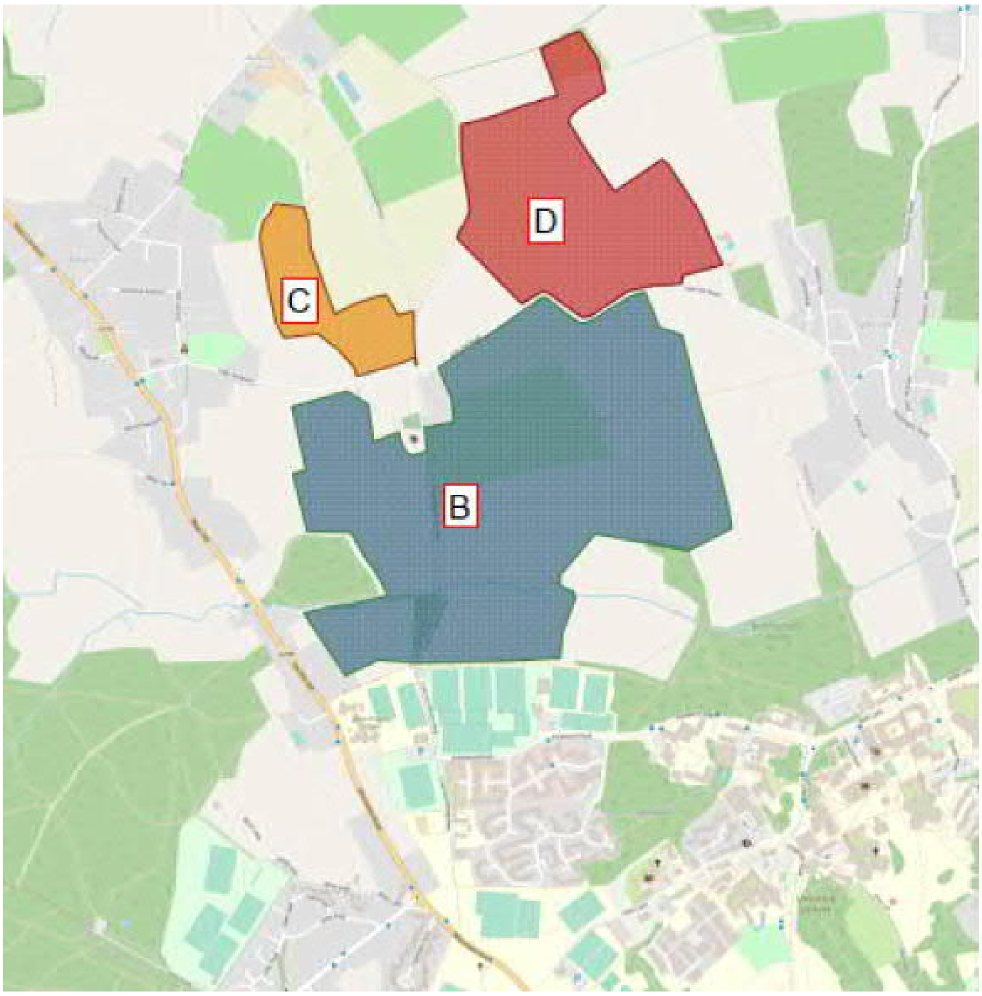
2 THE DEVELOPMENT SITES

2.1 SITE LOCATION

The UoK Canterbury Campus is located to the north of the centre of Canterbury on the urban fringe of the City, covering an area of approximately 92 hectares.

The location of Sites BCD in the context of the wider transport network is shown in **Figure2-1**.

Figure 2-1 - UoK Disposal Sites BCD Site Location



2.2 ACCESSIBILITY APPRAISAL

PEDESTRIAN CONNECTIVITY

The area benefits from a network of footways, bridleways, byways and shared use routes which provide pedestrian connectivity to the University and across the wider area.

Footpath CB24A (The Crab and Winkle Way) provides a strategic walking connection between Canterbury in the south and Whitstable in the north via the University campus. In the vicinity of Sites BCD the Crab and Winkle Way consists of a dedicated off-road shared use pedestrian and cycle route. To the south the route joins with Whitstable Road where an off-road pedestrian/cycle route is provided adjacent to the carriageway before it joins the main carriageway and footway provision into the City Centre. To the north the route continues via farmland to Site B before reaching Tyler Hill Road and connecting with the boundary of Site C via a byway and footpath.

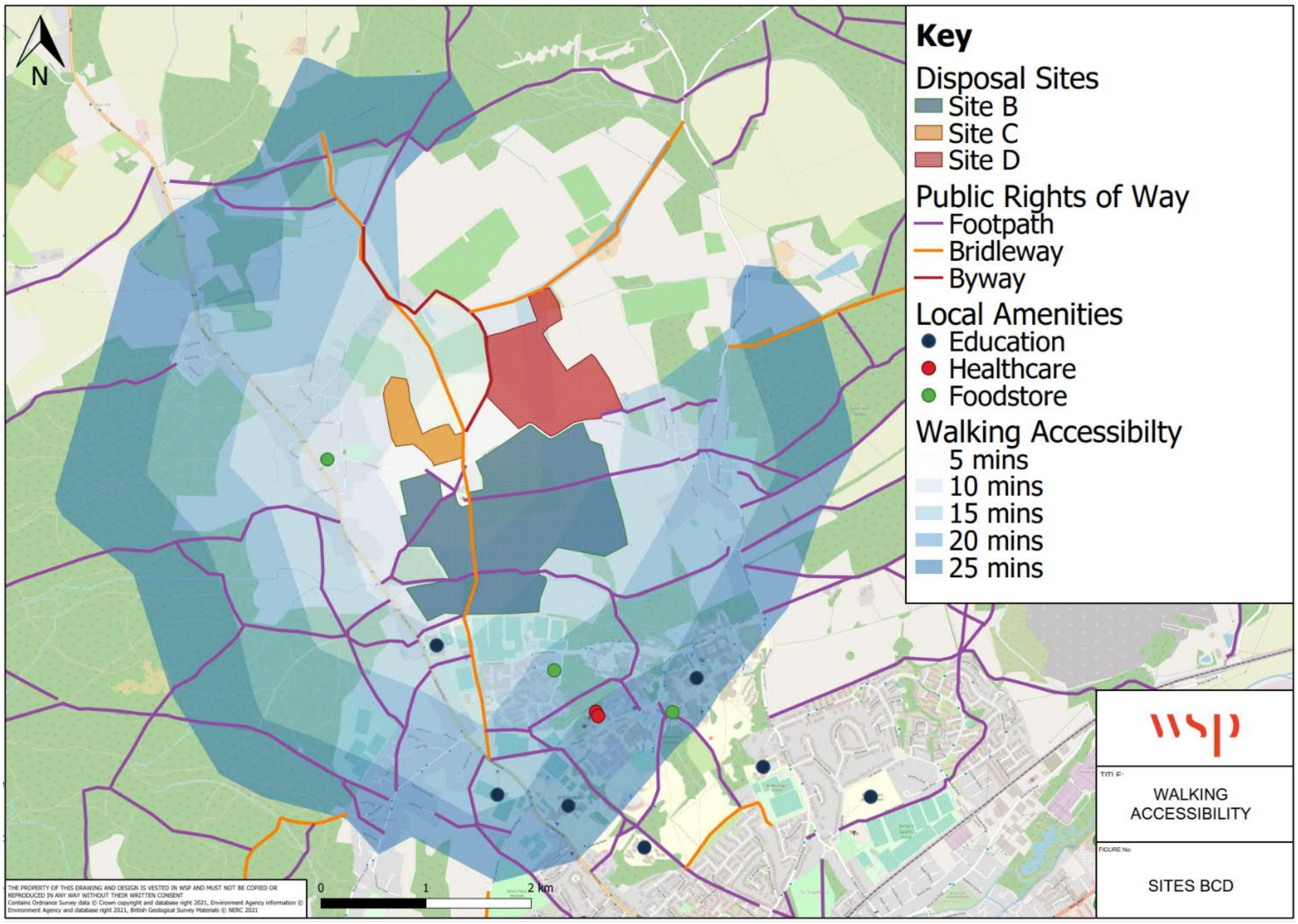
Site D is bound in the west by byway CB27 and in the north by bridleway CB24.

Between the Campus and the Sites are further connections to the wider area via various footpaths and byways including CB12 (follows the alignment of the watercourse and connects to Blean in the west), CB13 (connects into the University Campus and Giles Lane), CB14 (runs east west between Tyler Hill Road and Tyler Hill), CB27 and CB16 (which form part of the Crab and Winkle Way) and CB18A (boarders Site C to the north and connects with Blean in the west).

The location of the site, within a rural area means that a number of the PROWs connecting with the site are off-road and unsurfaced however the Crab and Winkle Way provides a high-quality paved route for both pedestrians and cyclists which connects with the University Campus and wider City.

The pedestrian network in the vicinity of the site along with local amenities are shown in **Figure 2-2**. Regarding amenities accessible by walking, Tyler Hill, Blean, the University Campus and much of northern Canterbury is accessible within a two-kilometre distance (equivalent to a 25 minute walk) where a range of amenities are accessible.

Figure 2-2 - Sites BCD Pedestrian Isochrone

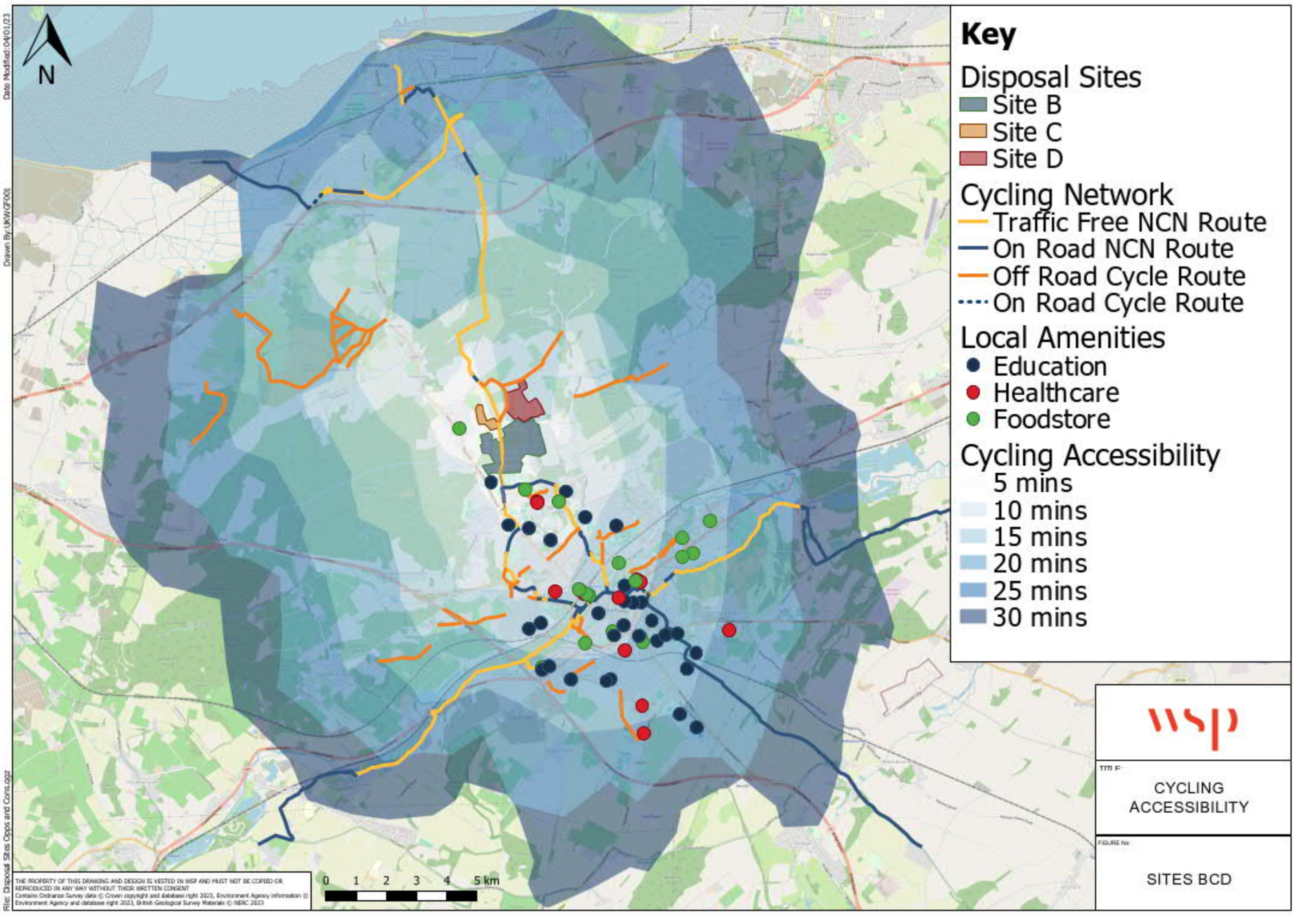


CYCLE CONNECTIVITY

The National Cycle Network (NCN) Route 1 runs along the Crab and Winkle Way and provides a north-south connection part on carriageway and part traffic free through the University Campus and Site B, and bounds Site C to the east. In addition to the NCN route, there are several off-road cycle routes that run through the University Campus east to west.

The cycle network in the vicinity of the site along with isochrones measured from the edge of the site are shown in **Figure 2-3**.

Figure 2-3 - Sites BCD Cycling Isochrone



As demonstrated in **Figure 2-3**, the connectivity of the cycle network is such that the whole of Canterbury and areas to the north including Whitstable are all accessible within a five-mile (30 minute) cycle of Sites BCD.

The sites are located within a maximum 25 minutes cycling of a range of amenities and facilities including schools, convenience retail and healthcare.

PUBLIC TRANSPORT

The University Campus and surrounding land benefits from access to a range of public transport services that primarily connect the University with wider Canterbury and destinations further afield.

BUS SERVICES

Figure 2-4 illustrates the bus stops and bus routes that are accessible from the bus stops in the vicinity of the University Campus and surrounding area.

Figure 2-4 – Local Bus Stops and Routes

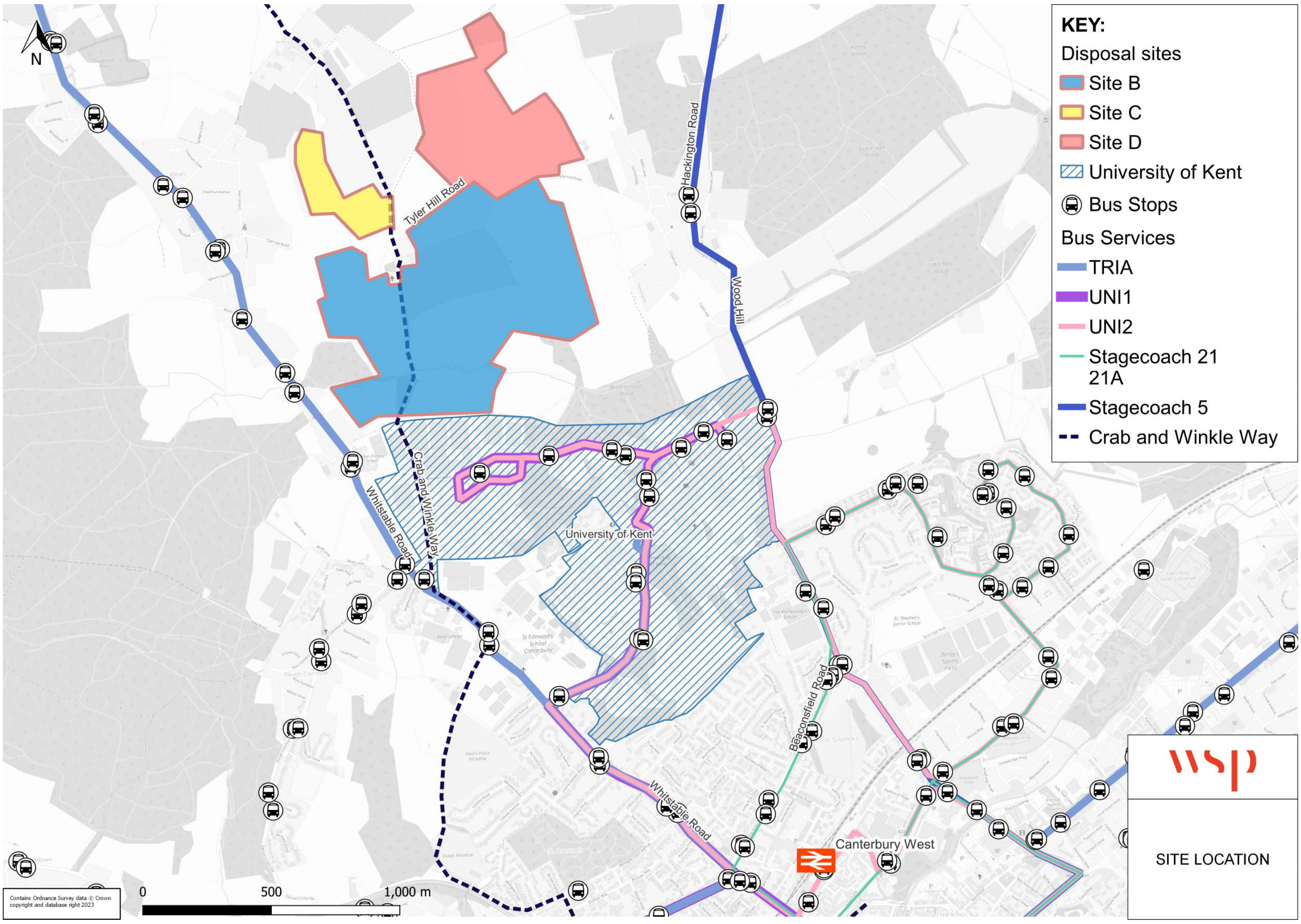


Figure 2-4 demonstrates that the University is served directly by four bus services whilst further services are accessible from both Whitstable Road in the west and St Stephen's Hill in the east.

Table 2-1 provides a summary of the bus services accessible from the University Campus, Whitstable Road and St Stephen's Hill that could be utilised by users of Sites BCD.

Table 2-1 - Bus Services in the Vicinity of the Sites

Bus Service	Route	First Bus	Last Bus	Frequency			Nearest Bus Bus Stop
				Mon - Fri	Sat	Sun	
5	Canterbury – Chestfield – Whitstable - Seasalter	06:33	20:09	Hourly	Hourly	2 hours	University of Kent Alcroft Grange
21/21A	City Centre - St. Dunstan's - Hales Place - City Centre	07:10	22:35	20 minutes	20 minutes	Hourly	Hales Place, Downs Road
UNI1	University of Kent – Westgate Towers - Canterbury-City Centre	08:27	18:27	10 minutes	20 minutes	Hourly	University of Kent, Keynes College (Stop A)
UNI2	Canterbury – Westgate Towers - University of Kent – Hales Palace	09:05	04:10	Hourly	Hourly	N/A	University of Kent, Park Wood
TRIA	Canterbury – Whitstable – Herne Bay	05:20	23:15	15 minutes	20 minutes	20 minutes	University of Kent, Keynes College (Stop A)

Table 2-1 demonstrates that a range of services are available in the area surrounding the sites that operate on a range of frequencies up to every 15 minutes. Key destinations served include Canterbury City Centre, Canterbury West Railway Station, Sittingbourne, Whitstable and Herne Bay.

RAIL SERVICES

Canterbury West Railway Station is located approximately 3.7 km from the centre of Sites BCD. Canterbury West Railway Station is located beyond a reasonable walking distance but could reasonably be accessed by bicycle.

Tables 2-2, Table 2-3 and **Table 2-4** provide details of the rail services from Canterbury West Station from Monday to Friday and Saturday and Sunday respectively. All timings are from Canterbury West Station.

Table 2-2- Rail Services (Monday – Friday)

Direct Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West – London Charing Cross	06:29	20:37	30 minutes	108 minutes
Margate – Canterbury West – London St Pancras	05:17	22:23	Hourly	54 minutes
Canterbury to Ashford International	05:17	23:23	Hourly	15 minutes

Table 2-3- Rail Services (Saturday)

Direct Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West – London Charing Cross	06:12	21:37	30 minutes	108 minutes
Margate – Canterbury West – London St Pancras	05:20	22:23	Hourly	55 minutes
Canterbury to Ashford International	05:20	23:23	Hourly	15 minutes

Table 2-4- Rail Services (Sunday)

Direct Service	First Train	Last Train	Frequency	Journey Time
Ramsgate – Canterbury West – London Charing Cross	08:37	21:37	30 minutes	111 minutes
Margate – Canterbury West – London St Pancras	07:24	22:23	Hourly	55 minutes
Canterbury to Ashford International	07:24	23:23	Hourly	15 minutes

Tables 2-2, Table 2-3 and **Table 2-4** demonstrate that Canterbury West Station provides train services to a range of locations including Margate, Ramsgate, London Charing Cross, London St Pancras and Ashford International.

Though Canterbury West Railway Station is located beyond a reasonable walking distance it could reasonably be accessed by bicycle. Space for 134 cycles is provided at the station. The railway station is also accessible by bus from the University Campus.

HIGHWAY NETWORK

The highway network surrounding Sites BCD comprises of a series of radial routes that converge on Canterbury City Centre located to the south.

The radial routes comprise of the following key links:

- West: A290 follows a north-south alignment providing direct connections to the settlements of Herne Bay and Whitstable in the north via Blean and Honey Hill and the City Centre in the south.

- East St Stephen's Hill/Canterbury Hill/Hackington Road also follows a north-south alignment providing direct connections to Chestfield, Herne Bay and Whitstable in the north via Tyler Hill and Radfall and the City Centre in the south.
- South-west, Rough Common Road follows an east-west alignment providing connections to the A2 (which links the M2 at the north and Temple Ewell and Dover at the south) and A 28 (connects to the M20 at the west and Birchington-on-Sea and Margate to the east).
- South-east the A28 provides links to Birchington-on-Sea and Margate to the east.
- To the south the A2050 connects to the A2 which provides connections further south.

As demonstrated above the proposed Sites are well placed to enjoy ample opportunities via local and strategic routes to key destinations near and further afield.

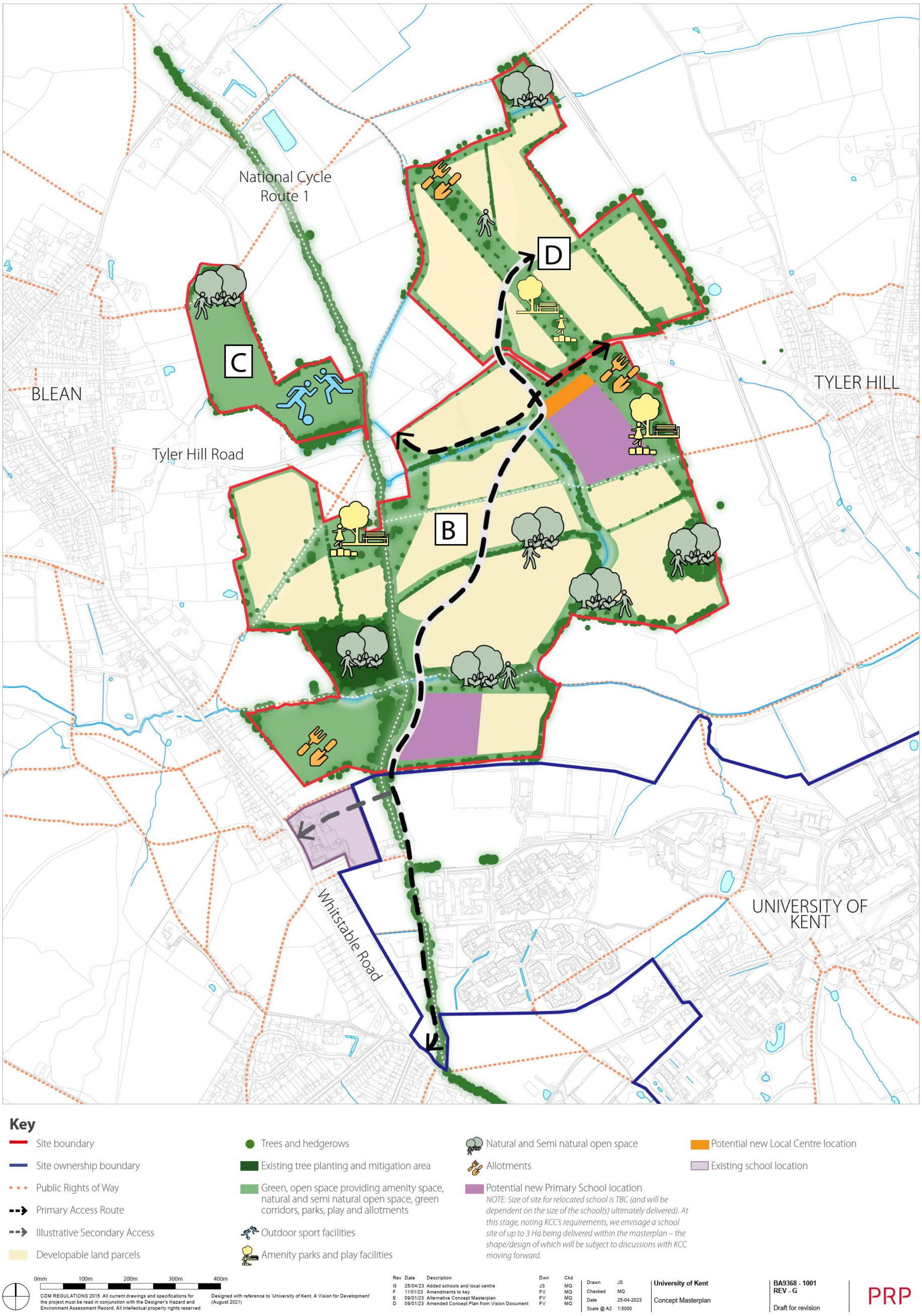
3. DEVELOPMENT PROPOSALS

Overview

Initial masterplanning optioneering indicated potential for approximately 2000 homes supported by a local centre (incorporating transport hub) and primary school to serve the new population on Sites BCD.

Figure 3-1 outlines the current emerging masterplan for Sites BCD.

Figure 3-1 - Emerging Masterplan Option (Source: PRP)



ACCESS STRATEGY

Vehicular Access

Tyler Hill Road

Tyler Hill Road is a key route connecting the sites with the wider highway network however it is currently not considered suitable to accommodate a significant increase in volumes of traffic due to its constrained width, land available within the highway boundary for improvement and multiple land ownerships fronting the highway which also limit potential for improvement.

Given the potential impact of locating a large-scale residential development either side of Tyler Hill Road, the access strategy for unlocking Sites BCD has focused on delivery of a new north-south route through the University Campus. Further proposals to downgrade Tyler Hill Road to manage and reduce movements from the proposed development or re-prioritising Tyler Hill Road as a sustainable transport link with improved crossing points are being considered.

A290

The initial primary point of access would be delivered onto Whitstable Road in the far south of the University Campus with a second point of access proposed via the Blean Primary School, which would be delivered at an appropriate point in the development's build out to provide additional permeability to the site.

PEDESTRIANS AND CYCLISTS

The following are proposed to ensure alternative routes for shorter distance trips than the private car can be achieved:

- Provision of local centre and primary school on site offering a range of amenities and facilities which will reduce the need to travel
- Provision of footways and cycleways on the key movement corridors into and out of the site
- Integration of the on-site provision with the Crab and Winkle Way and surrounding infrastructure
- Improvements to Public Rights of Way in the local area to enhance connectivity with local destinations such as Blean and Tyler Hill Road

EMERGING TRANSPORT STRATEGY

The last few years has witnessed a significant change to the transport environment. Changing travel trends have emerged, accelerated by the Covid Pandemic, which has resulted in a shift in the way people live and work. From a work perspective a more hybrid approach has emerged, mixing home and office type working. In addition, there has been significant growth in online retail.

The emergence of new technology is offering new opportunities for alternatives to the private car. Micro-mobility schemes, which offer a range of lightweight vehicles, such as e-scooters and e-bikes, overcome some of the traditional barriers to cycling by reducing the hindrance created by topography and distance and provide an alternative to the car and traditional public transport for shorter journeys.

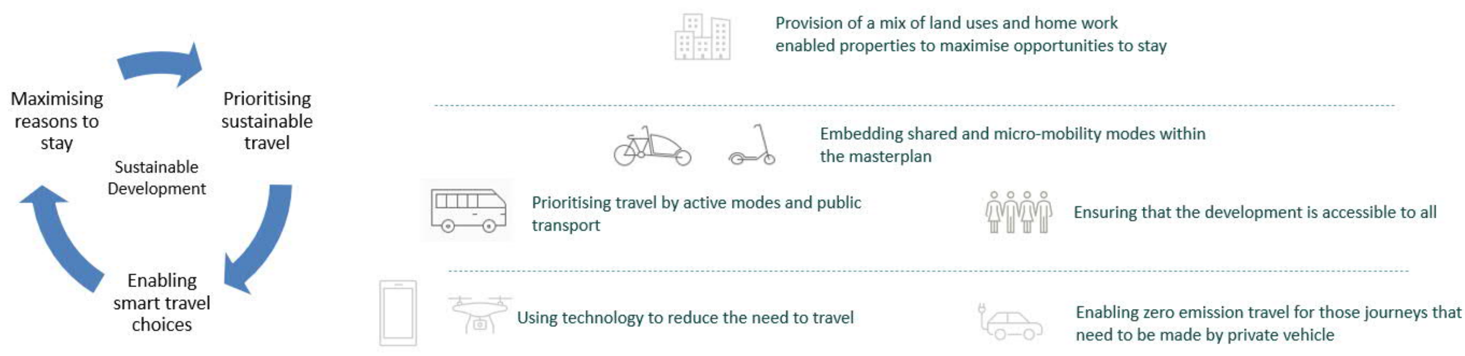
There has also been a relative shift towards low and zero emission vehicles, which has been further stimulated by changes within the new Building Regulations Part S.

As well as the above wider changes that have occurred, there are opportunities to explore other key areas which could facilitate a reduction in car ownership and private car usage. This includes, but is not limited to, the emergence of ride hailing services such as Uber and increasing development of autonomous vehicles and consolidation of deliveries.

The masterplan that has been developed for the UoK has sought to fully embrace these emerging technologies to create a sustainable development that is able to adapt to a changing environment and respond to a societal shift towards net zero. This approach is reflected in the transport strategy for the sites.

The Transport Strategy summarised in **Figure 3-2,** sets out some of the key transport principles that the masterplan will seek to achieve.

Figure 3-2 – Transport Priorities



PUBLIC TRANSPORT STRATEGY

A key principle of the transport strategy is the delivery of a transport hub on the development site to focus and provide access to a range of transport options, with the overarching aim of reducing reliance on the private car (**Figure 3-3**). A mobility hub can be understood as a 'place' or interchange providing different and connected transport modes supplemented with enhanced facilities to both attract and benefit the traveller. They are usually focussed around mass public transport (e.g. bus stops or rail station) and last mile mobility solutions (e.g. cycles). The transport hub would be located adjacent to the local centre and be complimentary to the uses within the local centre itself. Whilst the principle of a mobility hub (transport hub) is still evolving the key transport components of the facility would include:

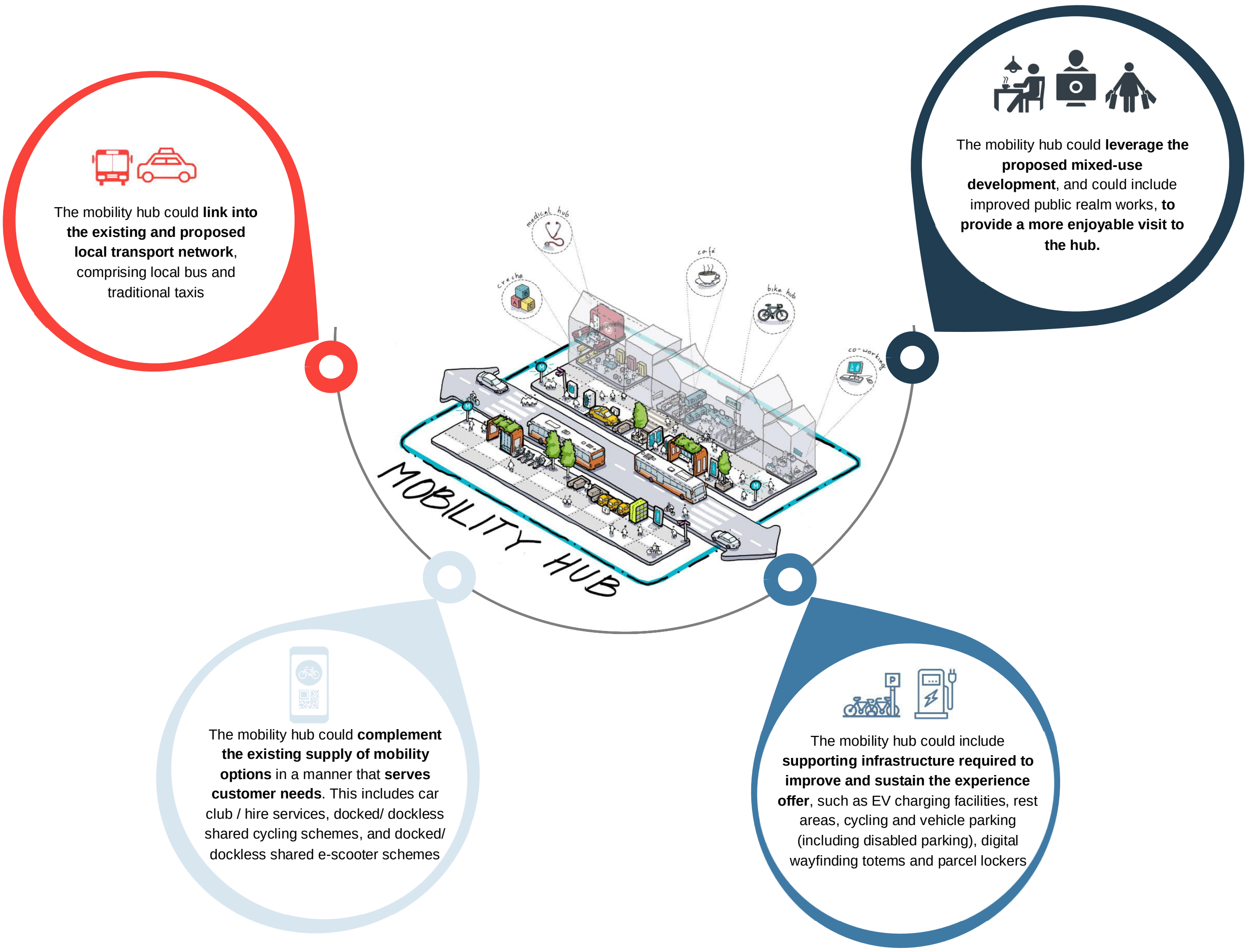
- Bus stop including access to real time passenger information
- Cycle parking to facilitate modal interchange including bike pump and repair facilities
- A focal point for ride sharing and hailing services (such as Uber)
- Car club spaces
- Micro-mobility (bike and scooter hire docking stations)
- Rapid electric vehicle charging

Complimentary facilities may include:

- Micro-consolidation facilities such as parcel lockers (e.g. Amazon lockers)
- Retail
- Digital services (real time public transport information, community news etc)

The deployment of mobility hubs has already started across the UK with proposals emerging in Manchester (Ancoates and New Islington) and incorporation within the new garden settlement at Otterpool near Folkestone in Kent.

Figure 3-3 – Illustration of Transport Hub



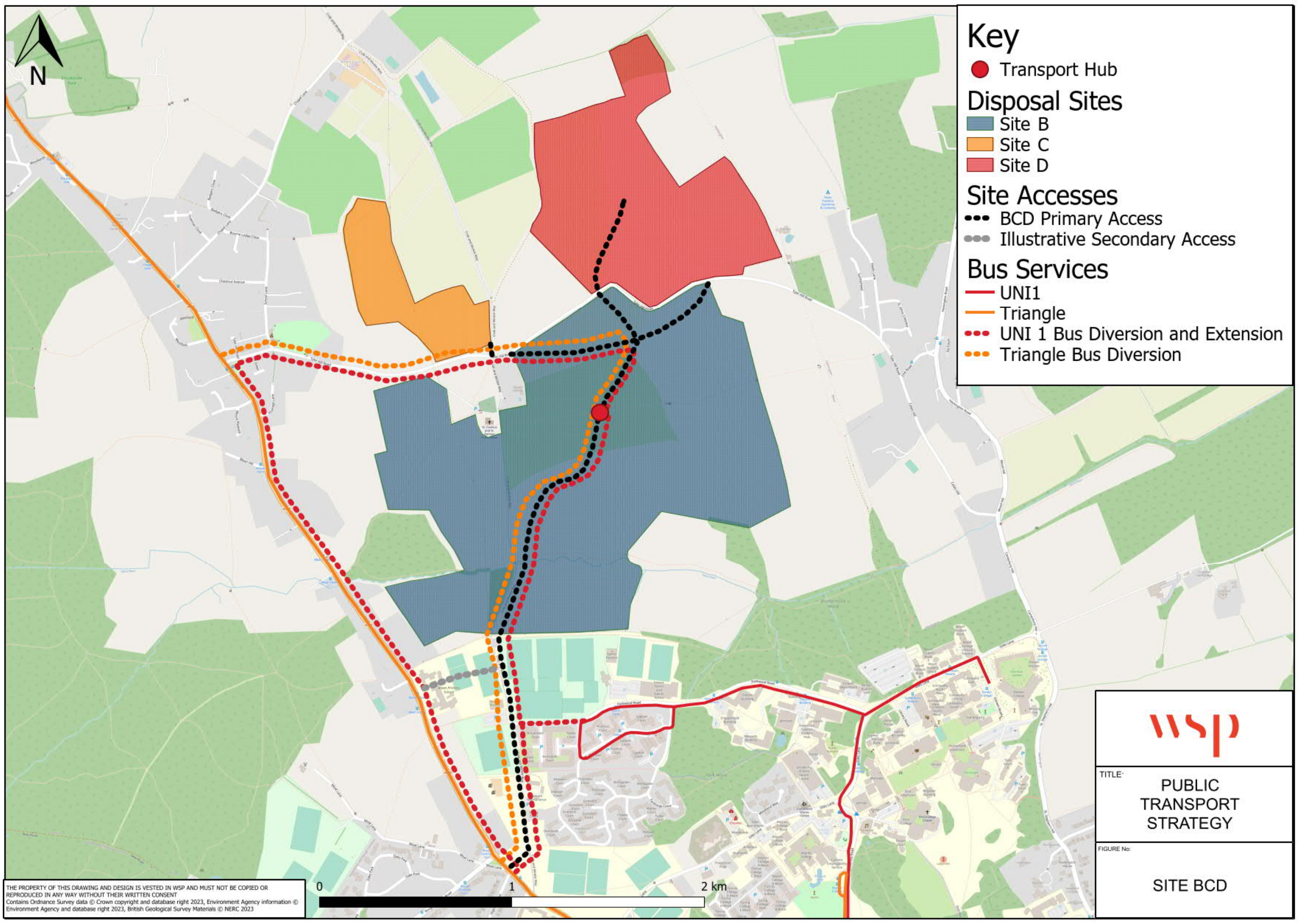
Alongside the emergence of mobility hubs, technology has facilitated the development of personalised journey planning platforms. When combined across modes these are known as Mobility as a Service (MaaS).

This app-based platform enables access to a wide range of mobility services (traditional bus, rail and taxi services) as well as emerging technologies such as car clubs and e-scooter and cycle hire. By providing access to information about all the services in one place people can make informed decisions about the most appropriate mode or multiple modes for their entire journey. Deployment of this platform could be done on a regional basis or on a development specific basis (Enterprise Car Club for instance have developed their own platform which is being deployed in parts of Scotland).

The use of a MaaS is considered a key element of future developments alongside the provision of the Transport Hub to offer a range of services to residents and visitors of the site.

The Sites benefit from the adjacency of the University Campus where high frequency bus routes can be accessed. The public transport strategy will seek to build on the existing network of bus routes by extension of existing services to serve the on-site public transport hub. **Figure 3-4** indicates how existing bus routes could be extended to serve the development's on-site transport hub.

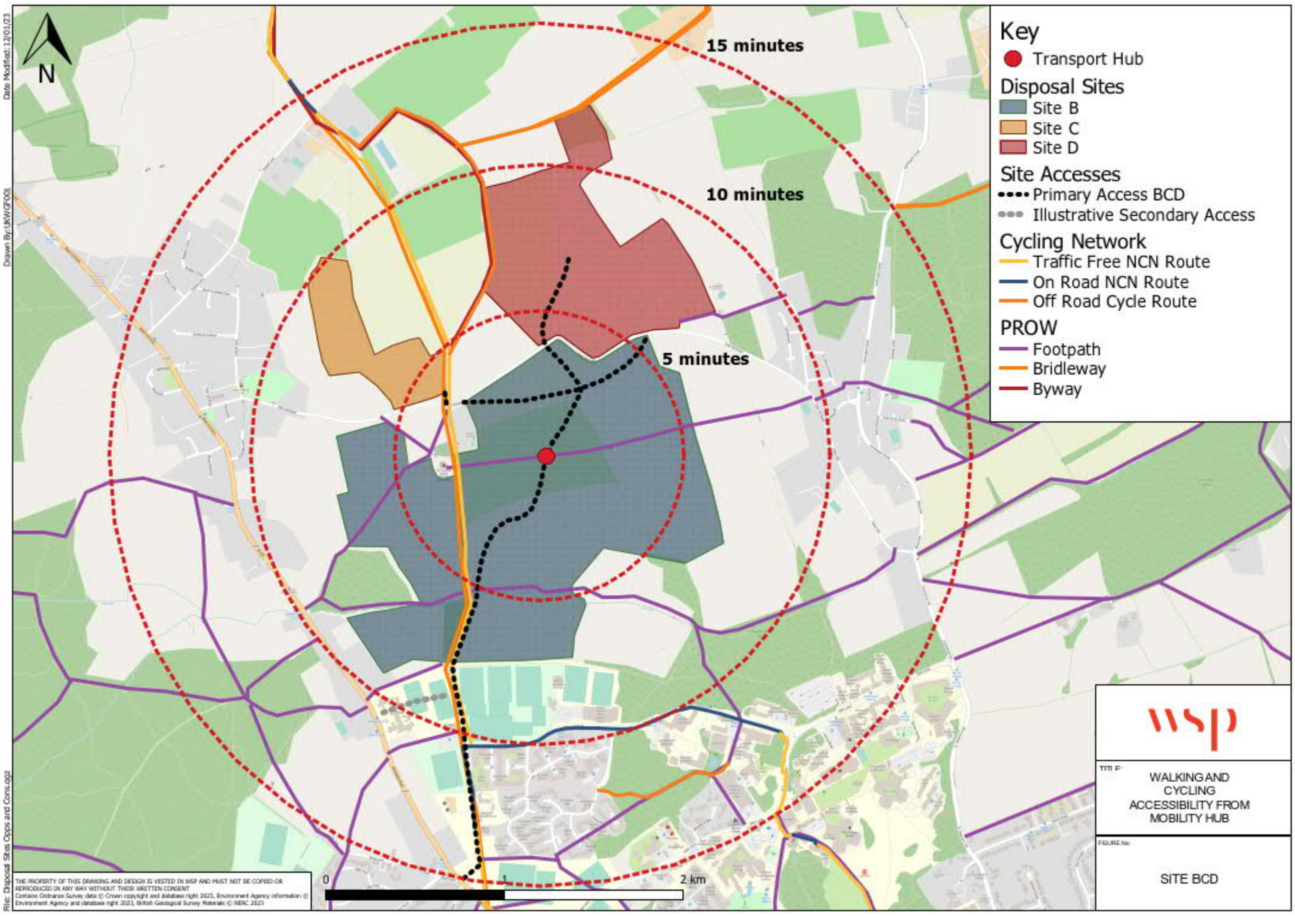
Figure 3-4: Public Transport Strategy



The strategy currently assumes an extension to Uni1 to serve the on-site transport hub. This would provide a weekday daytime frequency of up to every 10 minutes. This would be further enhanced with the diversion of the Triangle Route southbound through the site to increase connectivity to the City Centre. However, further discussions would be held with the University and Stagecoach as local bus operator to ensure integration of the site with the public transport network.

Figure 3-5 provides indicative walking times from the transport hub to all parts of the development site. These walking times would be further reduced through development of the on-site infrastructure and final siting of the public transport hub.

Figure 3-5: Public Transport Hub Walking Distances



The proposed public transport strategy is understood to align with CCC's emerging transport strategy in terms of prioritising bus-based transport to/from the site, however, we would welcome any opportunity to discuss how we can fully align our strategies.

WSP have been working with UoK to develop new Travel Plans for their Cantebrury and Medway Campuses.

As part of development of the Travel Plans[4] local public transport service providers were contacted in order to get their opinion on the existing operation of their services in relation to the University.

Stagecoach responded explaining that they work very closely with the University on meeting student transport requirements. The routes currently on offer, the Uni1 and Uni2, best serve the present student population. These routes provide a 24/7 service connecting the University, town centre, railway station and Hales Place – a popular student residential area. Potential modifications to the route are frequently discussed. Local bus routes are also diverted into campus to supplement the university services and travel discounts are available.

Views were also sought from National Express regarding their routes to the Canterbury campus. They noted that additional coaches have recently been implemented due to passenger uptake being high.

[4] University of Kent Canterbury Campus Travel Plan, March 2023

The proposed bus strategy which assumes an extension to Uni1 and diversion of the Triangle route to serve the on-site transport hub is consistent with Stagecoach's approach to serving the University.

WALKING, CYCLING AND MICRO-MOBILITY STRATEGY

Personal mobility (e-scooters, e-bikes, cargo bikes, electric skateboards, shared bicycles and scooters) are collectively referred to as Micro-mobility. Whilst some of these modes may be personal (owned by the user) there is a growing trend towards shared usage (Santander cycle hire in London for instance). Through the MaaS platform mentioned previously residents and visitors of the site would have access to a range of mobility services to facilitate travel to and from the development.

The development site benefits from access to the Crab and Winkle Way and the site benefits from access to the whole of Canterbury within a 30-minute cycle distance. The proximity of Canterbury to the site and available infrastructure alongside any enhancements that may be identified make travel by micro-mobility an attractive option for future residents and visitors to the site.

The development proposals will provide enhanced connections to the University and will provide natural surveillance of the Crab and Winkle Way where it passes through the site which will promote safety of the route.

The proposed mobility hub will also provide cycle parking and micro-mobility stations to encourage short journeys to be made sustainably between the development and surrounding areas.

It is acknowledged that other connections in the area are largely PROWs which are unpaved. As part of the development of the masterplan, improvements in the wider area would be considered and secured through any planning consent.

4. SUMMARY AND CONCLUSION

This TSN has been prepared to provide a summary of the Transport Strategy developed for Sites BCD being promoted within the Canterbury Local Plan. The Note draws on information presented in the Preliminary Transport Appraisal (PTA) prepared to supplement the Transport Strategy (which was developed in accordance with a scope agreed with Kent County Council (KCC) as highway authority) and Travel Plans for the UoK Campus.

This Note has demonstrated that the Proposed Development sites benefit from access by a range of modes of transport and provisional strategies have been developed to ensure that access by sustainable modes are prioritised and align with the emerging Transport Strategy for Canterbury.

Appendix E

Policy Review

Draft Canterbury District Local Plan (2040)

The vision for the district to 2040 focuses upon four key areas:

1) a sustainable and resilient economy
2) a thriving environment
3) improved connectivity
4) healthy communities.

Key Area 3 'Improved connectivity' focuses on *"high-quality public transport infrastructure, comprehensive walking and cycling networks and accessible community facilities which will help to improve air quality, respond to the challenges of climate change and enhance the quality of life for residents."*

Policy SS4 sets out the movement and transportation strategy for the district:

1) *"Working with partners, including Kent County Council, the council will deliver a comprehensive programme of sustainable transport infrastructure measures to improve neighbourhoods, accommodate new growth and to facilitate a significant shift to low-carbon and active travel journeys, particularly for short trips.*

2) *A new bus-led transport strategy will ensure people have high-quality sustainable transport options for travel that will reduce congestion, improve air quality and enhance the city centre environment and its heritage. Key infrastructure requirements include:*

   a) *Improved public transport connectivity across the district, with additional bus services, bus priority measures and enhanced park and ride infrastructure, and upgrades at railway stations in the district.*
   b) *The delivery of a comprehensive city-wide network of segregated cycle lanes and cycle parking infrastructure, with links to the coast and rural areas.*
   c) *Enhanced public realm and pedestrian environment on key routes and within the city centre.*
   d) *The reduction in capacity at some city centre car parks to reduce congestion on the ring road.*
   e) *New A2 access to the Kent and Canterbury Hospital and links to the A28 at Thanington; and*
   f) *Upgrades at the A2 junction at Harbledown and at Rough Common Road.*

3) *Improvements to connectivity and public realm at the coastal towns, including the provision of a park and bus facility and new A29 access at Whitstable, completion of Crab and Winkle Way cycle and pedestrian path to the harbour and improvements to traffic management will reduce congestion and help to improve the town centre environments.*

   The delivery of a coastal network of segregated cycle lanes and cycle parking infrastructure will support an increase in active travel journeys, with improved connectivity to the city and rural areas.

4) *The council will continue to work with partners to improve public transport connectivity in the rural areas and to maximise opportunities to improve walking and cycling routes to connect rural settlements with each other and to the urban areas within the district.*
5) *The council will promote the use of Park and Ride sites as transport hubs with links to alternative modes of transport and as centres for sustainable last-mile delivery solutions.*
6) *New development should ensure easy and safe pedestrian and cycle connectivity is available, including segregated cycle lanes where achievable, with high levels of connectivity to the wider network, including within and between neighbourhoods.*

   Public spaces, streets and movement networks provided through new developments should be accessible for all ages and levels of mobility and promote healthy lifestyles.

   Walking, cycling and active, low carbon, sustainable transport modes (such as public transport stops) should be prioritised in line with Policy DS13, over private cars with traffic speeds limited within new neighbourhoods.
7) *New development should be designed to help improve the air quality of the district as a whole.*

   Sustainable transport measures, such as the provision of electric charging infrastructure, shared transport initiatives, improved active travel connectivity as well as green infrastructure such as green roofs and walls, hedges and street trees will help to reduce air pollution and exposure in line with Policy DS16."

Relating to transport planning and development, Policy C12 – Land north of the University of Kent states "*Site C12 is allocated for a comprehensive mixed use development. Planning permission will be granted for development which meets the following criteria:*

1) *Development mix: Across the site, the development mix will include:*
   a) *Approximately 2,000 new dwellings including affordable housing, older persons housing, accessible housing, self building housing and an appropriate housing mix in line with Policies DS1 and DS2.*
   b) *Non-residential development:*
      (iv) *Provision of a community hub as focal area for the community containing a mix of uses including:*
         (1) *Local centre including commercial (minimum 1,250sqm) and local shopping and community uses (minimum 500sqm)*
         (2) *Office and business space (minimum 4,000sqm) including flexible working space*
         (3) *A mobility hub to serve residents and businesses.*
      (v) *Provision of a new 3FE Primary School (3 ha) with early years provision, located adjacent to the community hub*
      (vi) *Re-siting and provision of a new 2FE Primary School (2.05 ha) to replace existing capacity at Blean Primary School.*

2) *Design and Layout: The design and layout of the site should:*

   b) *Create a complete, compact and well-connected neighbourhood, where everyday needs can be met within a 15 minute walk or short cycle, to support the local economy, to promote health, wellbeing and social interaction and to address climate change by reducing car dependency.*

   d) *Create a new mixed use local centre as an easily accessible focal point of the development in the format of a high street or village / town square containing flexible outdoor space to use for community events, with pedestrians and cycles prioritised. A "Changing Places" facility should be located within community facilities.*

4) *Access and transportation: The access and transport strategy for the site should:*

   a) *Provide safe and convenient pedestrian and cycle connectivity including:*

      (v) *Improved walking and cycle connections to the city centre via the Crab and Winkle cycle route and PRoWs through the UoK estate*

      (vi) *Improved cycle connections to Whitstable via Crab and Winkle cycle route*

      (vii) *New and improved walking and cycling connections to Blean, Tyler Hill, Broad Oak and the wider countryside to the east; and*

      (viii) *Improvements to PRoWs within and around the site as required.*

   b) *Provide a Transport Hub within the site to facilitate good access to public transport facilities for new residents, with a new bus route connecting residential areas and the community hub to Canterbury West railway station and the city centre.*

   c) *Provide improvements to Canterbury West Station to include facilities for cycle parking and passenger flows.*

   d) *Provide a primary access point to the site at the junction of Whitstable Road and Rough Common Road and secondary access to the site from Whitstable Road through land at Blean Primary School.*

   e) *Minimise traffic flow onto Tyler Hill Road in both directions.*

   f) *Provide an all-movement junction at A2 Harbledown through the provision of additional slip roads.*

   g) *Provide highway improvements to Rough Common Road; and*

   h) *Provide a Transport Assessment to demonstrate the connectivity of the site with the existing highway network, any necessary mitigation and measures to minimise the need for use of private cars."*

Policy DS14 – Active and sustainable travel states:

1) *"Proposals for development must demonstrate how they will maximise high quality walking and cycling connectivity both within the site and to local facilities, open spaces and public transport networks including bus and rail. Existing Public Rights of Way should*

be retained or, where necessary and where the need outweighs the harm, rerouted and upgraded to avoid development, providing a publicly accessible, high quality route, subject to KCC statutory processes. Developments will be expected to improve off-site routes to ensure high quality connectivity and accessibility where necessary. Proposals within settlement boundaries should be designed to ensure that walking and cycling routes from the development are more convenient than vehicular routes. Routes and access should be designed to be safe and inclusive and meet the needs of all pedestrians and cyclists, including disabled people and the mobility impaired.

2) *Cycle parking should be provided in accordance with council's Parking Standards (Appendix 3), and must be conveniently sited, secure and overlooked to encourage their use. Any provision of new or upgraded cycle routes should be designed in accordance with Local Transport Note 1/20 or any subsequent updated guidance. Walking and cycling routes must be delivered at the earliest possible stage of a development and should be hard-surfaced and lit and, wherever possible, provide for ecological connectivity and pollinators.*

3) *Proposals for 10 or more homes within the urban areas should be located no more than 400 metres from a frequent bus service. Where appropriate, developments should include bus priority measures within sites, and high quality bus stop infrastructure, including high kerbs, shelters and timetables, to maximise the convenience and attractiveness of public transport. The council will use appropriate legal mechanisms to secure a commuted sum to cover future maintenance and developers may be required to contribute to improvements in bus services.*

4) *Proposals for more than 300 homes should maximise opportunities for alternative and innovative travel options from the site through the provision of a mobility hub in order to further reduce the need to travel by private car, such as through e-scooter* and cycle hire, parcel collection lockers, shared transport services and car clubs. Consideration should be given to opportunities for autonomous technologies for deliveries. Schemes should integrate effectively with existing networks and public transport, including through use of standard payment platforms. Consideration should be given to the scope for car-free areas and zero-emission transport zones as part of the scheme design."*

Policy DS15 – Highways and Parking states:

3) *"Proposals for development must ensure adequate vehicle parking provision reflecting the scale, use and location of development, in line with the council's Parking Standards (Appendix 3), and should set out how any parking is to be controlled. Within and on the edge of the designated city and town centres, developments should be "car free" with on street parking controls introduced where necessary.*

4) *Parking provision within the curtilage of all new homes in the district should include a suitable connection for EV charging. Within parking areas provided as part of new developments, EV charging points should be provided to a minimum of 1 in 10 spaces, with a further cable route for the remainder of the spaces. If the parking is to be allocated,*

then each space should have access to an EV charging point. For non-residential uses with off street car parking, EV charging points to a minimum standard of 7KW wifi enabled should be provided to a minimum of one in five spaces, with a further cable route for the remainder of the spaces.

5) *Proposals for development that will generate a significant volume of traffic should be accompanied by a transport statement or assessment and a green travel plan. The requirement will be judged on a case-by-case basis taking into consideration the existing road network capacity and constraints, the anticipated trips generated and the level of parking proposed. These documents must be comprehensive, robust, and demonstrate clearly how the development meets the requirements of the council's movement policies, including how:*

   a) *The design and layout of the development aligns with the Movement Hierarchy*

   b) *Walking and cycling mode share will be maximised, identifying opportunities for off-site improvements to routes connecting the development to local facilities and public transport networks*

   c) *Public transport mode share will be maximised, considering opportunities for on- and off-site improvements to bus infrastructure, and rail infrastructure where appropriate*

   d) *Opportunities for additional interventions which further reduce the need to travel by private vehicle have been maximised*

   e) *The impacts of any projected increase in vehicular traffic across the network will be mitigated*

   f) *Opportunities to internalise trips have been maximised*

   g) *The parking arrangements, including any EV charging points, will be delivered*

   h) *Any identified infrastructure improvements or mitigation schemes will be delivered, including timescales and funding arrangements.*

6) *Proposals for development will be refused where:*

   a) *The development design and transport strategy does not follow the Movement Hierarchy; or*

   b) *The development would prejudice the delivery of the key transport infrastructure requirements; or*

   c) *The development would lead to unacceptable highway safety; or*

   d) *The residual cumulative impacts on the road network would be severe.*

7) *Neighbouring sites would be expected to work collaboratively on construction traffic management such as rationalisation of access points, in order to minimise any adverse impacts on the living conditions of new and existing residents.*

8) *Relevant proposals should design for the sustainable development of freight and logistics by:*

   a) *Supporting and encouraging the development of freight distribution and logistics systems in appropriate locations that can reduce carbon emissions including innovations such as freight consolidation and zero emissions last mile distribution.*

   b) *Enabling improvements to and a shift away from road-borne freight to suitable low carbon modes and technologies, including electrification of delivery vehicles, rail, water and pipelines*

   c) *Working with the freight industry to enable the sustainable movement of goods whilst ensuring the negative impacts of freight traffic are minimised.*

   The council will additionally seek to enhance sustainable distribution by:

   a) *Utilising traffic management powers, where appropriate to do so, to manage access and egress from specific locations such as through pedestrianised urban centres and low traffic neighbourhoods*

   b) *Encouraging Heavy Good Vehicles (HGVs) to the primary route network, where possible."*

Draft Canterbury District Transport Strategy (DCDTS)

The DCDTS sets out the short, medium and long term proposals to accompany the policies for planned growth in the Local Plan, and has been written in line with the Department for Transport's (DfT) 'vision and validate' approach.

The CDTS details traffic flows on each of seven key routes into the city. There has been a steady decrease on all routes since around 2005 with the exception of A2 Canterbury bypass where traffic flows have increased by 37%.

In line with all of the national and local policies and strategies, and in contrast with the historic practice of 'predict and provide', the current methodology for transport planning is 'monitor and manage', which sets out a vision for future transportation with measurable targets which validate whether the vision is achievable and what additional measures can be employed to achieve this. This revised DCDTS therefore focuses on sustainable transport improvements and only new road building which is specifically required for new developments is included.

The sustainable transportation measures set out in the strategy are designed to reduce traffic flows across the district, and in particular on the approaches to and in the city centre of Canterbury.

It is forecast that the measures set out in the bus strategy and improvements to rail infrastructure will result in a 63% increase in mode shift to public transport, with a further 128% to walking and cycling by the horizon year of 2040. The government's target set out in its long-term walking and cycling plan, Gear Change, is for half of all journeys in urban areas to be made by walking and cycling by 2030. The number of people working from home is estimated to remain higher than was predicted in the 2014 Transport Strategy.

A district mode share target for 2031 and 2040 has been created, which is supported by ambitious targets for Canterbury city, Herne Bay, Whitstable, between Herne Bay and Whitstable and between Canterbury and Chartham, where a doubling of bus mode share is felt to be achievable due to:

- existing high levels of car use
- low bus mode share
- propensity of local populations to use bus (particularly in Canterbury and Herne Bay)
- significant levels of planned development.

An estimation has also been made of forecast mode switch to active travel along key corridors and in urban areas. The switch to sustainable transport is forecast to be higher in the urban area of Canterbury where significant improvements to bus services and infrastructure as well as new cycle routes are proposed.

Canterbury District Bus Strategy (CDBS)

The key vision of the Canterbury City Council Bus Strategy is for the bus to be a key pillar of the local transport network. Bus services should be reliable, affordable, accessible, safe, integrated and should evolve to support new travel patterns. The bus network should provide fast, frequent connections between the district's key centres, deliver a level of service which provides a realistic alternative to the private car, including those in smaller settlements and new developments and support improved rural connectivity as part of a multi-modal offer.

The key aims of the CDBS are:

- Faster bus services within and between the district's key centres
- A reliable bus network
- Enhanced accessibility and improved customer experience
- To provide a level of service to meet local need
- Reduction in the environmental impact of the bus network
- To ensure that the bus network provides an affordable transportation option
- To support the future growth of the bus network
- To expand the Park and Ride service.

Canterbury District Draft Local Cycling and Walking Implementation Plan (LCWIP) 2025 – 2040

The objective of the LCWIP is to progressively develop a coherent network for everyday safe and convenient walking and cycling that promotes the modal hierarchy and identifies and delivers enhancements. The mode hierarchy at an intervention and system level is:

1. **People:** safe and healthy walking routes between home and neighbourhood centres with progressive pedestrianisation at the centres.

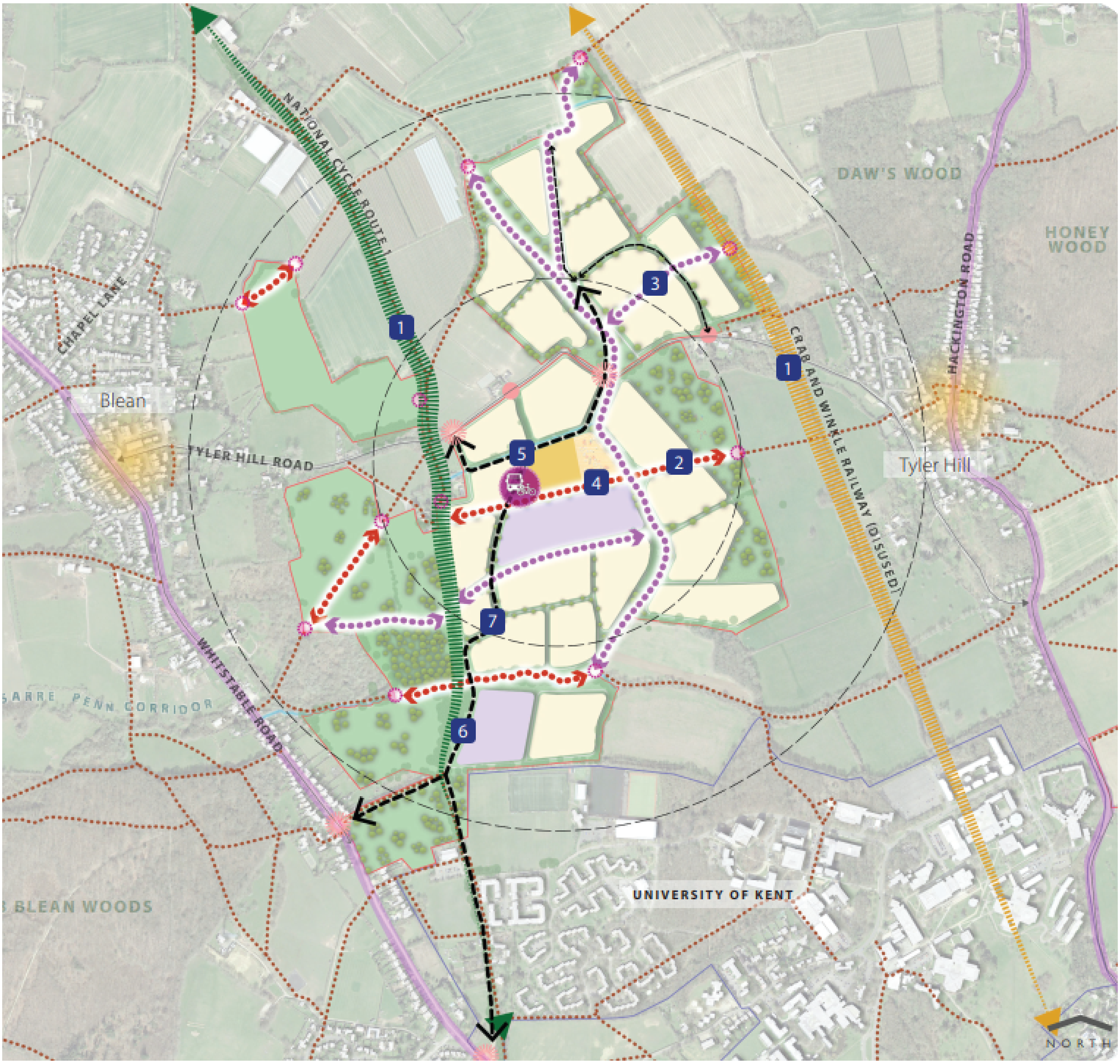
2. **Bicycles:** safe and easy cycling within neighbourhoods and on routes to school, work and urban centres, segregated wherever possible.
3. **Public transport:** increasing access, reliability and connectivity of bus, rail, park and ride and innovative public transport services.
4. **Service vehicles:** planned, co-ordinated and efficient delivery of goods and services to minimise the impact on urban centres, neighbourhoods and congestion.
5. **Shared mobility:** infrastructure and systems that reduce the need for private car ownership such as car clubs.
6. **Private vehicles:** appropriate levels of access for private vehicles to the regional road network, but generally disincentivising short distance and through neighbourhood individual car journeys.

The LCWIP will ensure that all new developments are suitably linked to the cycle network and that opportunities to extend the network are funded by developers where appropriate. All new developments should have walking and cycling links that are more convenient and more direct than motor traffic routes.

Agreements will be put in place with developers to ensure that ownership and maintenance of routes is either included in their management plans or is handed over to the city council of adopted by Kent County Council with commuted sums for future maintenance where appropriate.

Appendix F

Current Emerging Masterplan



Key

- Site boundary
- Spine road
- Primary road (leading to secondary and access routes)
- Existing key roads
- Vehicle access points
- Additional / emergency vehicle access
- Enhanced Salt Way active travel corridor (National Cycle Route 1)
- Crab and Winkle active travel route
- PRoW
- Retain PRoW within site
- Proposed new main pedestrian and cycle routes
- Pedestrian access points
- Existing village centre
- Existing bus route
- Mobility hub
- *Development parcel*
- *Primary education parcel*
- *Community hub*

Appendix G

UoK Access Strategy Technical 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.

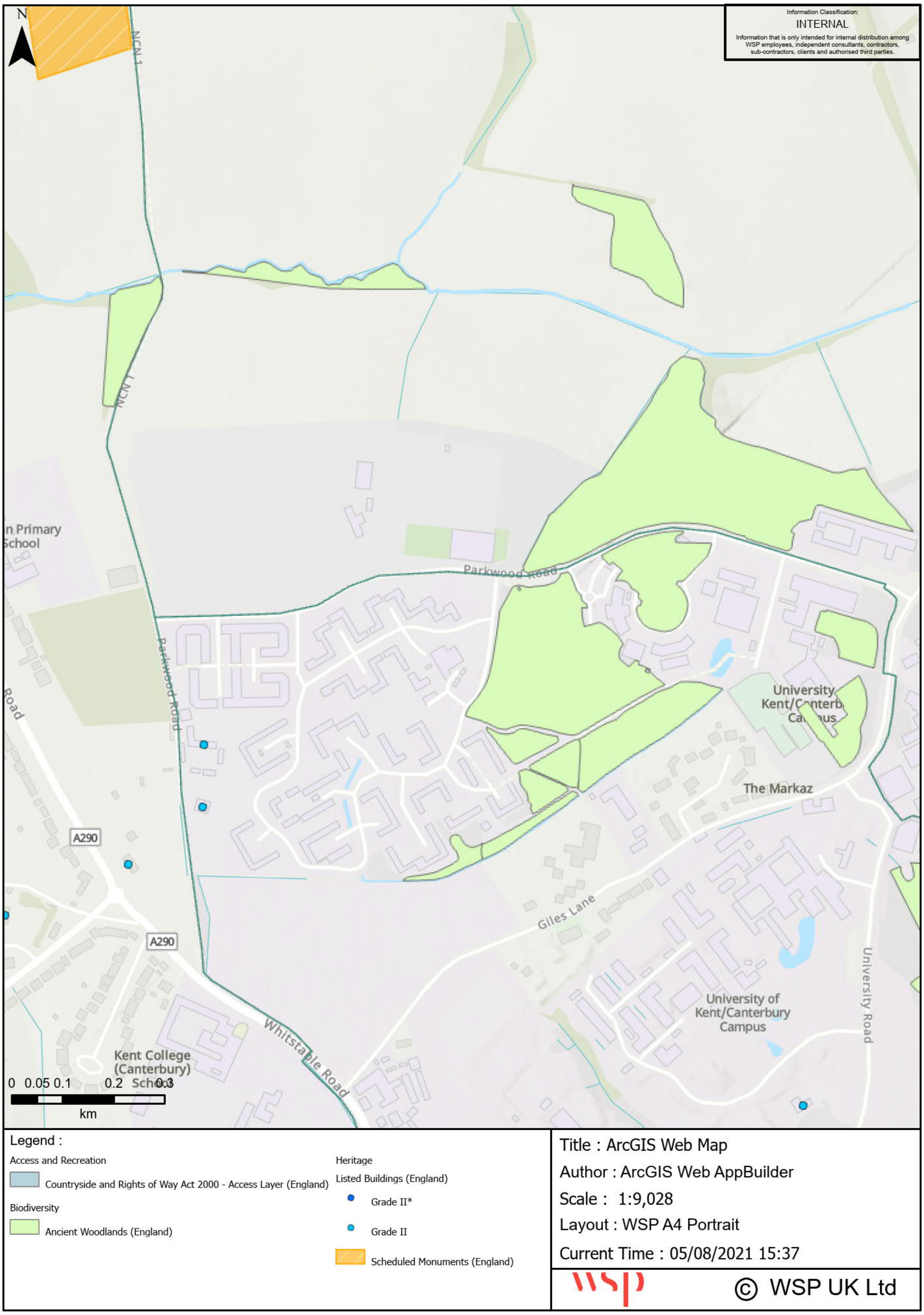
On the basis of the above, the access strategy for unlocking Sites BCD recommended developing a new north-south route through the University Campus achieving access onto Whitstable Road. To discourage increased usage of Tyler Hill Road it was recommended that the existing road was downgraded where it 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



TECHNICAL NOTE

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.

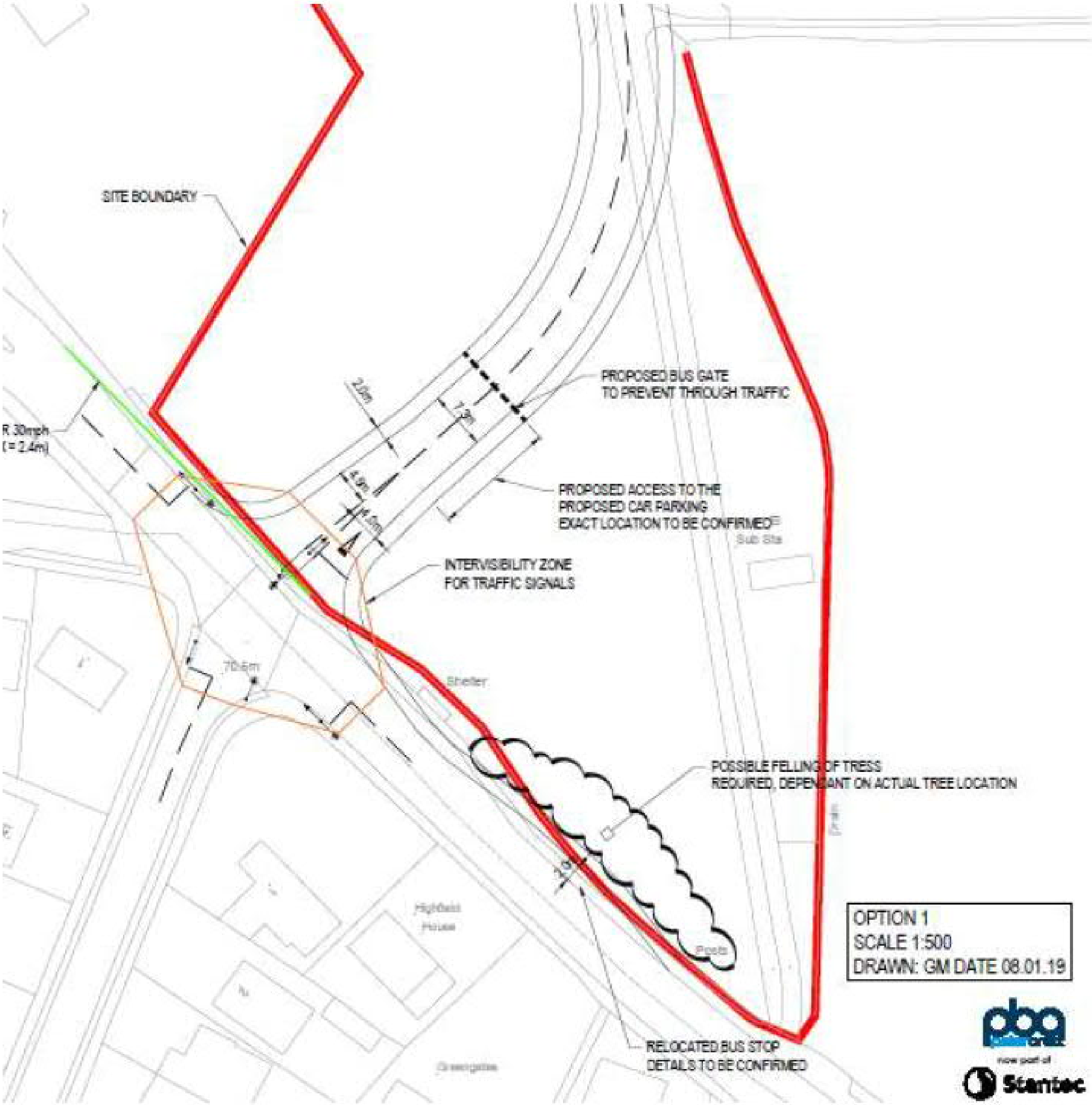
OPTION 4

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

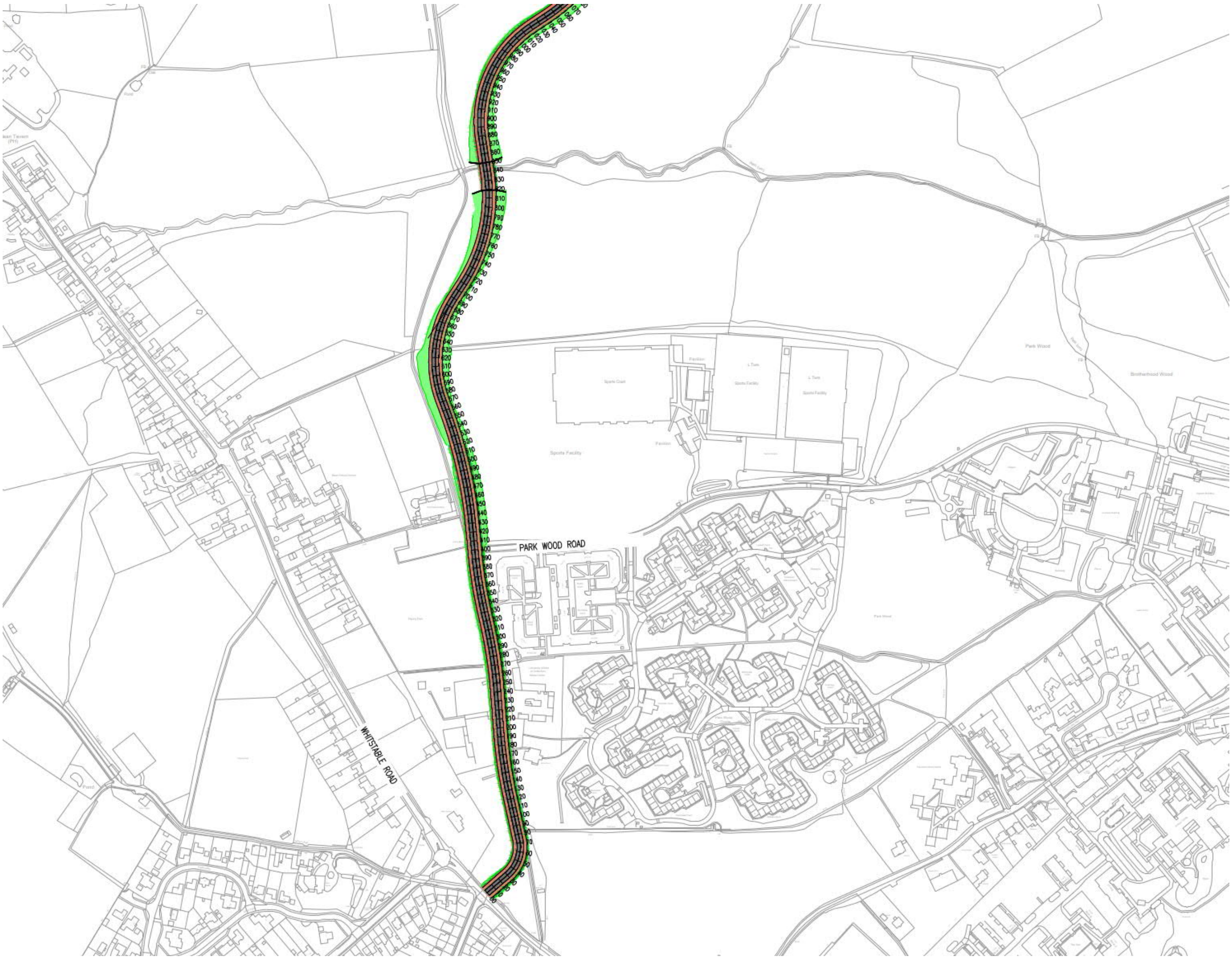
All of the options identified for the road involved passing through or close to (within the buffer zones of) the area of ancient woodland that runs parallel to the watercourse within Site B (Long Thin Wood). A review of the ancient woodland was undertaken by WSP's Arboriculture and Ecology Teams to identify 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



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

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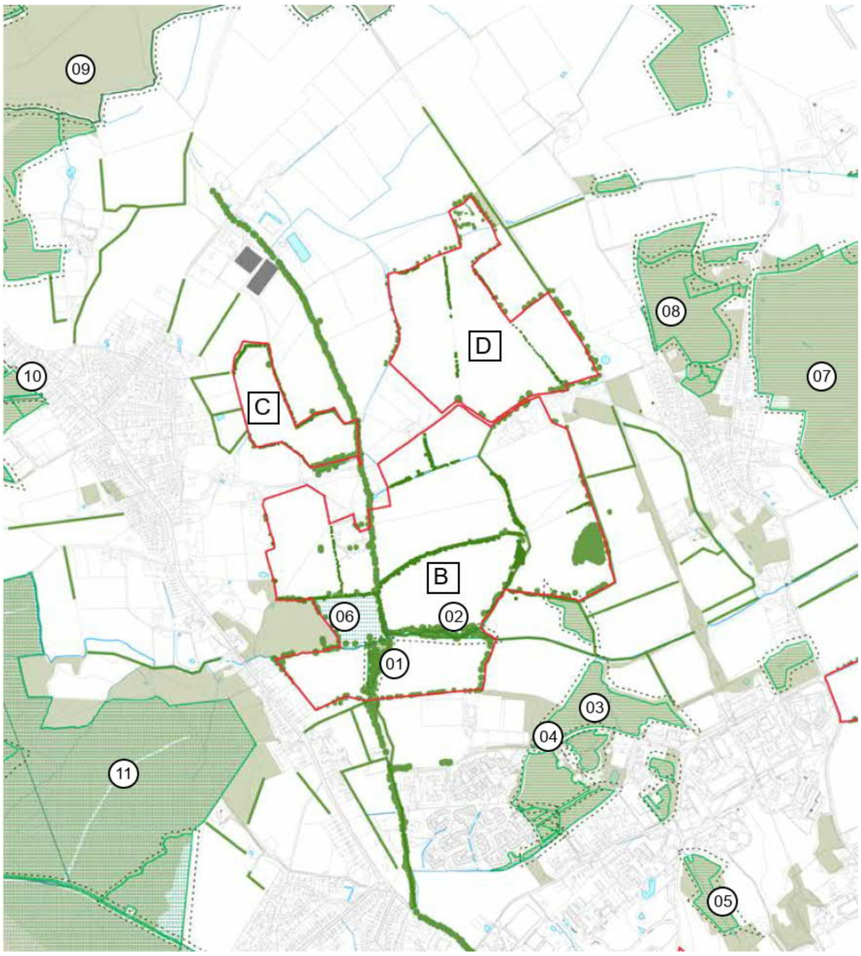

Figure 1: Woodland within vicinity of Site (Source: PRP)

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

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SUBJECT:	University of Kent: Long Thin Wood – Technical Summary		
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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.

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

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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

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CHECKED:	Alan Heatley	**APPROVED:**	Justin Sherlock

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

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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.

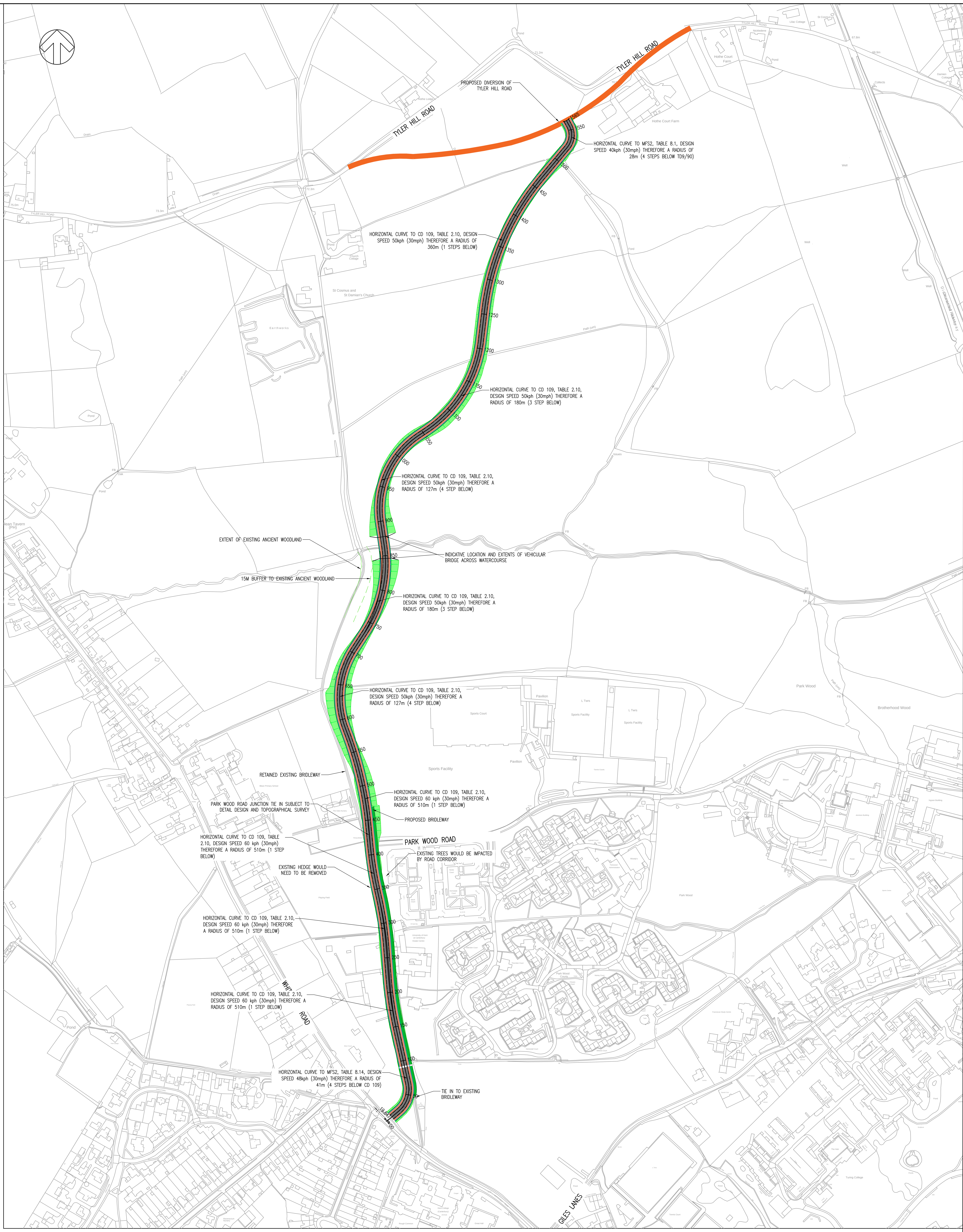
Irrespective of the status of the woodland as ancient or not it has several trees which have some veteran characteristics. This will need to be taken into account as the proposals are developed further.

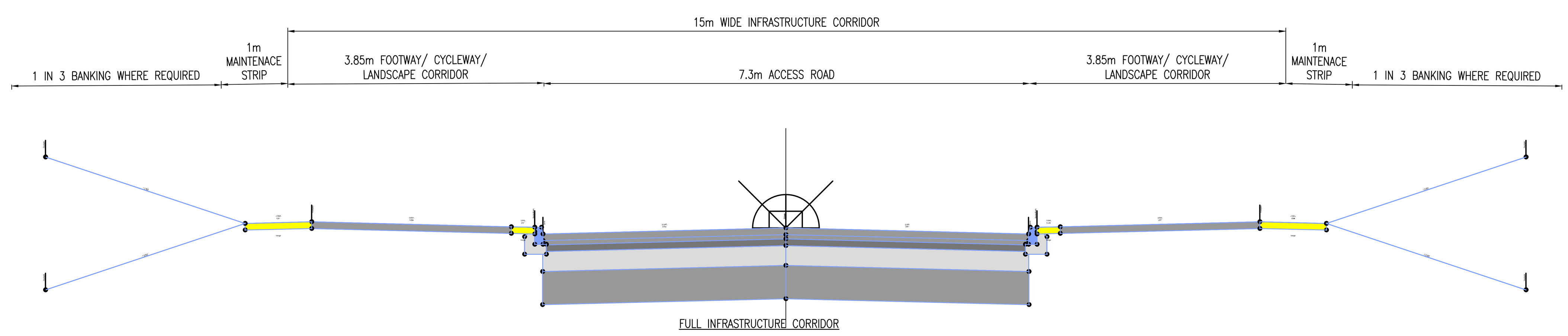
Appendix H

Access Road Alignments

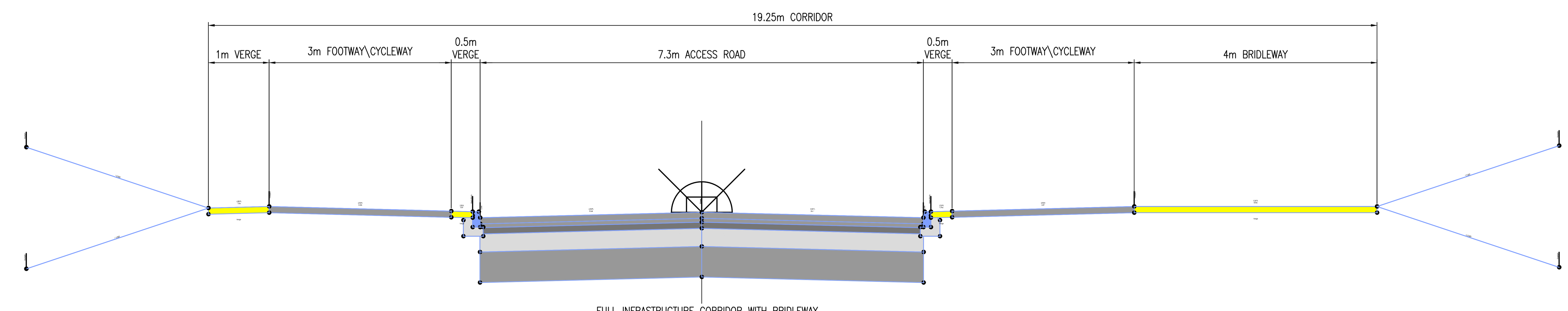
Public

DO NOT SCALE





FULL INFRASTRUCTURE CORRIDOR



FULL INFRASTRUCTURE CORRIDOR WITH BRIDLEWAY

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NOTES

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2. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH PROPOSED ALIGNMENT SKETCH 0896-SK-0002
3. DIMENSIONS SHALL NOT BE SCALED FROM THIS DRAWING. ALL DIMENSIONS SHOWN ARE IN METRES. DIMENSIONS MARKED 'DIMENSIONS TO BE SITE CHECKED' ARE SUBJECT TO CONFIRMATION BY THE CONTRACTOR BEFORE THE WORKS COMMENCE.
4. TOPOGRAPHICAL INFORMATION PROVIDED BY ENVIRONMENT AGENCY BASED ON "LIDAR COMPOSITE DTM - 1m" DATA SET. ALL LIDAR DATA HAS A VERTICAL ACCURACY OF +/- 15cm AND ITS ACCURACY MUST NOT BE USED FOR THE DETAIL DESIGN OF EARTHWORK STRATEGIES

REV	DATE	BY	DESCRIPTION	CHK	APP
P02	30/03/2022	DSB	ROUTE AMENDED	MPB	JS
P01	05/08/2021	RH	FIRST ISSUE	JS	JS

DRAWING STATUS: S0 - WORK IN PROGRESS

wsp
Unit 9 The Chase
John Tate Road
Foxholes Business Park
Hertford
SG13 7NN, UK
T+ 44 (0) 1992 526 000
F+ 44 (0) 1992 526 001
wsp.com

CLIENT: UNIVERSITY OF KENT

ARCHITECT: PRP

PROJECT: UNIVERSITY OF KENT CANTERBURY CAMPUS

TITLE: ACCESS ROAD VIA CRABB AND WINKLE WAY HORIZONTAL ALIGNMENT PLAN

SCALE @ A0: 1:2000	CHECKED: MPB		APPROVED: MPB
PROJECT No: 70080896	DESIGNED: DHP	DRAWN: RH	DATE: March 22
DRAWING No: 0896-SK-0007			REV: P02

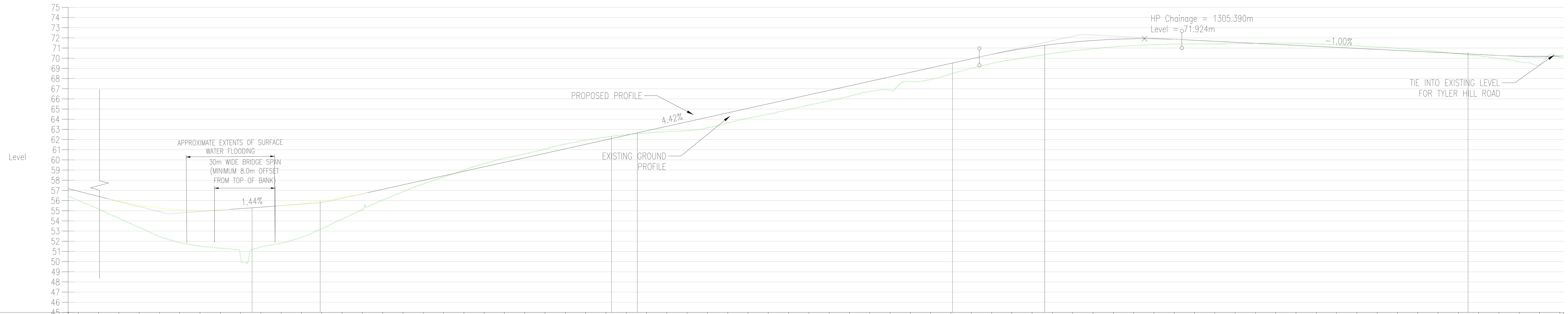
DO NOT SCALE

CHAINAGE	EXISTING LEVELS	PROPOSED LEVELS
00.000	70.531	70.407
10.000	69.725	69.590
20.000	69.435	69.593
30.000	69.510	69.540
40.000	69.426	69.566
50.000	69.491	69.470
60.000	69.490	69.455
70.000	69.437	69.335
80.000	69.381	69.356
90.000	69.290	69.349
100.000	69.293	69.384
110.000	69.234	69.534
120.000	69.295	69.531
130.000	69.428	69.575
140.000	69.514	69.598
150.000	69.498	69.510
160.000	69.352	69.536
170.000	69.452	69.545
180.000	69.165	69.740
190.000	69.493	69.835
200.000	69.575	69.902
210.000	69.596	70.045
220.000	69.667	69.989
230.000	69.761	70.087
240.000	69.660	70.163
250.000	69.680	70.295
260.000	69.781	70.323
270.000	69.787	70.352
280.000	69.849	70.356
290.000	69.811	70.434
300.000	69.786	70.569
310.000	69.811	70.775
320.000	69.819	71.148
330.000	69.847	70.768
340.000	69.869	70.640
350.000	69.954	70.692
360.000	70.012	70.708
370.000	70.094	70.642
380.000	70.248	70.570
390.000	70.308	70.582
400.000	70.308	70.608
410.000	70.372	70.596
420.000	70.379	70.508
430.000	70.357	70.467
440.000	70.174	70.452
450.000	70.203	70.384
460.000	70.397	70.454
470.000	70.678	70.349
480.000	70.822	68.770
490.000	70.360	68.468
500.000	69.684	68.291
510.000	68.963	68.181
520.000	68.574	68.070
530.000	68.314	67.957
540.000	68.269	67.840
550.000	68.478	67.712
560.000	68.723	67.585
570.000	68.660	67.526
580.000	68.379	67.490
590.000	67.882	67.449
600.000	67.736	67.405
610.000	67.670	67.322
620.000	69.717	67.290
630.000	69.693	67.218
640.000	69.050	67.163
650.000	65.830	67.099
660.000	65.068	67.017
670.000	64.403	66.945
680.000	63.667	66.878
690.000	62.935	66.825
700.000	62.142	66.728
710.000	61.387	66.477
720.000	60.603	64.793
730.000	59.897	64.159
740.000	59.134	63.478
750.000	58.374	62.731
760.000	57.615	61.906
770.000	56.847	61.009
780.000	56.024	60.105
790.000	55.174	59.243
800.000	54.258	58.344

HORIZONTAL GEOMETRY: L =22.343; R: 41.000 L: 44.456; L =82.437; R: 510.000 L: 70.691; L =46.783; R: 510.000 L: 74.232; L =5.167; R: 510.000 L: 64.191; L =34.847; R: 510.000 L: 131.045; L =10.943; R: 127.000 L: 118.150; L =29.894; R: 180.000 L: 130.492

VERTICAL GEOMETRY: G =-1.095% L =81.187; R =4254.734 K =42.545 L =75.000; G =0.668% L =99.614; R =1000.000 K =10.000 L =13.352; G =-0.668% L =31.771; R =2176.614 K =21.766 L =30.000; G =0.711% L =134.837; R =1014.117 K =10.130 L =57.850; G =-5.000% L =265.745; R =933.182 K =9.323 L =60.000

PR-ALIGNMENT-003 CH 0.000m TO 800.000m
SCALE: H 1:200,V 1:40. DATUM: 45.000



CHAINAGE	EXISTING LEVELS	PROPOSED LEVELS
775.000	56.437	60.550
780.000	56.024	60.105
790.000	55.174	59.243
800.000	54.258	58.344
810.000	53.376	57.465
820.000	52.475	56.649
830.000	51.876	55.790
840.000	51.524	54.961
850.000	51.325	54.175
860.000	50.428	53.447
870.000	51.443	52.785
880.000	51.813	52.119
890.000	52.384	51.574
900.000	53.248	51.255
910.000	54.197	51.192
920.000	55.067	50.990
930.000	56.062	49.972
940.000	56.875	51.241
950.000	57.645	51.726
960.000	58.314	52.413
970.000	59.008	53.069
980.000	59.647	53.623
990.000	60.166	54.289
1000.000	60.587	54.949
1010.000	61.091	55.641
1020.000	61.558	56.318
1030.000	61.953	56.945
1040.000	62.246	57.493
1050.000	62.490	58.131
1060.000	62.645	58.941
1070.000	62.788	59.697
1080.000	62.865	60.381
1090.000	63.152	61.050
1100.000	63.631	61.735
1110.000	64.101	62.390
1120.000	64.510	63.019
1130.000	64.954	63.660
1140.000	65.396	64.291
1150.000	65.827	64.912
1160.000	66.272	65.484
1170.000	66.741	66.004
1180.000	66.867	66.652
1190.000	67.690	66.971
1200.000	67.918	67.727
1210.000	68.456	67.930
1220.000	69.008	68.482
1230.000	69.487	69.041
1240.000	69.865	69.512
1250.000	70.173	69.903
1260.000	70.481	70.200
1270.000	70.754	70.502
1280.000	70.944	70.763
1290.000	71.113	70.965
1300.000	71.259	71.143
1310.000	71.332	71.281
1320.000	71.383	71.361
1330.000	71.396	71.406
1340.000	71.416	71.413
1350.000	71.435	71.432
1360.000	71.462	71.456
1370.000	71.502	71.470
1380.000	71.475	71.520
1390.000	71.397	71.490
1400.000	71.312	71.412
1410.000	71.218	71.334
1420.000	71.099	71.240
1430.000	70.983	71.119
1440.000	70.851	70.997
1450.000	70.648	70.866
1460.000	70.428	70.662
1470.000	70.250	70.444
1480.000	69.960	70.262
1490.000	69.656	69.964
1500.000	69.385	69.665
1511.921	70.041	69.789
1510.000	70.098	69.438

HORIZONTAL GEOMETRY: R: 180.000 L: 130.492; L =33.555; R: 127.000 L: 143.477; L =12.761; R: 180.000 L: 155.378; L =45.341; R: 360.000 L: 208.620; L =57.886

VERTICAL GEOMETRY: G =-5.000% L =265.745; R =933.182 K =9.323 L =60.000; G =1.436% L =23.152; R =1507.881 K =15.058 L =45.000; G =4.424% L =301.420; R =1840.527 K =18.405 L =99.839; G =-1.000% L =154.426; R =2000.000 K =20.000 L =40.000

PR-ALIGNMENT-003 CH 775.000m TO 1511.921m
SCALE: H 1:200,V 1:40. DATUM: 45.000

NOTES
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3. DIMENSIONS SHALL NOT BE SCALED FROM THIS DRAWING. ALL DIMENSIONS SHOWN ARE IN METRES. DIMENSIONS MARKED "DIMENSIONS TO BE SITE CHECKED" ARE SUBJECT TO CONFIRMATION BY THE CONTRACTOR BEFORE THE WORKS COMMENCE.
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REV	DATE	BY	DESCRIPTION	CHK	APP
P02	30/03/2022	DSB	ALIGNMENT UPDATED	DSB	JS
P01	05/08/2021	RH	FIRST ISSUE	JS	JS

DRAWING STATUS: S0 - WORK IN PROGRESS

wsp
Unit 9 The Chase, John Tate Road, Foxholes Business Park, Hertford, SG13 7NN, UK
T+ 44 (0) 1992 526 000, F+ 44 (0) 1992 526 001
wsp.com

CLIENT: UNIVERSITY OF KENT

ARCHITECT: PRP

SITE/PROJECT: UNIVERSITY OF KENT CANTERBURY CAMPUS

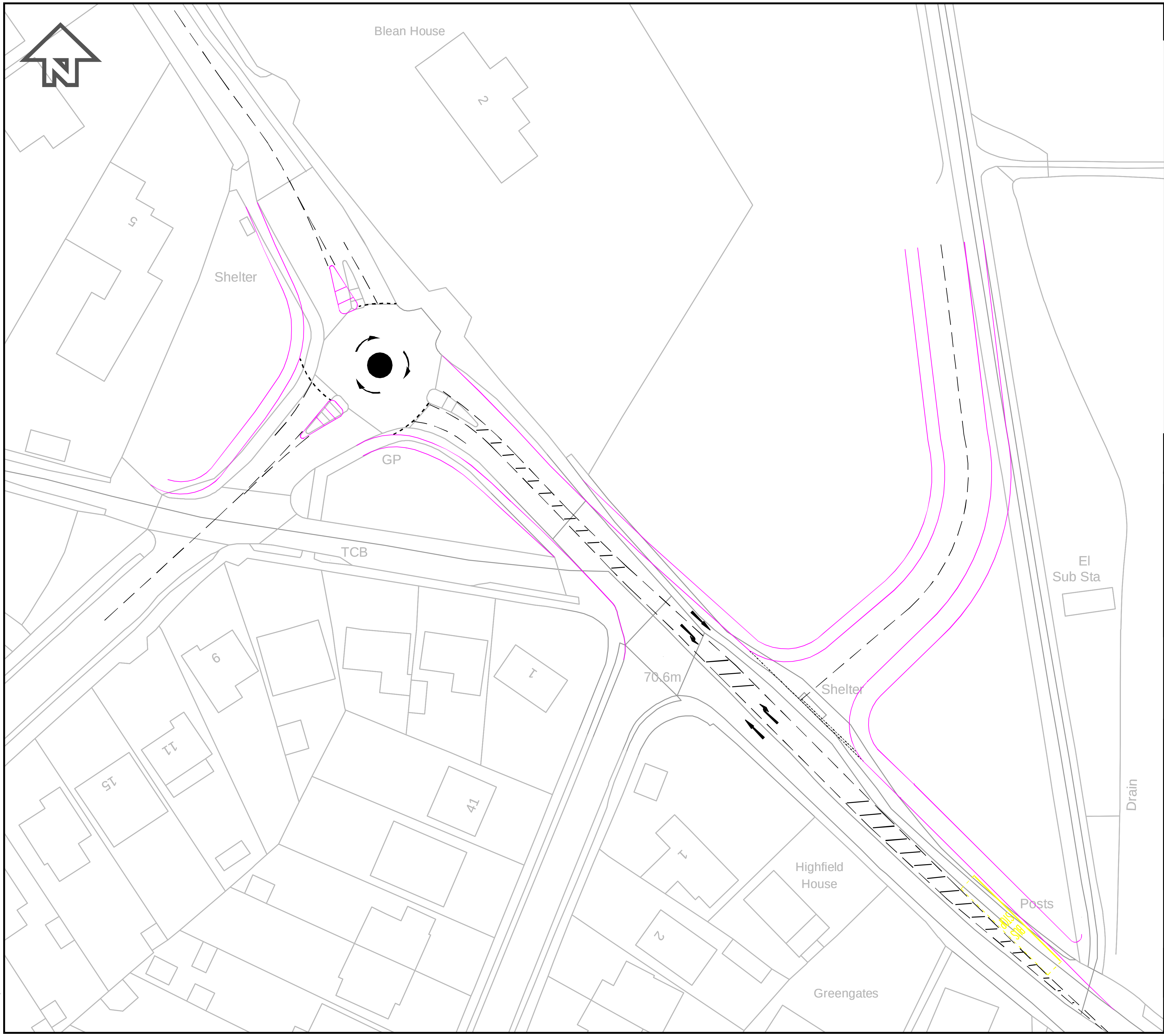
TITLE: ACCESS ROAD VIA CRABB AND WINKLE WAY VERTICAL ALIGNMENT PLAN

SCALE @ A1: 1:1250	CHECKED: JS		APPROVED: JS
PROJECT NO: 70080896	DESIGNED: DHP	DRAWN: RH	DATE: March 22

DRAWING No: 0896-SK-0008 | REV: P02

Appendix I

Access Arrangement



DO NOT SCALE

KEY

Proposed Kerb Line

Proposed Road Marking

DRAWING STATUS:

wsp

Mountbatten House, Basing View, Basingstoke, RG21 4HJ, UK
T+ 44 (0) 1256 318 800, F+ 44 (0) 1256 318 700
wsp.com

CLIENT:
University of Kent

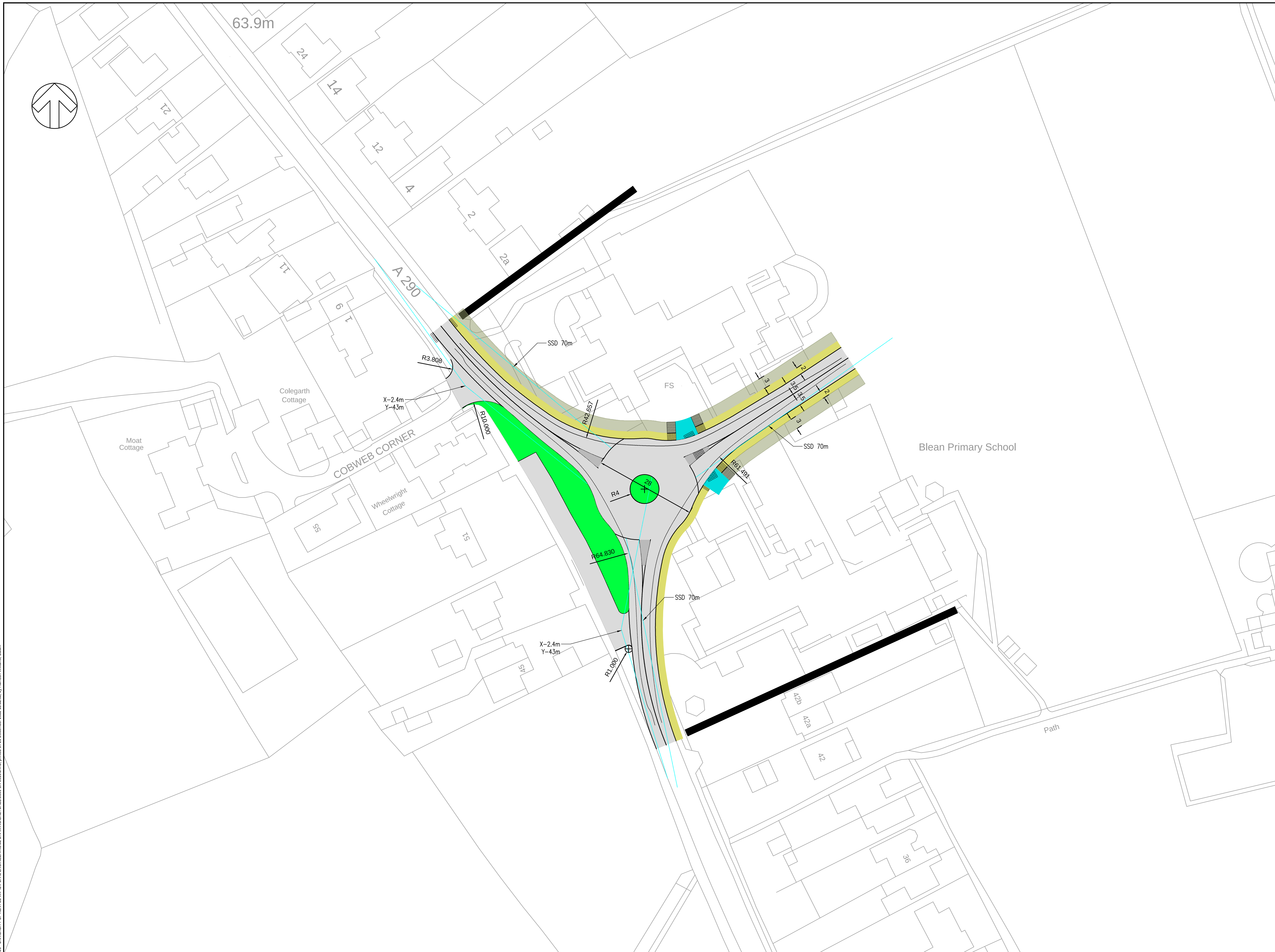
ARCHITECT:
PRP

PROJECT:
University of Kent, Canterbury

TITLE:
Preliminary Transport Appraisal
Staggered Priority Junction Mitigation
Junction Geometry Measurements

SCALE @ A3: NTS	CHECKED: JS		APPROVED: AA
PROJECT No: 70080896	DESIGNED: JS	DRAWN: JS	DATE: January 2023

DRAWING No:	REV:
70080896-XX-XX-TP-016	P01



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- FOOTWAY
- CYCLEWAY
- VERGE
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Unit 9 The Chase, John Tate Road, Foxholes Business Park, Hertford, SG13 7NN, UK
T+ 44 (0) 1992 526 000, F+ 44 (0) 1992 526 001
wsp.com

CLIENT: UNIVERSITY OF KENT

ARCHITECT:

SITE/PROJECT: UNIVERSITY OF KENT CANTERBURY CAMPUS

TITLE: BLEAN PRIMARY SCHOOL 28m ICD ROUNDABOUT

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Unit 9 The Chase, John Tate Road, Foxholes Business Park, Hertford, SG13 7NN, UK
T+ 44 (0) 1992 526 000, F+ 44 (0) 1992 526 001
wsp.com

CLIENT:
UNIVERISTY OF KENT

ARCHITECT:

SITE/PROJECT:
UNIVERSITY OF KENT
CANTERBURY CAMPUS

TITLE:
BLEAN PRIMARY SCHOOL
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DRAWING No: 70080896-XX-XX-TP-025

REV: P01

Appendix J

Bus Routing Technical Note

TECHNICAL NOTE 1

DATE:	17 May 2024	**CONFIDENTIALITY:**	Public
SUBJECT:	UoK – Proposed Bus Strategy – Meeting with Stagecoach and UoK		
PROJECT:	University of Kent, Canterbury Campus	**AUTHOR:**	Sarah Thomas
CHECKED:	David Dixon	**APPROVED:**	Justin Sherlock

INTRODUCTION

Canterbury City Council (CCC) published the revised Regulation 18 version of the Draft Local Plan (DLP) for public consultation on 12th March 2024.

Policy C12 of the DLP allocates land to the north of the University of Kent (Sites BCD) (the 'Site') for comprehensive mixed-use development (standalone new settlement) comprising approximately 2,000 homes, a community hub (retail, community, offices, and a mobility hub), up to 2 primary schools (one of which is to be a replacement for the existing Blean School), waste water treatment works, and open space.

In April 2024, WSP were commissioned by the University of Kent (UoK) to update the Transport Appraisal (the latest of which was prepared in January 2023) to summarise the work undertaken to date and to reflect the latest DLP, Draft District Transport Strategy, Draft Local Cycling and Walking Implementation Plan and the District Bus Strategy.

A meeting to discuss the proposed bus strategy was held on 10/05/2024. The following attendees were present:

- Matthew Arnold (Stagecoach)
- Teresa Curtis (University of Kent)
- David Dixon, Sarah Thomas, Kenneth Cobb and Scarlett Mackay (WSP)

This Technical Note (TN) sets out the topics of discussion at the meeting, and the relevant outcomes.

BUS STRATEGY

The Canterbury District Bus Strategy (CDBS) was prepared by Steer in February 2024.

The CDBS was developed to identify measures and actions that could be taken to reduce delays to bus services, encourage significant mode shift to bus and provide local consideration of what further proposals could be brought forward.

The proposed measures included within the CDBS seek to prioritise sustainable modes of transport which will allow for planned growth without increasing traffic flows and without compromising the climate change action plan.

The bus strategy includes a target to at least double the bus mode share in the built-up areas of Canterbury, Herne Bay and Whitstable to achieve a 16% mode share.

As set out in the CDBS, the city council will require developers to pay to provide bus routes to new developments or to increase the service if the development is already served by bus routes. In addition to this, the city council will use funding that has been collected from developments through Community

Infrastructure Levy to enhance the bus network and bus infrastructure if not directly related to a development to improve the service across the district.

EXISTING CONDITIONS

The University Campus and surrounding land benefits from access to a range of public transport services that primarily connect the University with wider Canterbury and destinations further afield.

Figure 1 illustrates the bus stops and bus routes that are accessible from the bus stops in the vicinity of the University Campus and surrounding area.

Figure 1 – Local Bus Stops and Routes

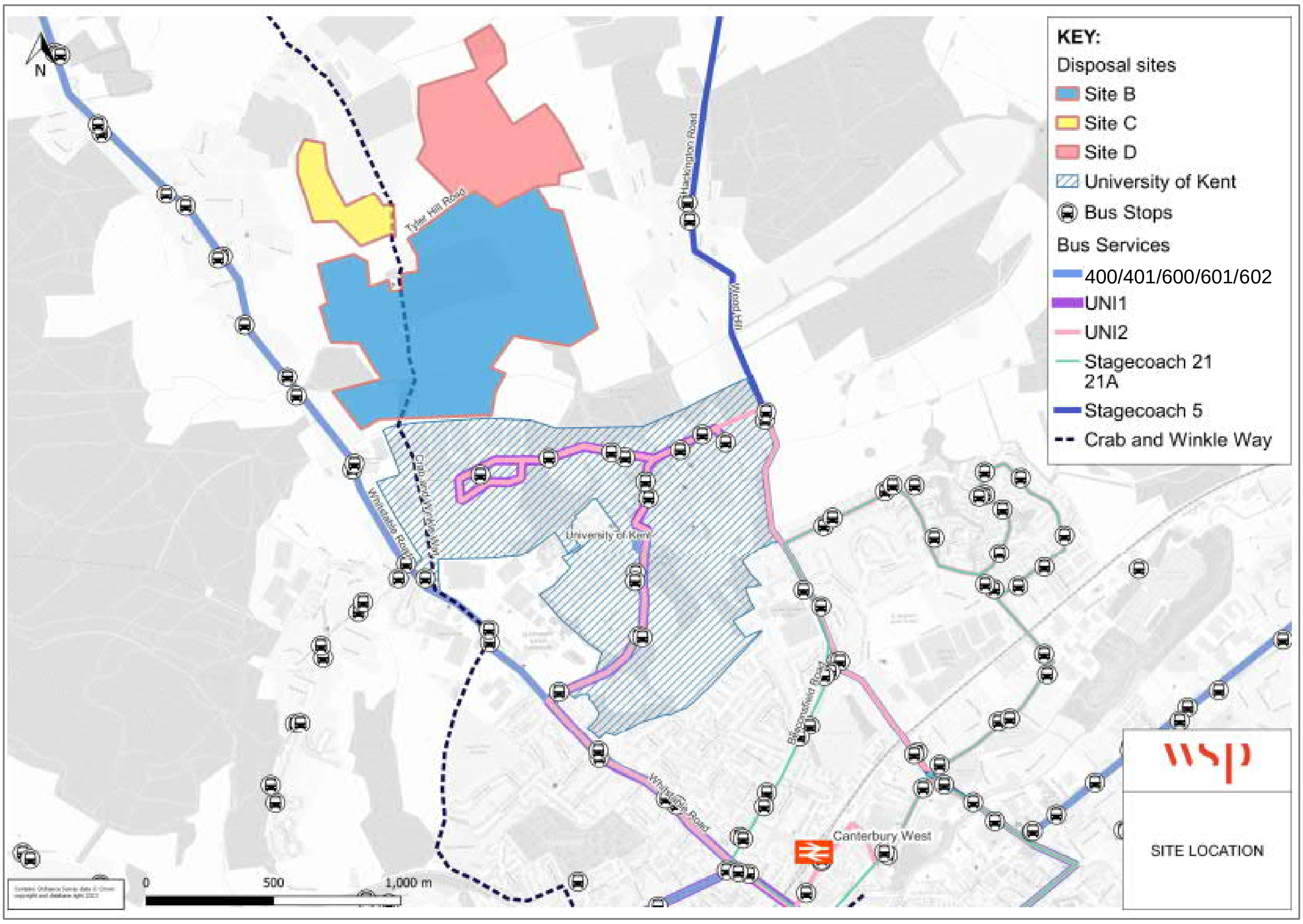


Figure 1 demonstrates that the University is served directly by four bus services (UNI1, UNI2, 5, 400/401/600/601/602) whilst further services are accessible from both Whitstable Road in the west and St Stephen's Hill in the east.

Table 1 provides a summary of the bus services accessible from the University Campus, Whitstable Road and St Stephen's Hill that could be utilised by users of Sites BCD.

Table 1 – Local Bus Services

Bus Service	Route	First Bus	Last Bus	Frequency			Nearest Bus Stop
				Mon – Fri	Sat	Sun	
5	Canterbury – Chestfield – Whitstable - Seasalter	06:33	20.09	Hourly	Hourly	2 hours	UoK, Alcroft Grange
21/21A	City Centre - St. Dunstan's - Hales Place - City Centre	07:01	22:35	20 mins	20 mins	Hourly	Hales Place, Downs Road
UNI1	UoK – Westgate Towers – Canterbury City Centre	08:32	18:32	10 mins	10-15 mins	30 mins	UoK, Keynes College (Stop A)
UNI2	Canterbury –Westgate Towers - UoK – Hales Place	09:04	04:05	30 mins (hourly night service)	30 mins	N/A	UoK, Park Wood Road
400	Canterbury – Whitstable	05:22	23:08	30 mins	60 mins	Hourly	UoK, Keynes College (Stop A)
401	Canterbury – Whitstable	07:38	23:38	30 mins	20-60 mins	20-40 mins	Canterbury Bus Station
601	Canterbury – Herne Bay	08:00	18:00	30 mins	30 mins	Hourly	Canterbury Bus Station
602	Canterbury – Herne Bay	07:00	23:30	Hourly	Hourly	Hourly	Canterbury Bus Station

Table 1 demonstrates that a range of services are available in the area surrounding the sites that operate on a range of frequencies up to every 10 minutes. Key destinations served include Canterbury City Centre, Canterbury West Railway Station, Sittingbourne, Whitstable and Herne Bay.

From 05/05/24 the Triangle buses were renamed with route numbers. Buses between Canterbury and Whitstable are now numbered 400 and 401. Buses between Canterbury and Herne Bay are numbered 600 and 601, with the 602 serving Broomfield, Beltinge and Herne Bay.

The 400 and 401 services alternate along the same route out of Canterbury, so Monday – Friday one comes ever 15 minutes, Saturday – Sunday one comes every 20 minutes. Also, the 600 and 601 services alternate along the same route out of Canterbury, so Monday – Saturday one comes every 15 minutes, and every 30 minutes on Sundays.

Stagecoach currently offer Student Bus Passes and Travel Cards, offering savings on regular ticket prices and unlimited travel which equates to less than £2 per day. The national £2 bus fare cap introduced on 1st January 2023 across England is also applicable to travel in Canterbury and wider Kent bus network.

It is noted that the frequency of the services set out in **Table 1** is lower than pre-Covid frequencies, due to a reduction in bus travel. During discussions with Stagecoach on 10th May 2024, it was understood that an increase in bus travel has occurred and is continuing to take place, with usage starting to return to pre-covid levels. The intention is therefore to increase the frequency of services back to pre-covid levels in the near future, once the demand arises.

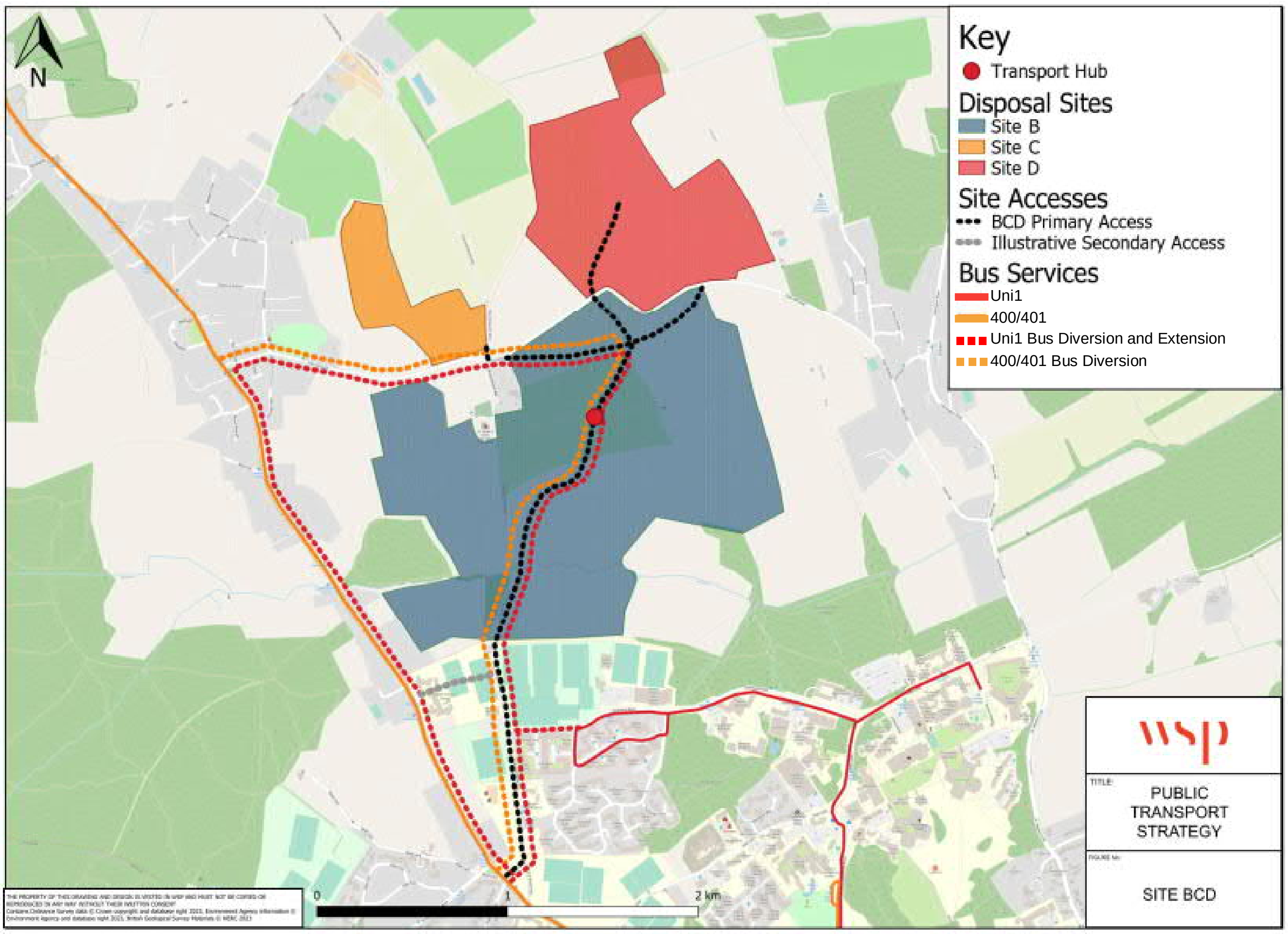
PROPOSED BUS STRATEGY

As discussed, the Site benefits from the adjacency of the University Campus where high frequency bus routes can be accessed. The public transport strategy will seek to build on the existing network of bus routes by extension of existing services to serve the on-site public transport hub.

A key principle of the transport strategy is the delivery of a transport hub on the development site to focus and provide access to a range of transport options, with the overarching aim of reducing reliance on the private car. The transport hub will be located adjacent to the local centre and be complimentary to the uses within the local centre itself. Whilst the principle of the transport hub is still evolving the key transport components of the facility would include bus stops including access to real time passenger information.

Figure 2 indicates how existing bus routes could be extended / diverted to serve the development's on-site transport hub. Discussions were held on 10th May with the University and Stagecoach to ensure integration of the site with the public transport network, and the potential routes shown in **Figure 2** were presented.

Figure 2 – Proposed Public Transport Strategy



The strategy currently considers an extension to Uni1 (shown in red in **Figure 2**) to serve the on-site transport hub. This route could either be fully extended via A290 Whitstable Road, or it could turn around at the transport hub. There is also the opportunity for a combination of both, alternating the route to maximise coverage. Extension of the Uni1 service would provide a weekday daytime frequency of up to every 10 minutes.

Another option is to divert the 400/401 service (shown in orange in **Figure 2**). At present, the route travels along the A290 Whitstable Road, but it could be diverted through the site, entering / exiting the A290 via Tyler Hill Road and one of the site access points.

It was understood during the meeting on 10th May that both of the above proposals were supported by Stagecoach and the University. It was agreed that a positive public transport offering could be delivered at this site that fulfils the CCC Transport Strategy, but also supports the planned improvements sought by Stagecoach and the University. It was agreed that as the wider strategies are progressed within Canterbury, the university would continue to work with the bus operators to finalise the public transport delivery.

SUMMARY

The following key points were summarised from the meeting held between WSP, Stagecoach and UoK on 10th May:

- There is an intention to increase the frequency of bus services back to pre-covid levels in the near future, once the demand arises.
- Stagecoach support the an extension of the existing Uni1 bus service to serve the on-site transport hub. The route could either be fully extended via Whitstable Road or it could turn around at the transport hub.
- Another option is to divert the 400/401 service (shown in orange in **Figure 2**). At present, the route travels along the A290 Whitstable Road, but it could be diverted through the site, entering / exiting the A290 via Tyler Hill Road and one of the site access points.

Appendix K

Rough Common Road Study

Public

TECHNICAL NOTE 1

DATE:	30 December 2022	**CONFIDENTIALITY:**	Public
SUBJECT:	University of Kent - Rough Common Road		
PROJECT:	70080896	**AUTHOR:**	Callum Duce
CHECKED:	David Dixon	**APPROVED:**	Justin Sherlock

INTRODUCTION

WSP have 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. As part of discussions regarding Sites BCD Kent County Council (KCC) as highway authority requested that a study be undertaken to review the ability of Rough Common Road to accommodate additional traffic in the future associated with Canterbury City Council's Local Plan and more specifically the Proposed Development known as Sites BCD on land owned by the UoK.

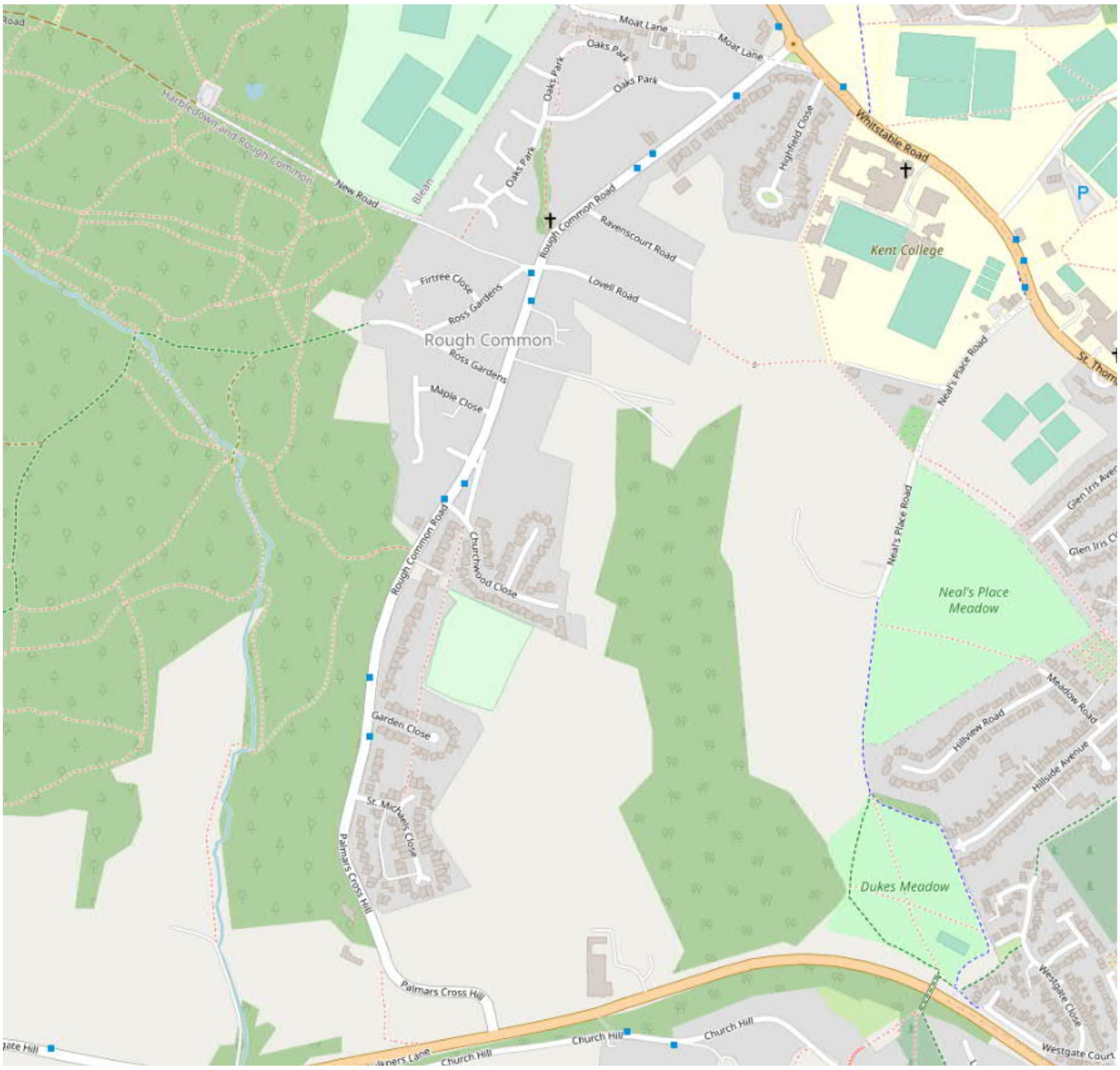
More specifically the purpose of the study was to:

- Understand existing conditions on Rough Common Road in relation to traffic flow, public transport provision, accidents, and parking
- Identify through use of a parking survey the current on-street parking arrangements and their usage during the weekday peak periods to determine if parking would constrain future traffic growth
- Identify through a site visit any geometric constraints that would affect the ability of Rough Common Road to accommodate additional traffic; and
- Make recommendations for improvements to Rough Common Road that could be considered to accommodate future traffic growth along this link.

TECHNICAL NOTE

Study Area

Figure 1: Study Area

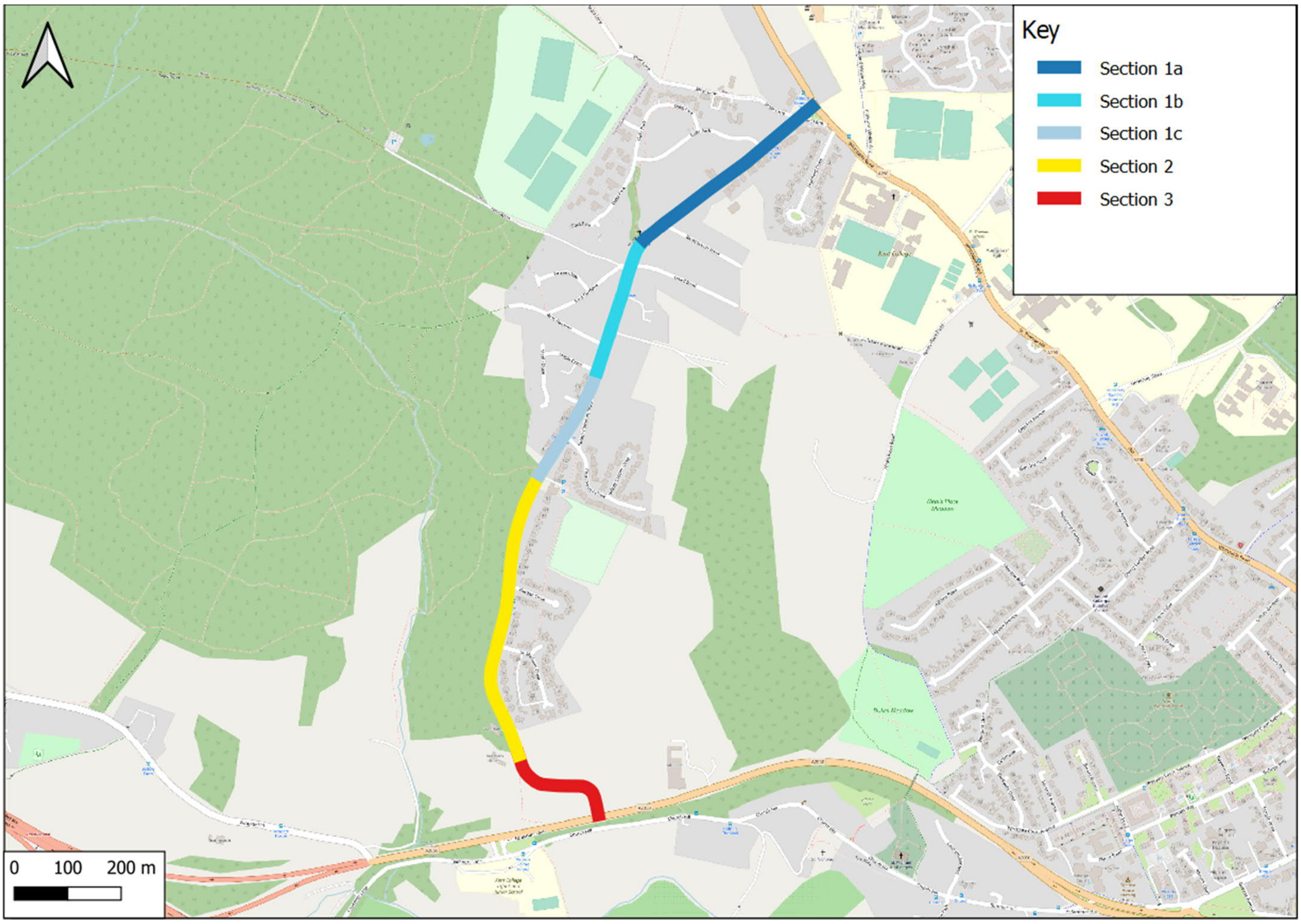


Rough Common Road (Figure 1) is a two-way single carriageway road with one lane running in each direction that spans 1.65km, connecting the A2050 in the south and the A290 Whitstable Road to the north. The road is street lit and for the majority of its length is subject to a 30mph speed limit. The road can be split broadly into three main character areas:

- Section 1 – between Whitstable Road and Rough Common Village Hall where the road passes through the built-up area of Rough Common
- Section 2 – between the Village Hall and the speed limit change where the road only features frontage access on the eastern side
- Section 3 – the southern end of the road on the approach to the traffic signal junction with A2050.

These sections are shown spatially on Figure 2.

Figure 2: Rough Common Road Subsections



Section 1

Section 1 can be broadly sub-divided into three sub-sections. Section 1a runs between the mini-roundabout junction with Whitstable Road and St Gabriel's Church. In Section 1a Rough Common Road features a carriageway which varies in width between approximately 6m and 6.5m. Footways of approximately 1.8m width line both sides of the carriageway with verges separating the carriageway and footways (Figure 3).

This Section of road is characterised by properties which feature their own driveways. As such, limited evidence of on-street parking is present. Two inset parking bays have been provided along this Section with capacity for approximately two vehicles each (Figure 4). Signage instructs motorists not to park on the verge (Figure 5).

Figure 3: Section 1a of Rough Common Road

Figure 4: Inset Parking Bays

Figure 5: Parking Restriction

Section 1b runs between St Gabriel's Church and Maple Close. This section features a carriageway width of approximately 6.2m. Footways (which vary in width) line both sides of the carriageway but there is no verge separating the two making it feel noticeably narrower than Section 1a. An inset parking bay (Figure 6) is provided with capacity for approximately four vehicles near the access to Maple House, an assisted living unit. Around Rough Common Stores some properties do not feature off-street parking and as such some parking, which cannot be accomodated within the inset parking bay provided, is located on carriageway (Figure 7). This parking reduces the carriageway to a single lane and acts as an informal priority working system.

Figure 6: Inset Parking Bay

Figure 7: Parking on-street

Section 1c runs betweeen Maple Close and the Rough Common Village Hall. This sub-section features a carriageway width of approximately 6.3m. An inset parking bay is provided outside of properties 95-101 (Figure 8). A separate unpaved service road then feeds properties behind a small green area adjacent to the junction with Church Wood Close.

Figure 8: Inset parking bay

Section 2

In this Section Rough Common Road features a carriageway width of between 7.8-6.8m. A footway of approximately 1.6m width is provided on the eastern side of the carriageway only which is located adjacent to the carriageway (i.e. there is no verge) (Figure 9). To the west is the Blean Woods SPA. A bus stop is located on the western side of the carriageway.

Figure 9: Properties on one side on the carriageway

Section 3

Unlike the remaining sections of Rough Common Road this section features a 50mph speed limit. The road is noticably wider than the other sections at approximately 7.8m width. However, the steep gradient and tight geometry as the road descends towards the A2050 means that veicle speeds are constrained (Figure 10).

This section features a verge and footway on the eastern side of the carriageway only and is characterised by a more rural feel.

Figure 10: Section C

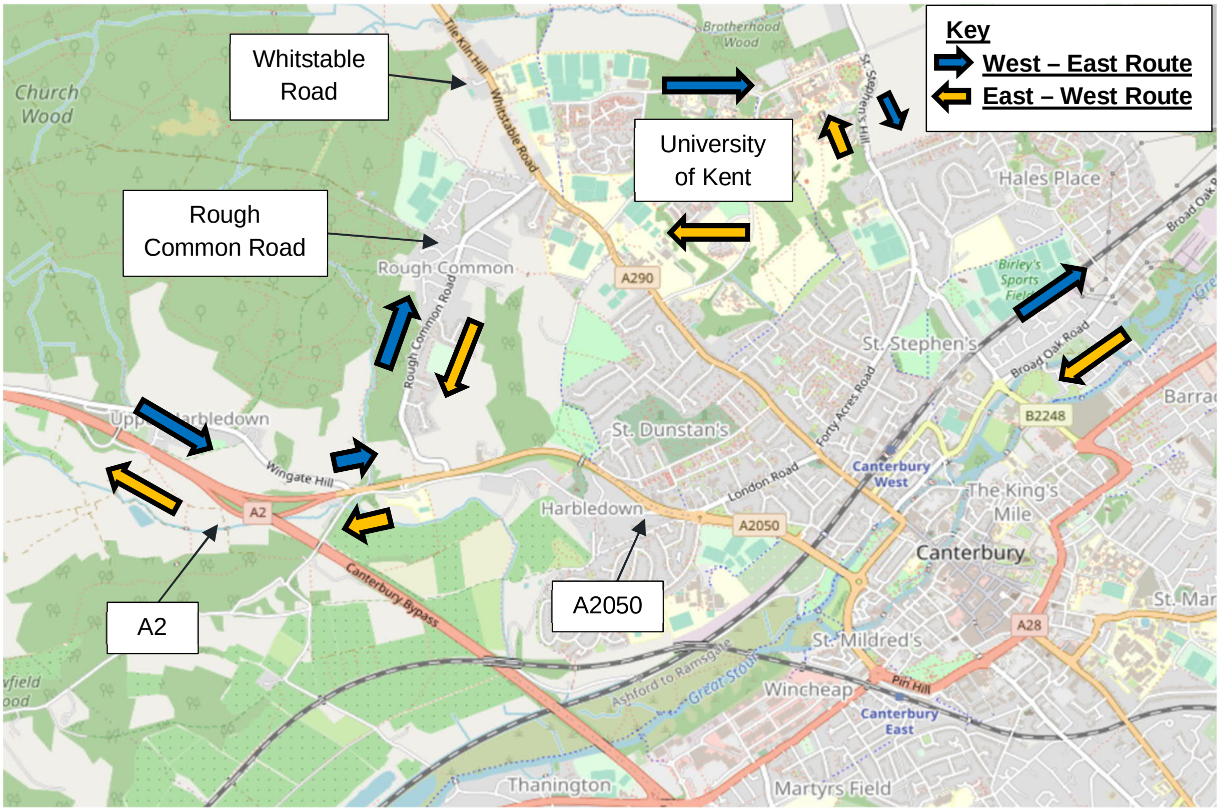
Current Usage of Rough Common Road

Function

The road is mostly located within the residential area of Rough Common, however it serves as a vital transport link for Canterbury, facilitating traffic movements between the A2 to the west of Canterbury, the University and northern Canterbury to the north. Due to the historic nature of Canterbury City Centre and limited routes available to motorists, traffic travelling to the east of Canterbury also uses Rough Common Road to avoid congestion in the City Centre.

A study undertaken by the University in 2018 identified that on the University Campus (which lies immediately to the east of the study area) 17% of traffic in the AM peak period (07:30-09:30) and 43% of traffic in the PM peak period (16:30-19:30) was through traffic. Whilst this does not confirm what proportion of traffic is then using Rough Common Road, because of the limited number of routes for traffic travelling between the A2 and A28 to the east of Canterbury it seems likely that Rough Common Road acts as part of an alternative east-west cross-city route (Figure 11).

Figure 11: Rough Common Road Local Context



Traffic Volumes

Table 1 shows traffic flows for Rough Common Road as identified from the traffic surveys undertaken in 2021. It then provides an estimate of the traffic flows for the peak hours for the 2045 future forecast year including the traffic associated with Sites BCD as identified in the Preliminary Transport Appraisal.

Table 1: 2021 and 2045 Base + Development Flows along Rough Common RoadYear	Time Period	Northbound		Southbound		Two-way	
		All traffic	% HGV	All traffic	% HGV	All traffic	% HGV
2021	AM Peak	599	1	437	2	1036	1
	PM Peak	401	0	416	1	817	0
	Daily	4864	1	4149	1	9013	1
2045 + Development	AM Peak	840	1	821	1	1661	1
	PM Peak	818	0	612	1	1430	0
	Daily	-	-	-	-	-	-

To identify the capacity of this link road, TA79/99 – Capacity of Urban Roads has been considered. It should be noted that TA79/99 has now been withdrawn, however it has been used in this study as a means to identify at a high level the capacity of the Rough Common Road.

Table 2: TA79/99 Capacities of Urban Road

		Two-way Single Carriageway- Busiest direction flow (Assumes a 60/40 directional split)									Dual Carriageway			
		Total number of Lanes									Number of Lanes in each direction			
		2				2-3	3	3-4	4	4+	2		3	4
Carriageway width		6.1m	6.75m	7.3m	9.0m	10.0m	12.3m	13.5m	14.6m	18.0m	6.75m	7.3m	11.0m	14.6m
Road type	UM	Not applicable										4000	5600	7200
	UAP1	1020	1320	1590	1860	2010	2550	2800	3050	3300	3350	3600	5200	*
	UAP2	1020	1260	1470	1550	1650	1700	1900	2100	2700	2950	3200	4800	*
	UAP3	900	1110	1300	1530	1620	*	*	*	*	2300	2600	3300	*
	UAP4	750	900	1140	1320	1410	*	*	*	*	*	*	*	*

Table 2 shows the capacities of urban roads based on carriageway width. The carriageway width along the Rough Common Road Study Area is between 6.1m – 6.75m and is considered to be classed as “UAP3” being a “variable standard road carrying mixed traffic with frontage access and more than two side roads per km”. These factors give the road a capacity of between 900-1110 vehicles in the busiest direction during a peak period which is greater than that predicted for 2045. Based upon TA79/99 Rough Common Road is identified as operating within capacity in both the existing and future forecast years including Sites BCD.

Public Transport

Rough Common Road is served by a number of bus routes that provide connections to a variety of destinations. All of the routes that operate along the whole road’s length are school bus services, notably the 903, 904, 905 and 906 services between Herne Bay and a number of Canterbury schools including St Anselm’s School, Simon Langton Boys’ School, Barton Court School and Simon Langton Girl’s School respectfully. The 913 service to and from Yorkletts serves a number of schools within Canterbury including St Anselm’s School, Simon Langton Boys’ School and Simon Langton Girl’s School.

Further afield buses serving the general public can be accessed at the Rough Common Turn bus stop located on Whitstable Road to the north of the study area.

Table 3 shows the services that are available.

Table 3: Bus Services

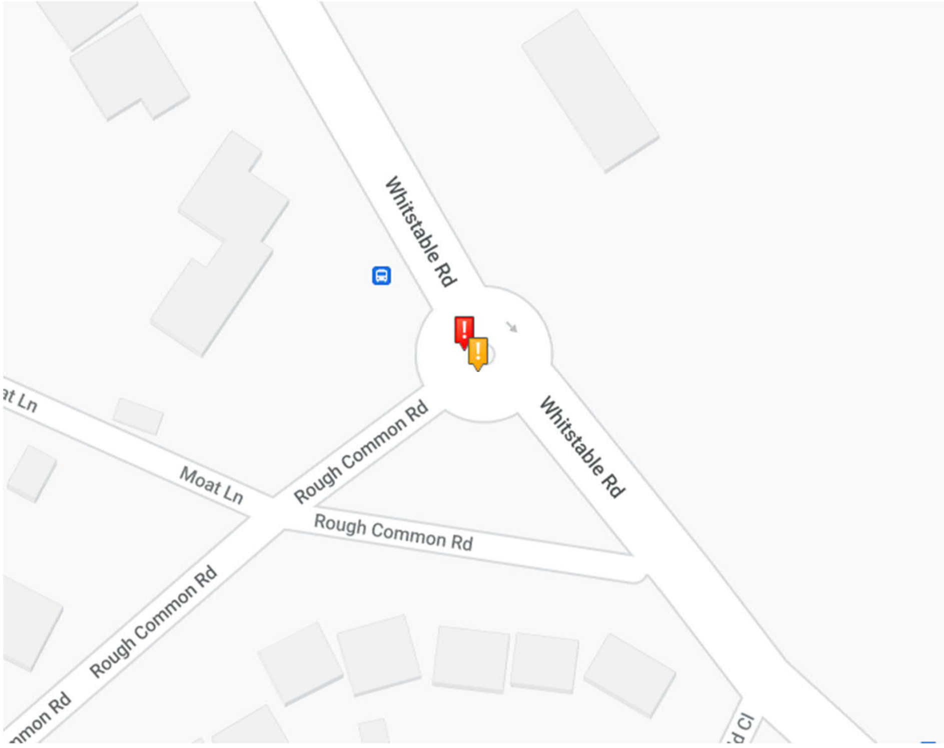
Service	Route	Weekday Frequency (buses/hr)	
		AM Peak (08-00-0900)	PM Peak (1700-1800)
4	Canterbury - Greenhill	2	2
4	Greenhill - Canterbury	1	1
903, 904, 905, 906	Herne Bay – Canterbury Schools	One service in the morning	
903, 904, 905, 906	Canterbury Schools – Herne Bay	One service in the afternoon	
913	Yorkletts – Canterbury Schools	One service in the morning	
913	Canterbury Schools - Yorkletts	One service in the morning	
Triangle	Canterbury – Whitstable – Herne Bay	3	3
Triangle	Herne Bay – Whitstable - Canterbury	3	3

Accident Record

A review of the Crashmap database was undertaken to understand whether there was an existing pattern of collisions that could be exacerbated by future increases in traffic volume along Rough Common Road.

Data provided by CrashMap reveals that only 6 collisions occurred within the study area across a 3-year period between 2019 and 2021, with 5 being slight and 1 incident being serious. The serious incident occurred at the A290 Whitstable Road/Rough Common Road roundabout in October 2019. There does not seem to be any noticeable trend that is impacted by the parked vehicles along this corridor. The accident locations are set out in Figures 12-14 below.

Figure 12: Whitstable Road/Rough Common Road Roundabout CrashMap data



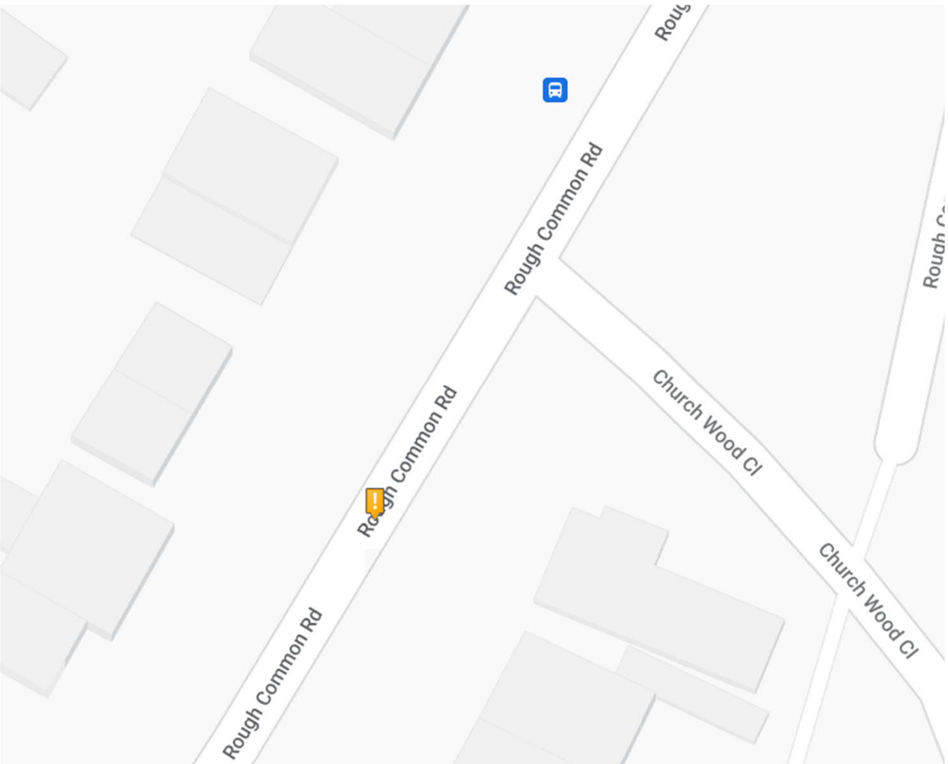


Figure 13: Rough Common Road CrashMap Data

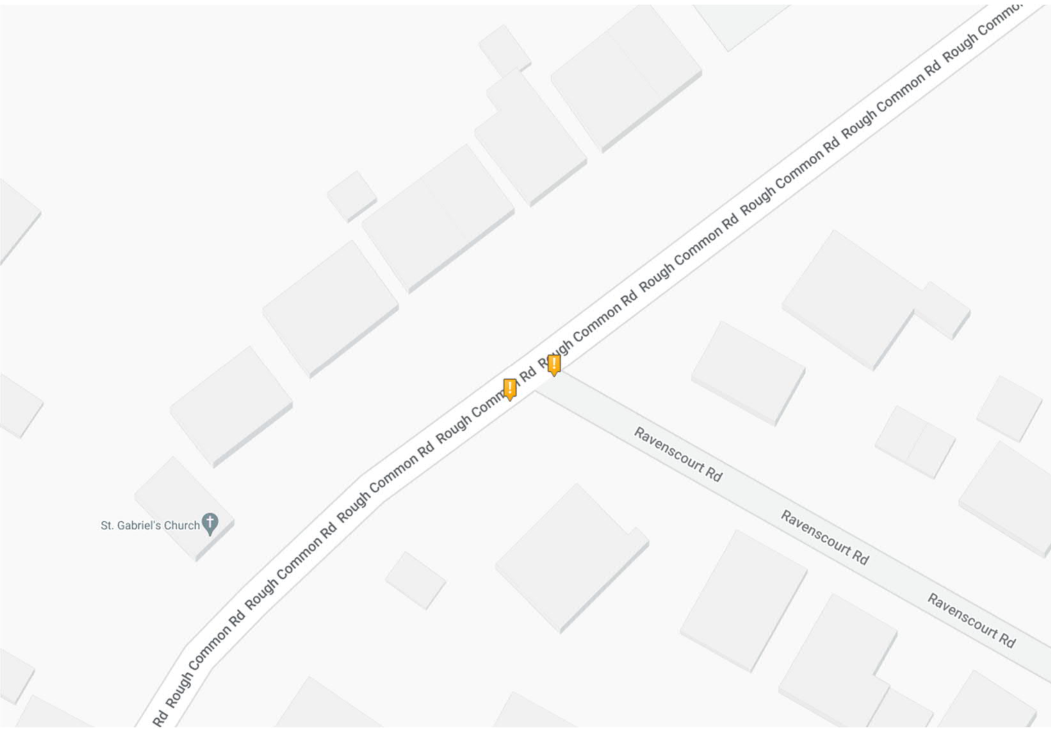
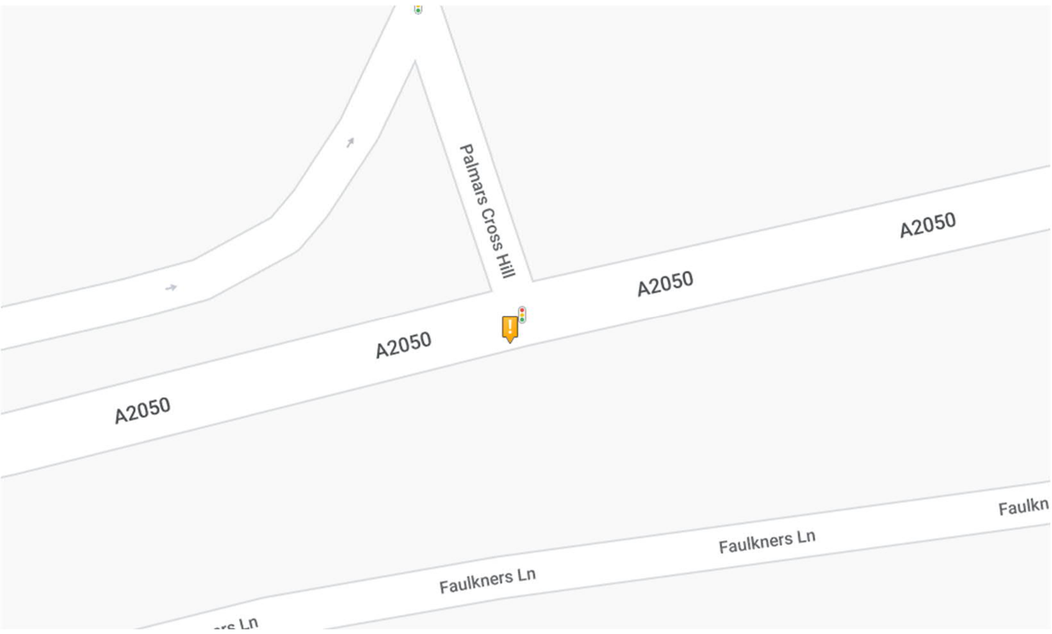


Figure 14: A2050/Palmars Cross Hill Junction CrashMap data



Parking Survey

A parking survey was undertaken on Wednesday 6th July and Thursday 7th July 2022. The following time periods were surveyed:

- 07:00-10:00 on Wednesday 6th July 2022
- 07:00-10:00 on Thursday 7th July 2022
- 16:00-19:00 on Thursday 7th July 2022

During these time periods the quantum, type and length of stay of parked vehicles was noted using a 30-minute parking beat survey.

Full parking survey results are shown in **Appendix A** split down by 30 minute time period. A summary of the results are provided by survey period below.

Wednesday 6th July 2022 – 07:00-10:00

- Section 1a – vehicles were noted parking within the designated inset parking bays. One vehicle was parked on the carriageway for one of the parking best surveys (08:00) only
- Section 1b – five vehicles were parked in the lay-by adjacent to the access to Maple House throughout the parking survey. Two vehicles were also noted parked on carriageway outside of property 81 at the start of the survey. This increased to three vehicles at 08:00 and decreased to one by 09:00.
- Section 1c – three vehicles were noted parked in the layby outside property 97. One vehicle was noted parked outside of property 100 on carriageway between 07:00-09:00.
- Section 2 – a vehicle was noted parked on carriageway outside of property 159b between 07:00-09:00.
- Section 3 – no vehicles were noted parked in this section

Thursday 7th July 2022 – 07:00-10:00

- Section 1a – vehicles were noted parking within the designated inset parking bays only.
- Section 1b – between three and four vehicles were noted to be parked in the layby adjacent to the access to Maple House throughout the parking survey. A vehicle was noted to be parked on carriageway outside of property 81 at the start of the survey. This steadily increased to up to five vehicles parked between property 81 and Maple Close by 10:00.
- Section 1c – between one and three vehicles were parked in the lay-by outside of property 97.
- Section 2 – a vehicle was noted parked on carriageway outside of property 159b throughout the survey. A vehicle was noted parking on carriageway outside of property 169 between 08:00-10:00
- Section 3 – between one and two vehicles were noted parked in the layby near the speed limit threshold throughout the duration of the survey

Thursday 7th July 2022 – 16:00-19:00

- Section 1a – vehicles were noted parking within the designated inset parking bays only.

- Section 1b – between three and four vehicles were noted to be parked in the layby adjacent to the access to Maple House throughout the parking survey. A vehicle was noted to be parked on carriageway outside of property 89 (near Maple Close) throughout the parking survey.
- Section 1c – between zero and two vehicles were parked in the lay-by outside of property 97. A vehicle was also noted parking on carriageway outside of property 102 at 16:30
- Section 2 – a vehicle was noted parked on carriageway outside of property 159b throughout the survey. A vehicle was noted parking on carriageway outside of property 153 between 16:00-17:00
- Section 3 – between one and two vehicles were noted parked in the layby near the speed limit threshold throughout the duration of the survey

Recommendations

The main issues identified as affecting the free flow of traffic on Rough Common Road from the parking survey conducted were;

- Vehicles parked on the eastern side of the carriageway between Ross Gardens and Maple Close where properties generally have no off-street parking facilities
- Vehicles parked in Section 2 of the study area despite appearing to have off-street parking available

It is evident that the parking constraints on Rough Common Road are an existing issue that would need to be considered further by KCC as highway authority, noting the likely increase in traffic even without the University of Kent land promotion site. As such, the most appropriate way forward would be for parking restrictions to be included as part of the wider Canterbury Transport Strategy, and where necessary additional parking for residents and/or parking controls (restricted to peak hours) are introduced. The development at the University of Kent could contribute to this wider strategy.

However, to show how improvements could be delivered to help improve the existing situation, WSP have suggested increases in the existing layby provision that can be undertaken within the existing adopted highway.

Figure 15 and Figure 16 show where laybys could be increased in length to accommodate further spaces.

Figure 15: Maple Close/Rough Common Road parking recommendations

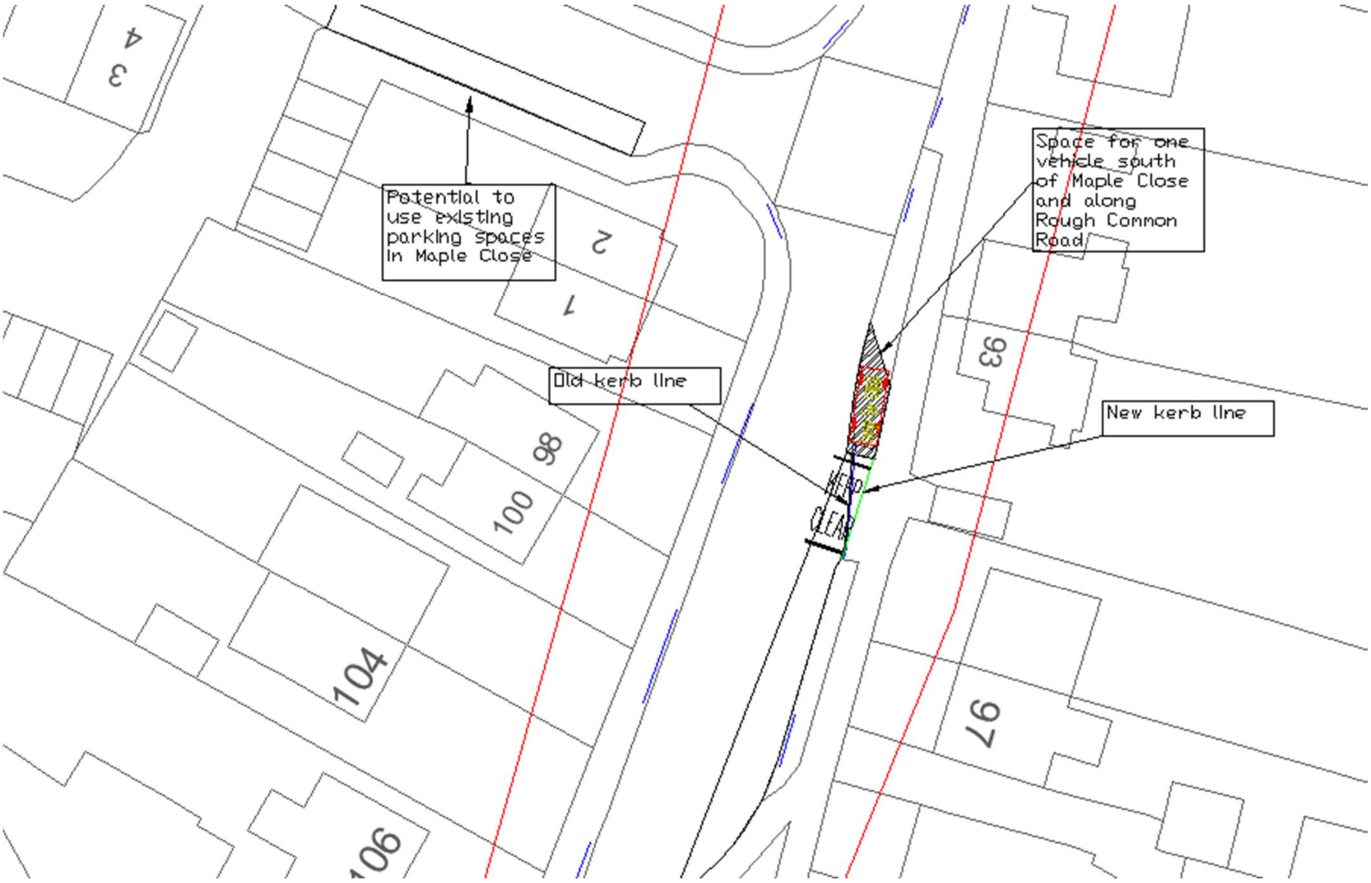


Figure 15 shows the potential for an additional off street parking space being provided north of the existing layby and outside property 93. It is anticipated that a new Keep Clear sign is located between properties 95 and 93 to enable access to the existing driveways.

Figure 16: Section 1b Rough Common Road parking recommendations

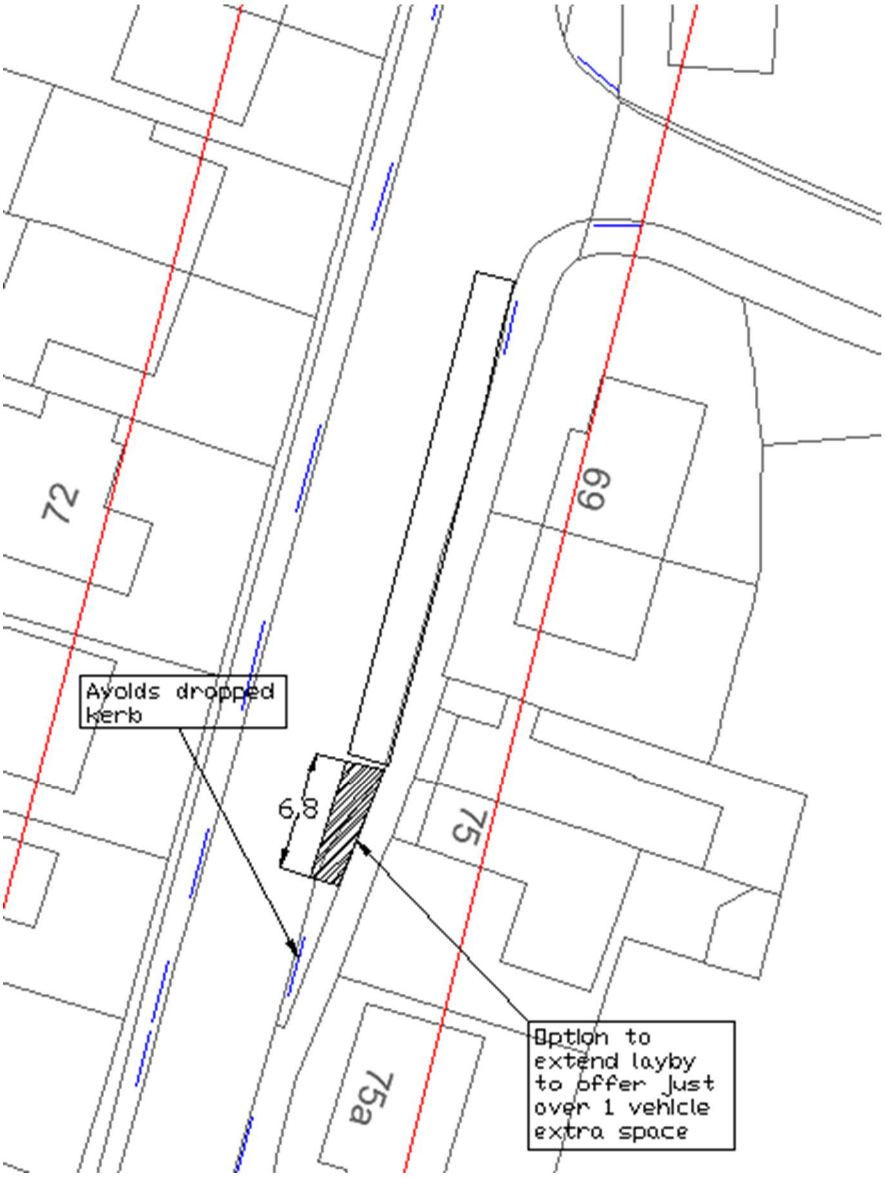


Figure 16 shows the potential for an additional space to be located outside properties 69-75a. The additional space could be delivered by extending the parking bay by circa 6-7m south of the existing boundary. This could accommodate an additional vehicle off street.

The two above schemes would enable 2 additional vehicles to park off street which would significantly improve the situation on this section of Rough Common Road and significantly improve movements along this corridor.

SUMMARY

WSP was commissioned to undertake a study of Rough Common Road to identify potential for improving the free flow of traffic and ensuring it would be suitable for increased traffic volumes associated with local plan growth and more specifically Sites BCD.

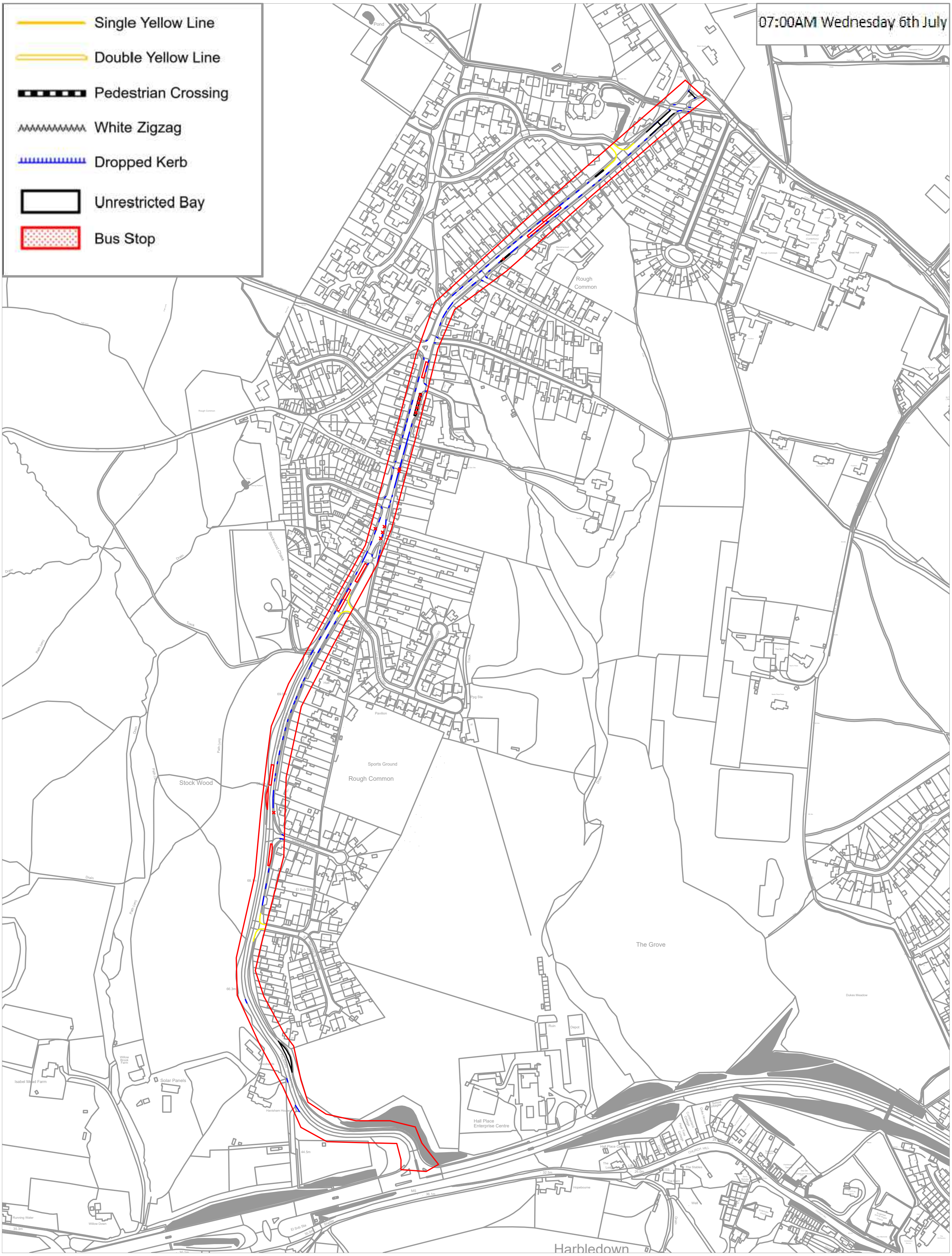
A review of the existing condition of Rough Common Road identified that it is currently suitable for the volume and type of traffic that it carries with no specific accident record identified. Having reviewed the future year flows within Table 1, the 2045 + increase in traffic is still well below link capacity of Rough Common Road therefore there are no constraints associated with the development.

The parking survey indicates that the free flow of traffic is restricted during peak periods by on-street parking that occurs in section 1b and 2. To address this, proposals have been put forward that could increase the off street provision by 2 parking spaces which would improve throughput in this location (subject to KCC consideration). This could be coupled with the introduction of peak period parking restrictions to safeguard the free flow of traffic, reducing the current constraints during the peak periods.

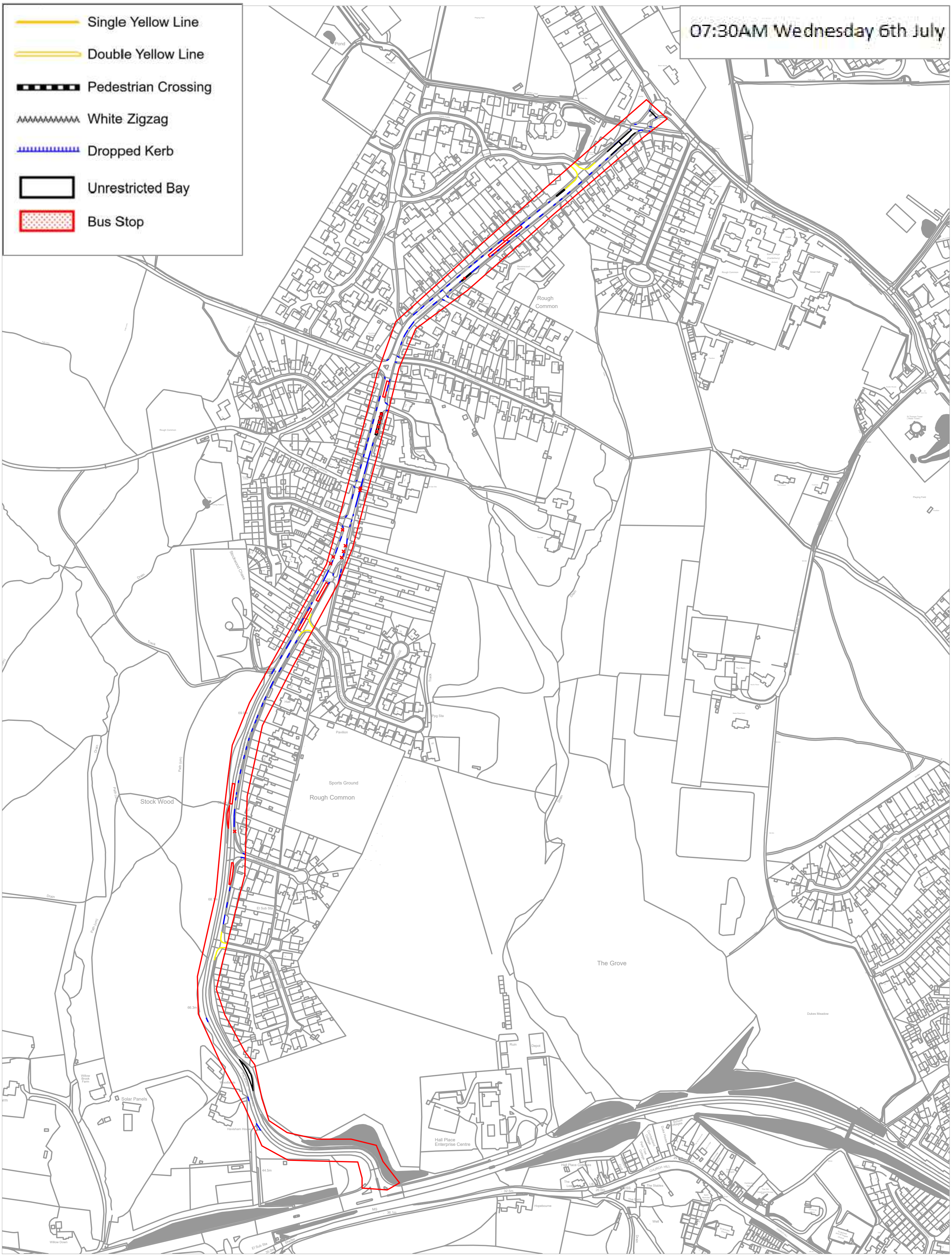
Notwithstanding the above, the parking on Rough Common Road is an existing constraint and an issue that would need to be considered further by KCC without the UoK allocation with increases in vehicle movements expected in the future due to the wider growth in the town. As such, it is suggested that improvements along this corridor are considered as part of the wider Canterbury Transport Strategy, whereby more significant improvements could be considered by KCC (including the provision of more off street parking using land outside of the adopted highway) and where appropriate the Proposed UoK allocation could contribute too.

The review has shown that the existing road can accommodate the future forecast traffic flows and improvements to the existing parking constraints can be forthcoming, and that subject to continued review with KCC, a wider mitigation package for this corridor should be pursued.

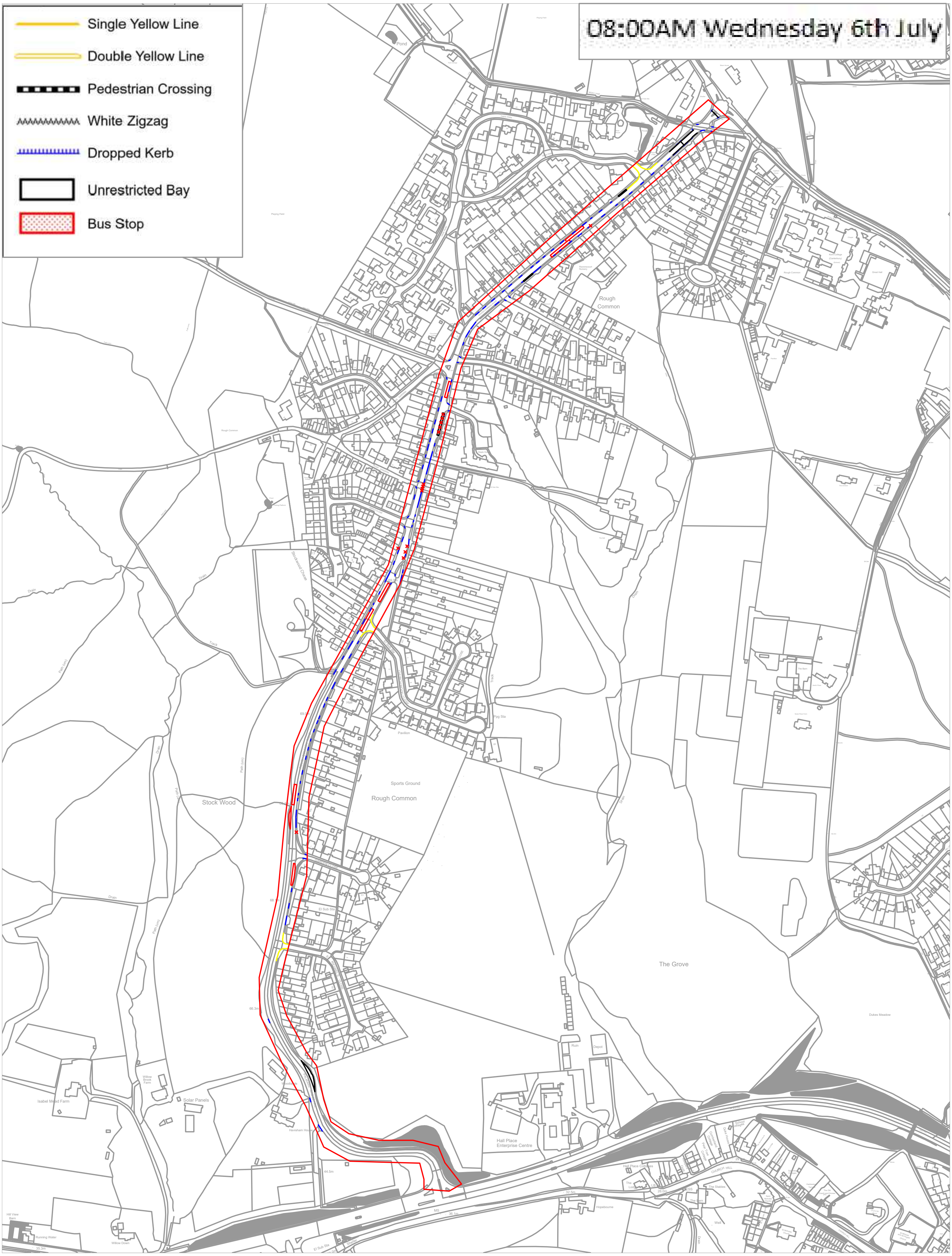
Appendix A



Single Yellow Line
Double Yellow Line
Pedestrian Crossing
White Zigzag
Dropped Kerb
Unrestricted Bay
Bus Stop
07:00AM Wednesday 6th July
Rough Common
Sports Ground
Rough Common
Stock Wood
Pavilion
The Grove
Hall Place Enterprise Centre
Solar Panels
Harbledown



Single Yellow Line
Double Yellow Line
Pedestrian Crossing
White Zigzag
Dropped Kerb
Unrestricted Bay
Bus Stop
07:30AM Wednesday 6th July
Rough Common
Sports Ground
Rough Common
Stock Wood
The Grove
Pavilion
Solar Panels
Hall Place Enterprise Centre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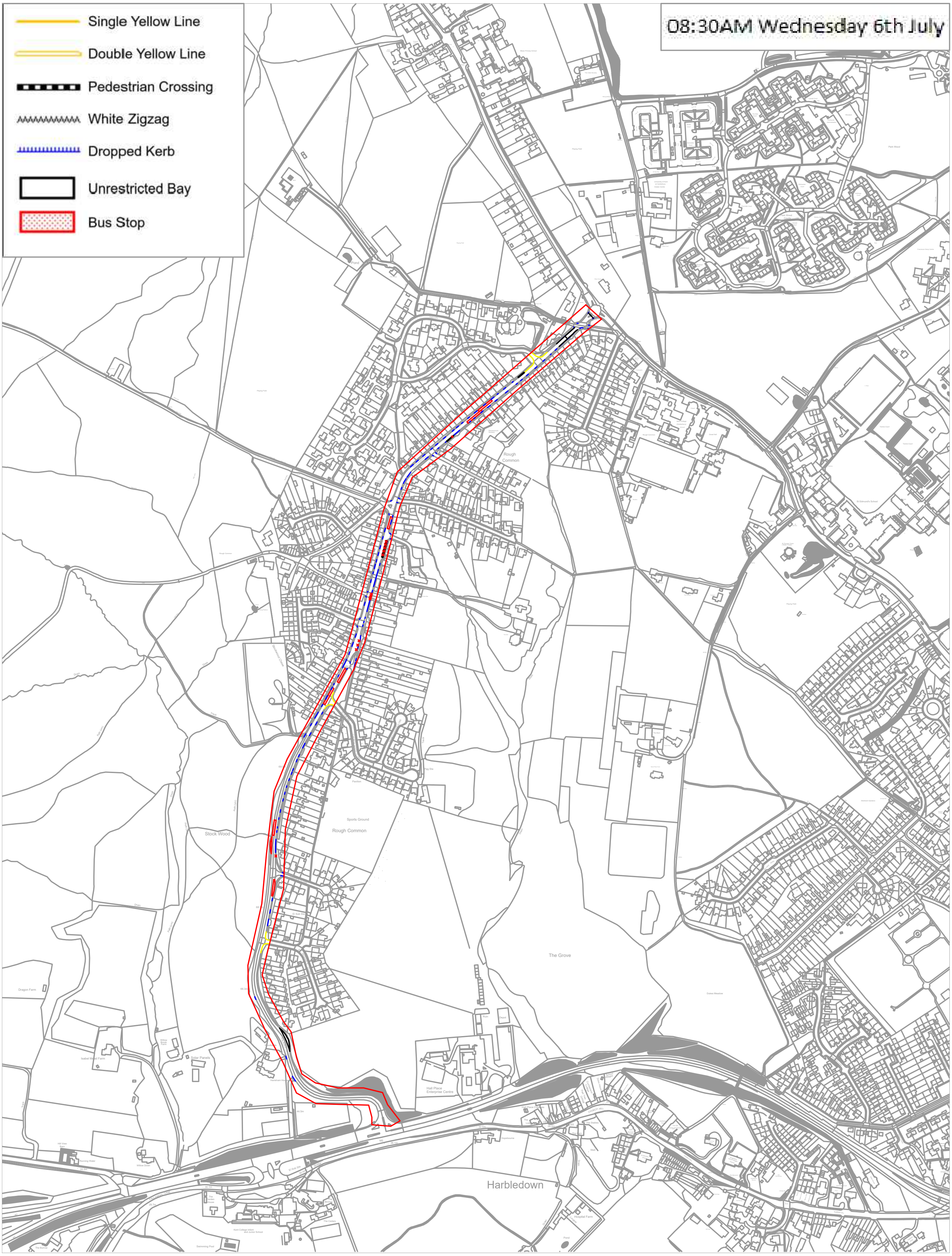
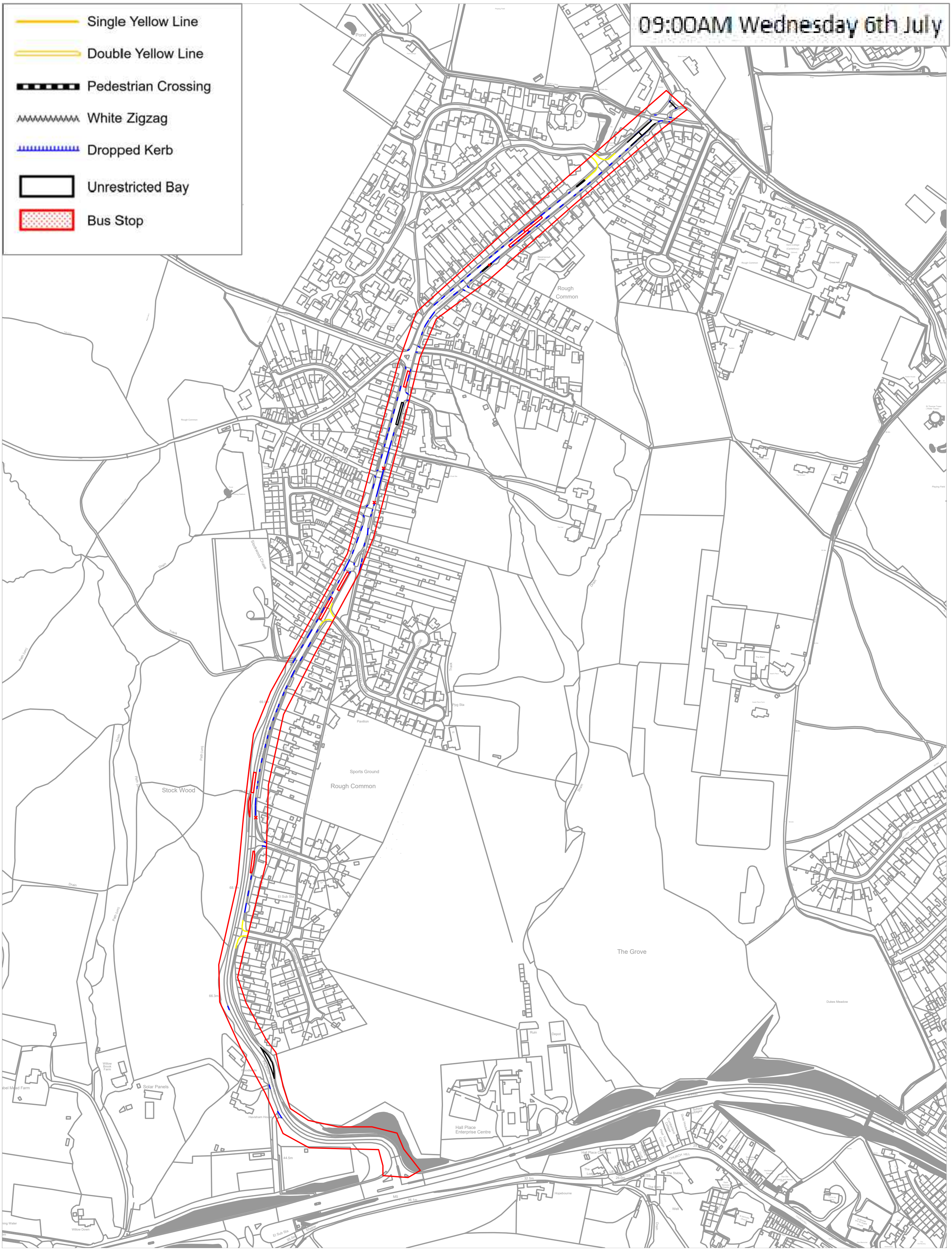
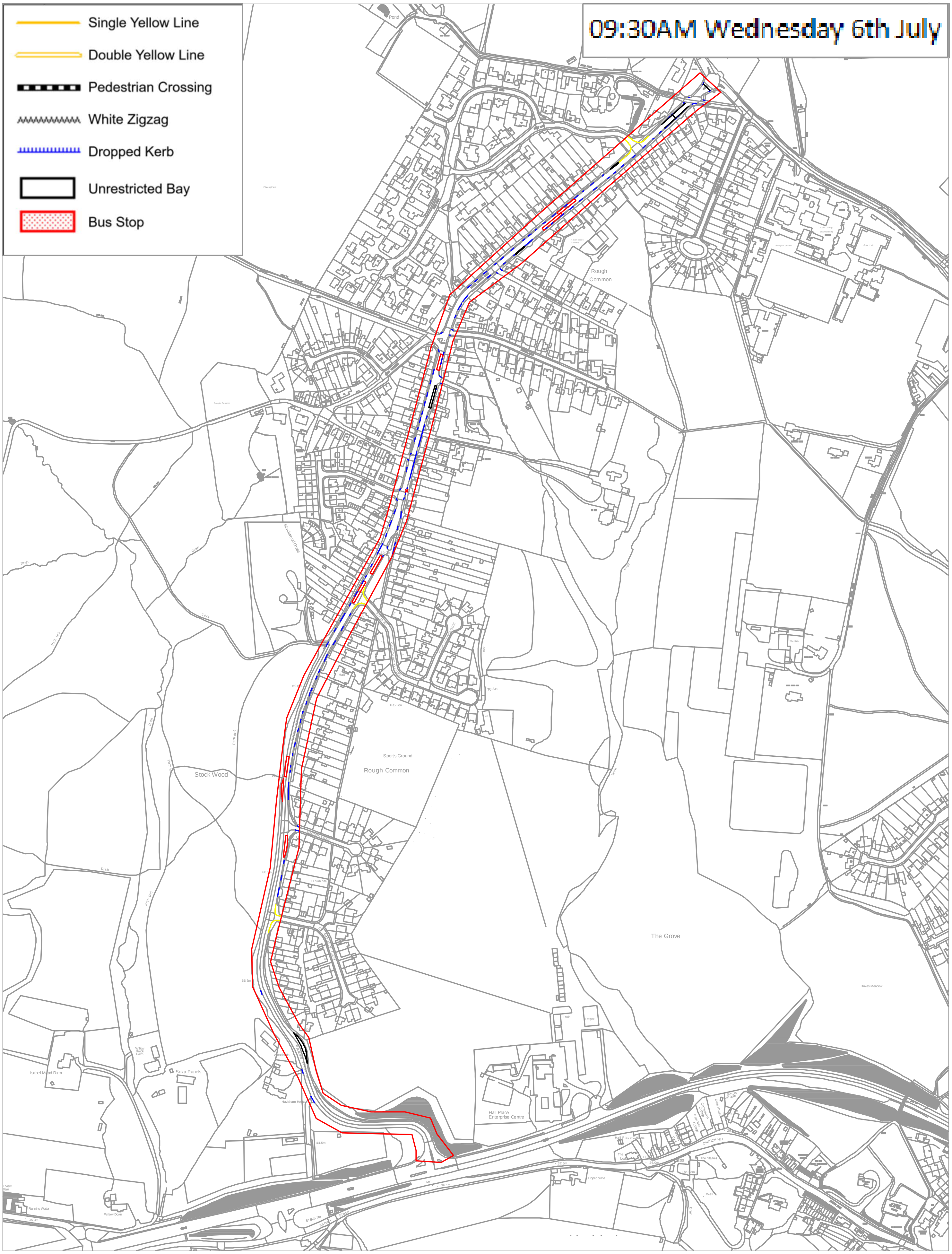
Single Yellow Line
Double Yellow Line
Pedestrian Crossing
White Zigzag
Dropped Kerb
Unrestricted Bay
Bus Stop
Rough Common
Sports Ground
Rough Common
Stock Wood
The Grove
Hall Place Enterprise Centre
Solar Panels
Pond
Pavilion
Isabel Mead Farm


Single Yellow Line
Double Yellow Line
Pedestrian Crossing
White Zigzag
Dropped Kerb
Unrestricted Bay
Bus Stop
08:30AM Wednesday 6th July
Rough Common
Sports Ground
Stock Wood
The Grove
Harbledown

09:00AM Wednesday 6th July

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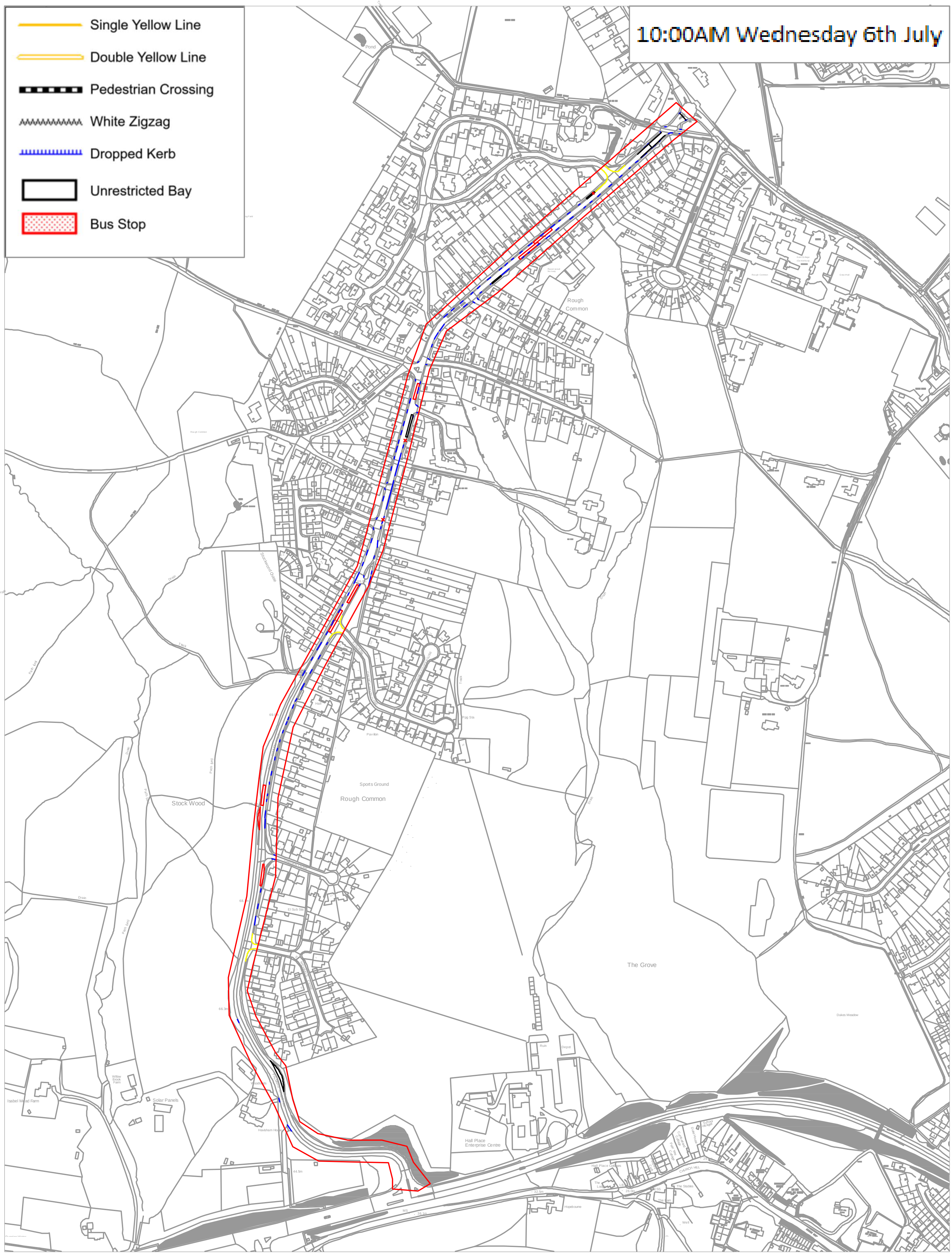
White Zigzag
Dropped Kerb
Unrestricted Bay
Bus Stop
Pond
Rough Common
Sports Ground
Rough Common
Stock Wood
The Grove
Solar Panels
Hall Place Enterprise Centre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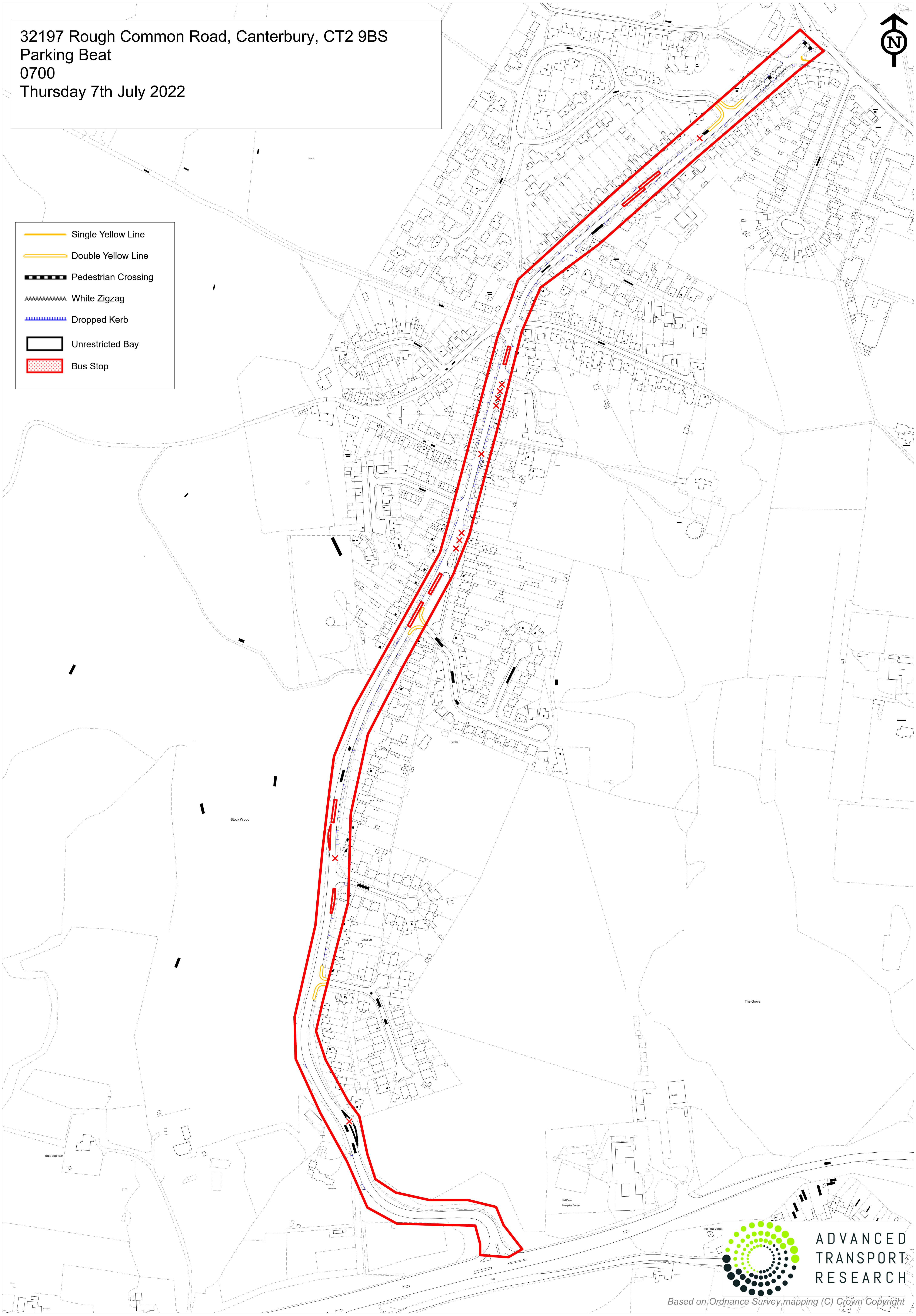
Pedestrian Crossing
White Zigzag
Dropped Kerb
Unrestricted Bay
Bus Stop
Pond
Rough Common
Sports Ground
Rough Common
Stock Wood
The Grove
Solar Panels
Hall Place Enterprise Centre

32197 Rough Common Road, Canterbury, CT2 9BS
Parking Beat
0700
Thursday 7th July 2022



ADVANCED TRANSPORT RESEARCH

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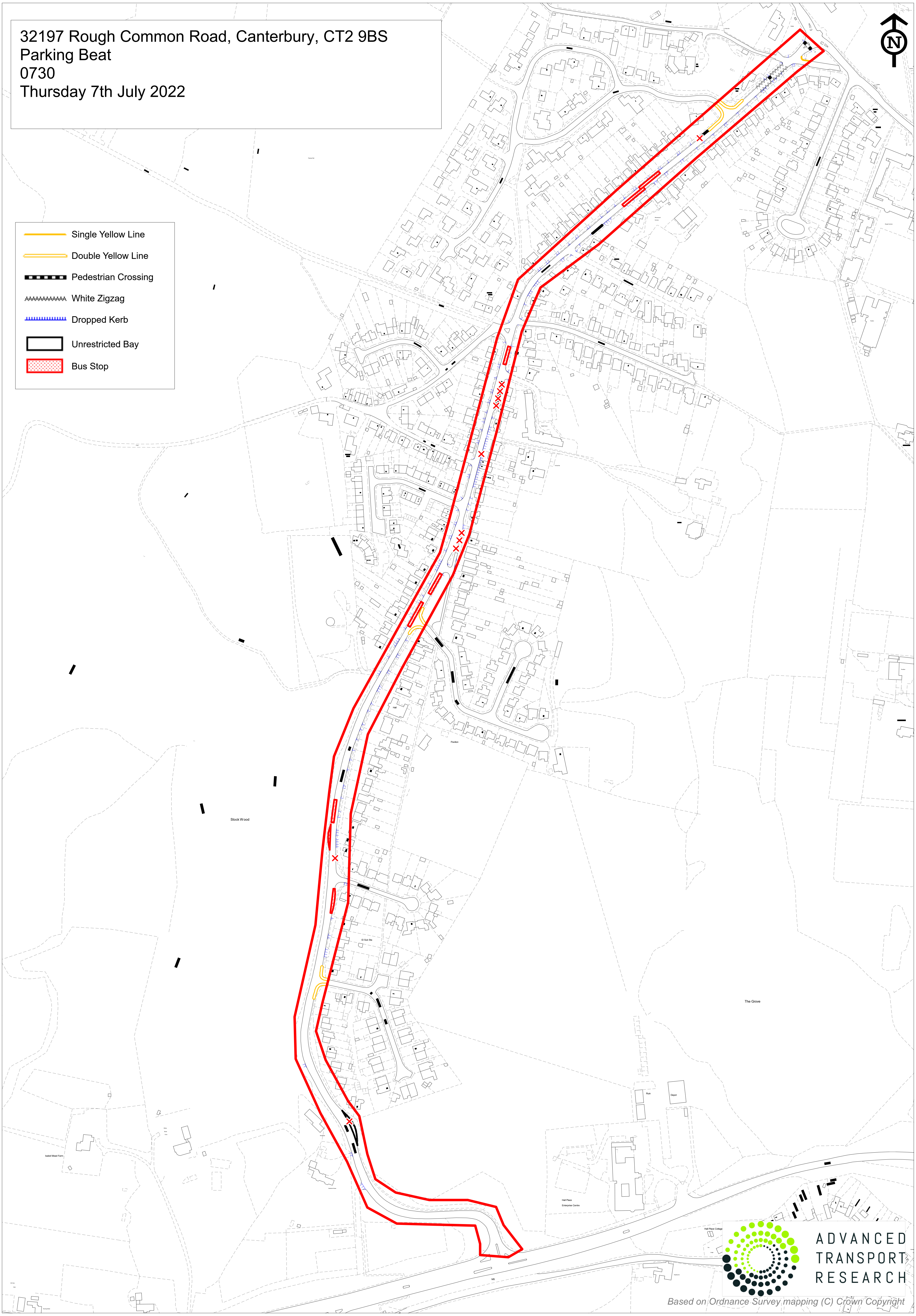
Parking Beat
0730
Thursday 7th July 2022



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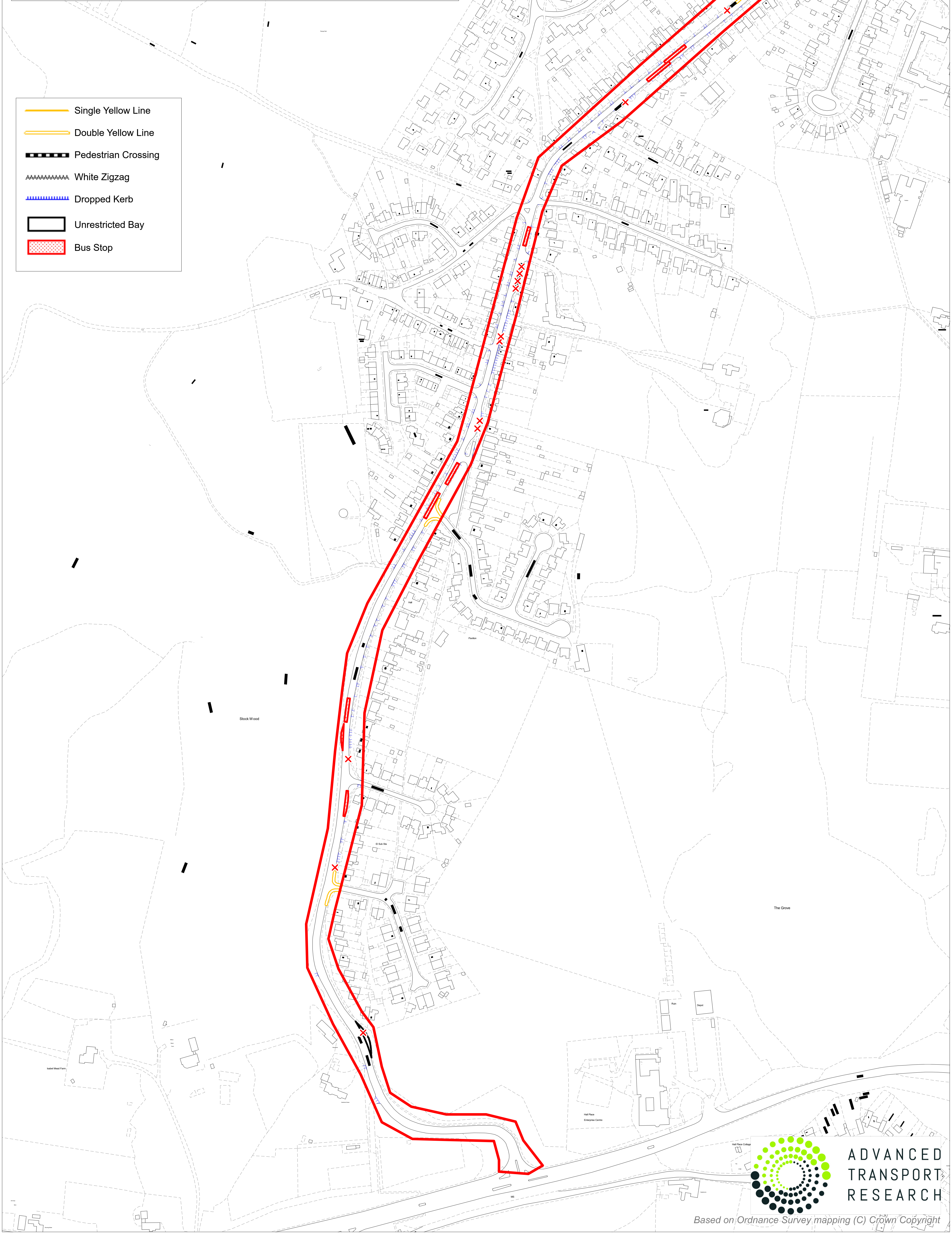
Parking Beat
0800
Thursday 7th July 2022



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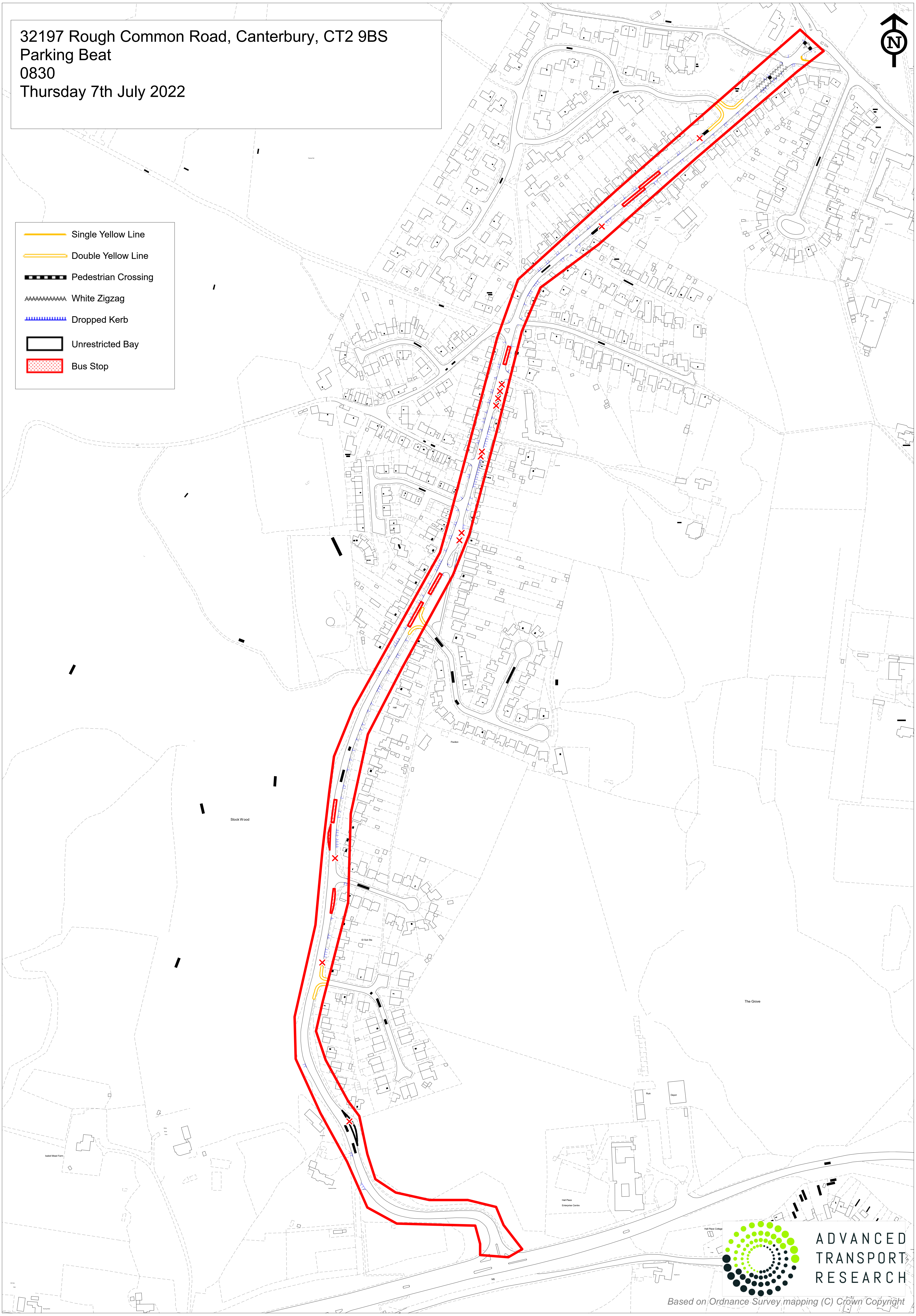
Parking Beat
0830
Thursday 7th July 2022



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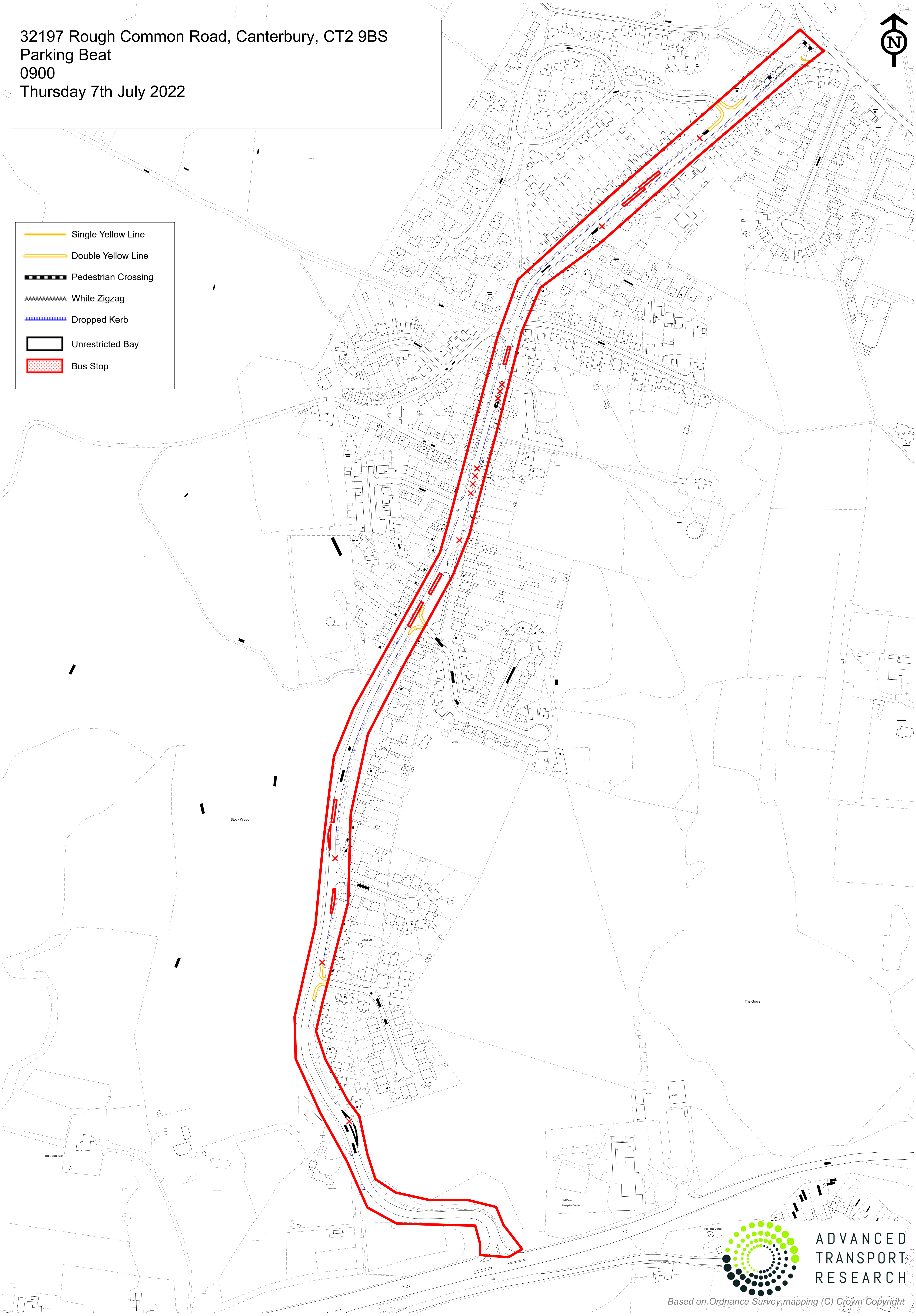

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Parking Beat
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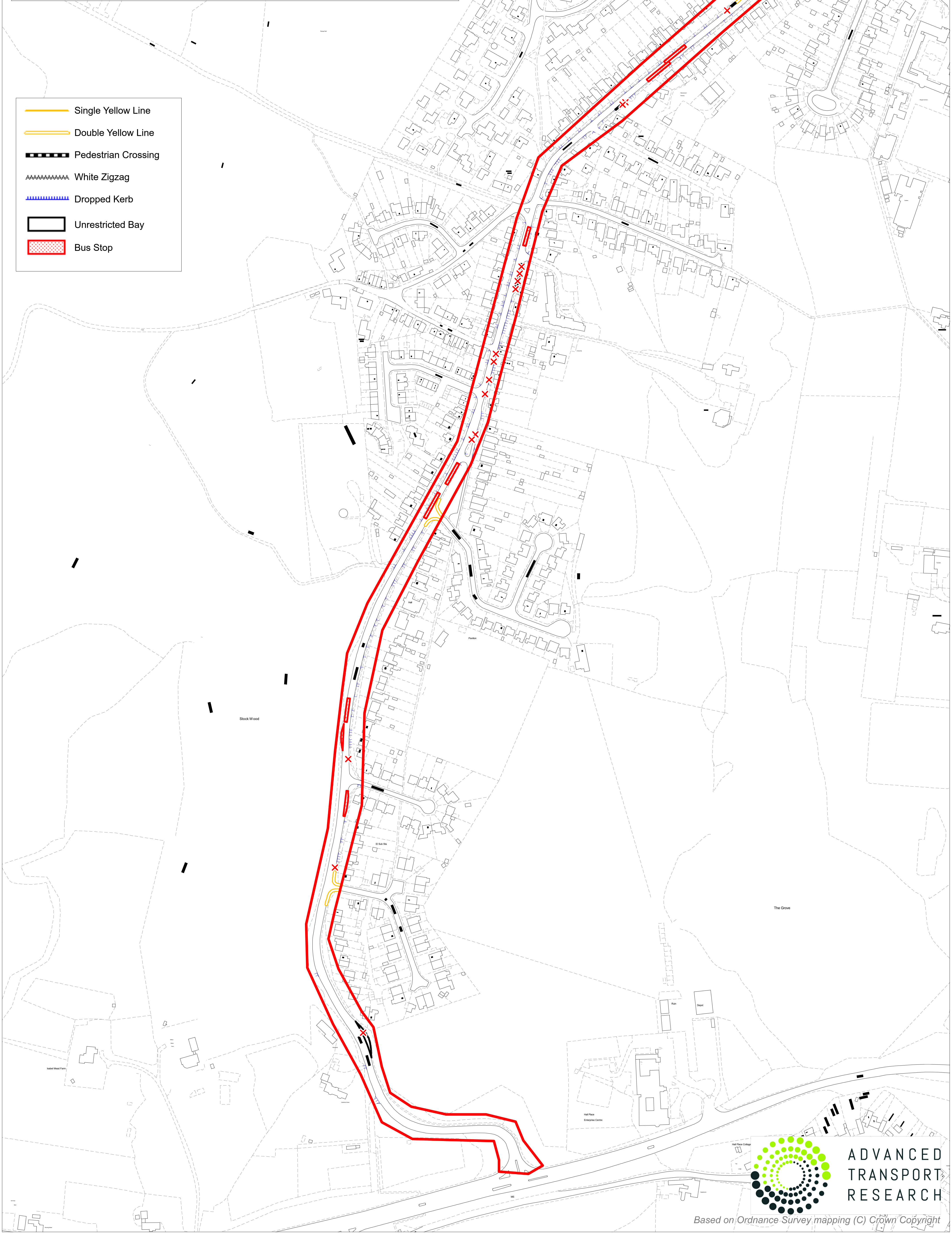

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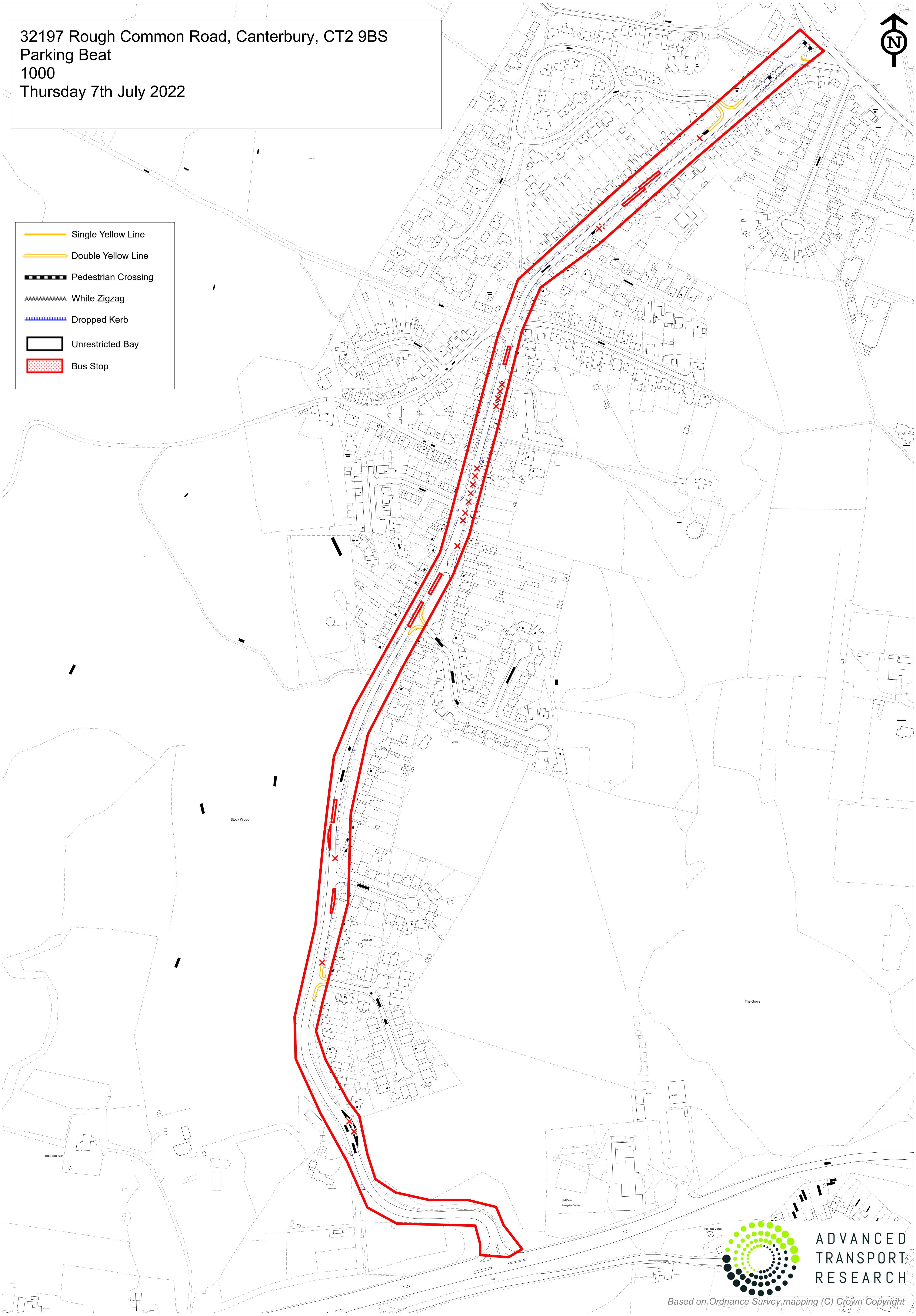

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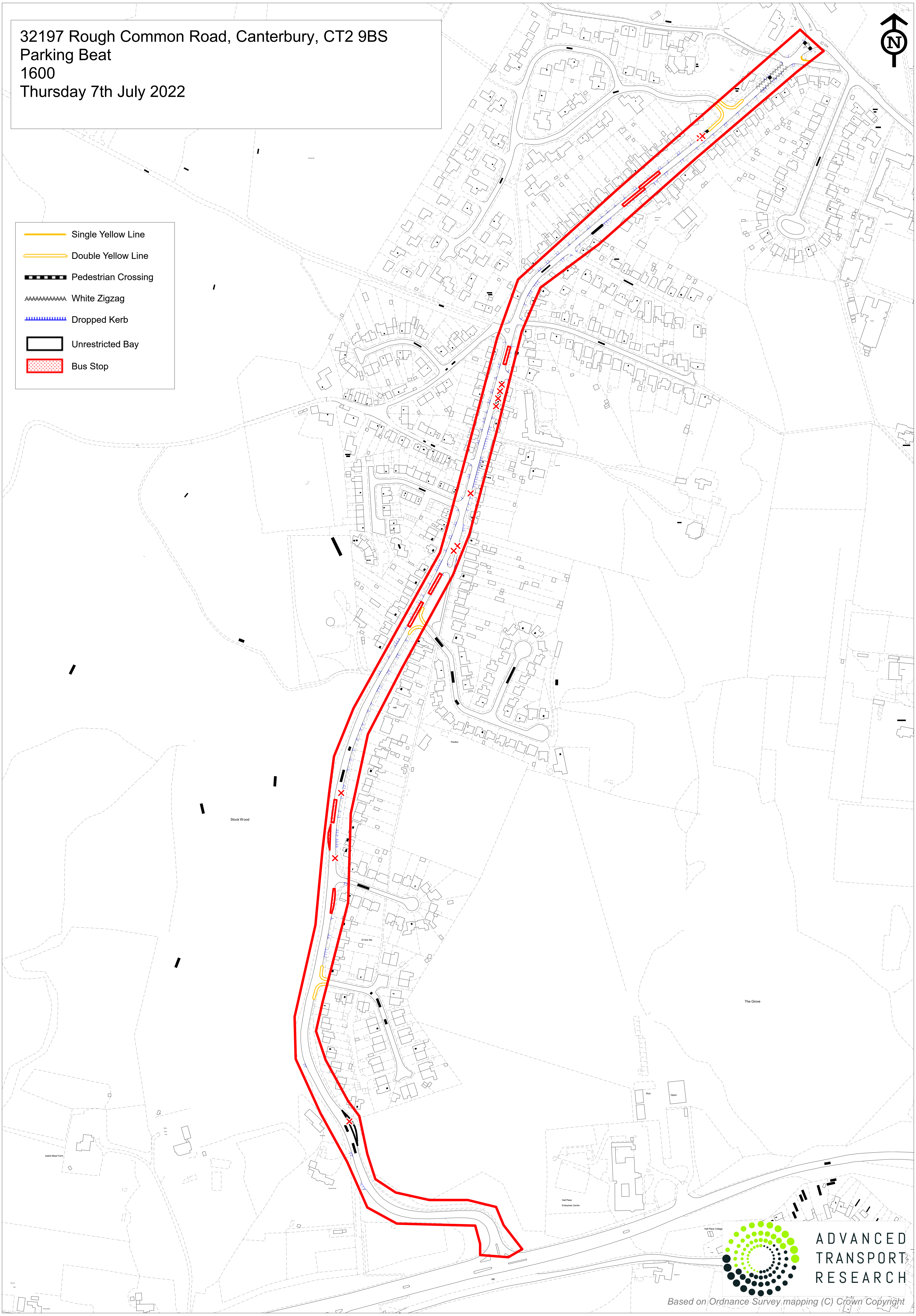

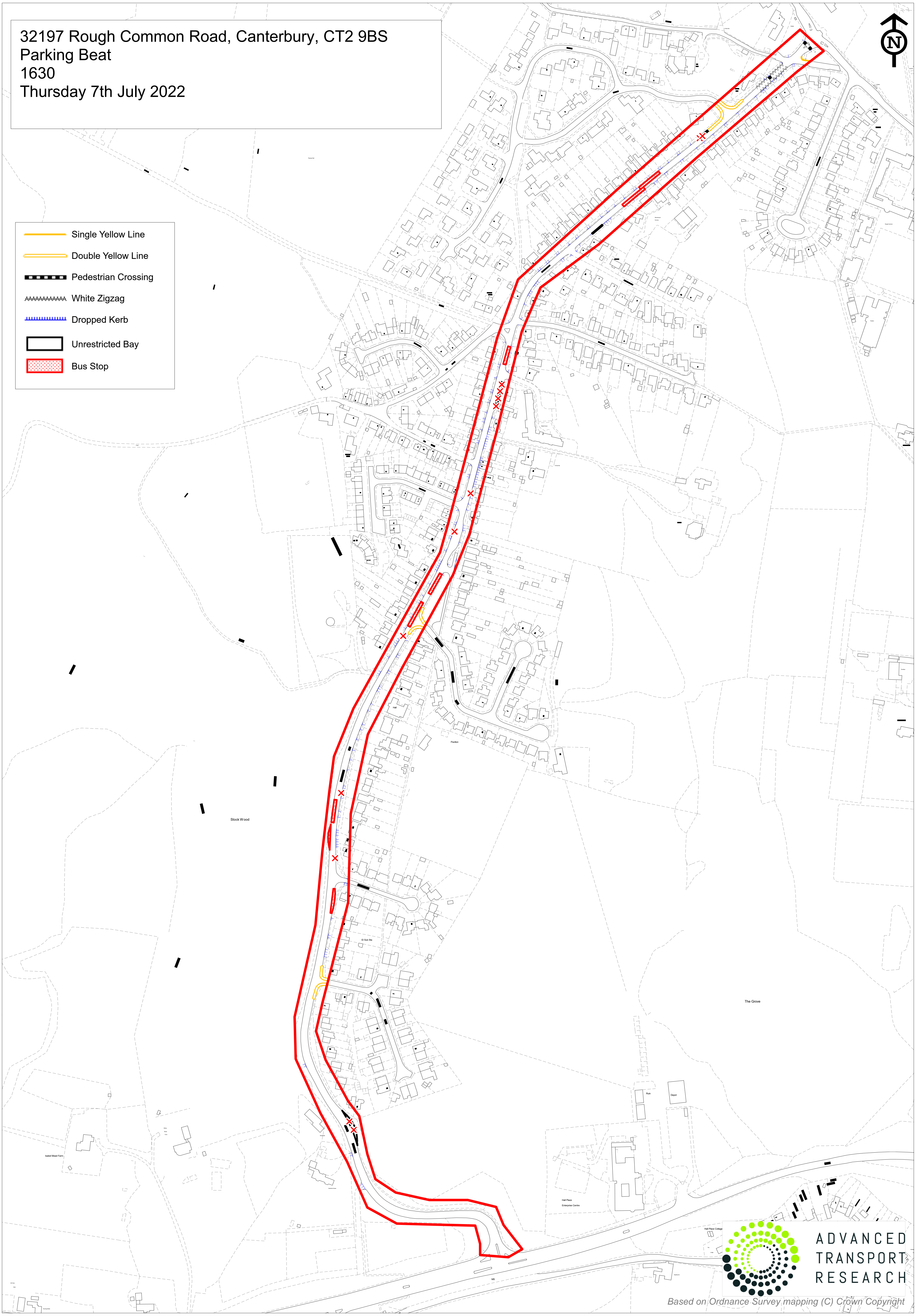

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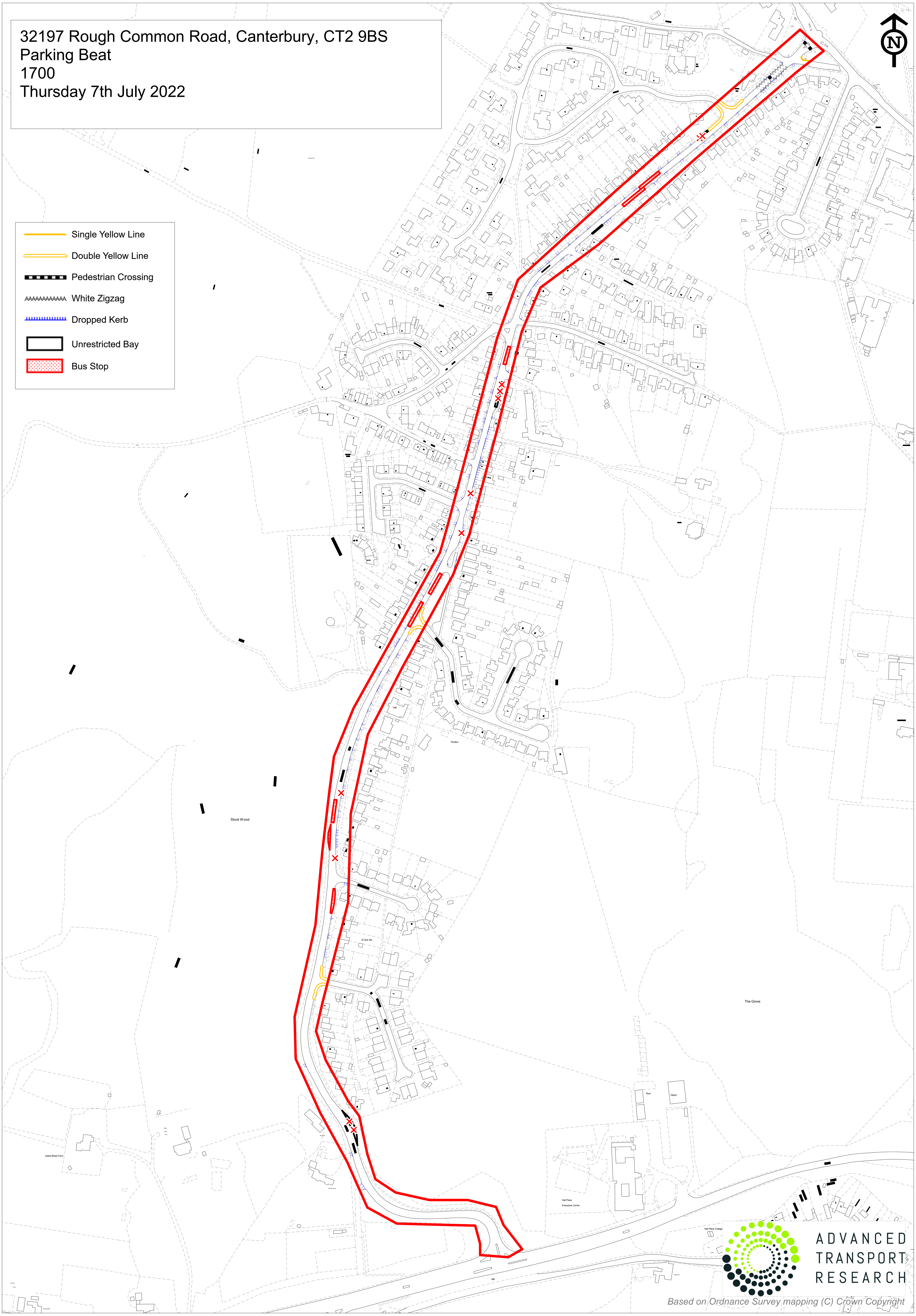
Parking Beat
1630
Thursday 7th July 2022
Single Yellow Line
Double Yellow Line
Pedestrian Crossing
White Zigzag
Dropped Kerb
Unrestricted Bay
Bus Stop
Stock Wood
The Grove
N
ADVANCED TRANSPORT RESEARCH
Based on Ordnance Survey mapping (C) Crown Copyright

32197 Rough Common Road, Canterbury, CT2 9BS
Parking Beat
1700
Thursday 7th July 2022



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Parking Beat
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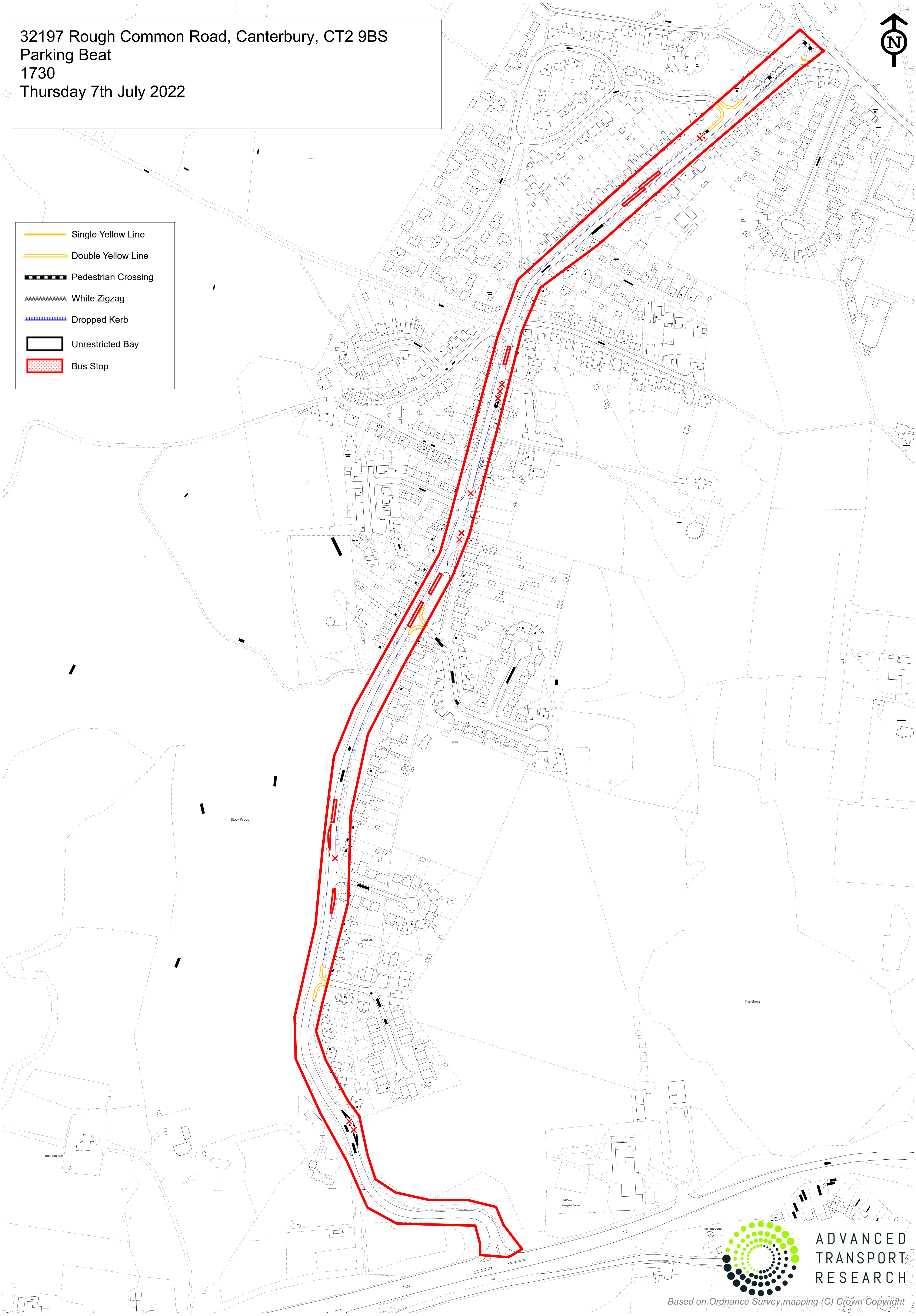

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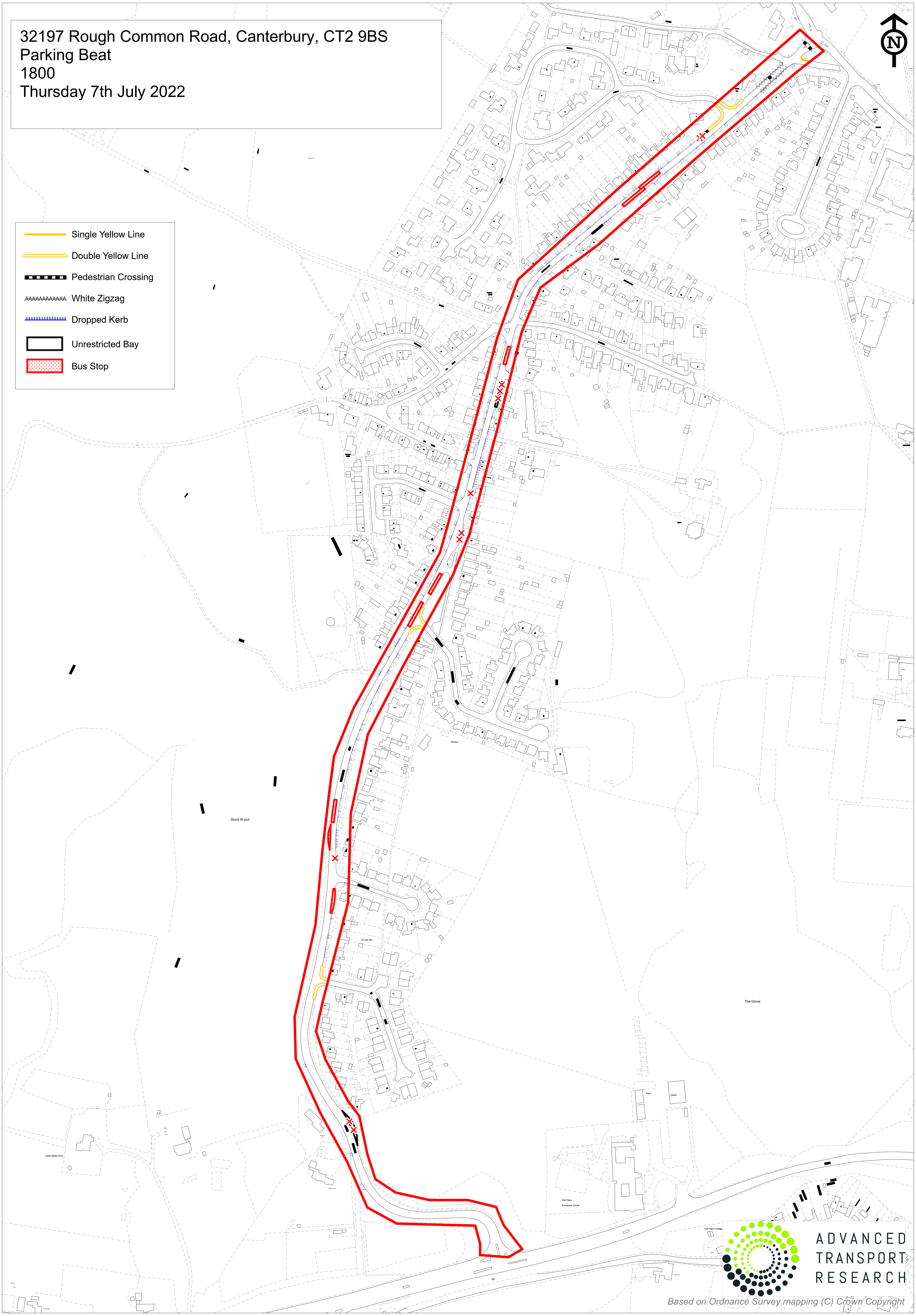

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Parking Beat
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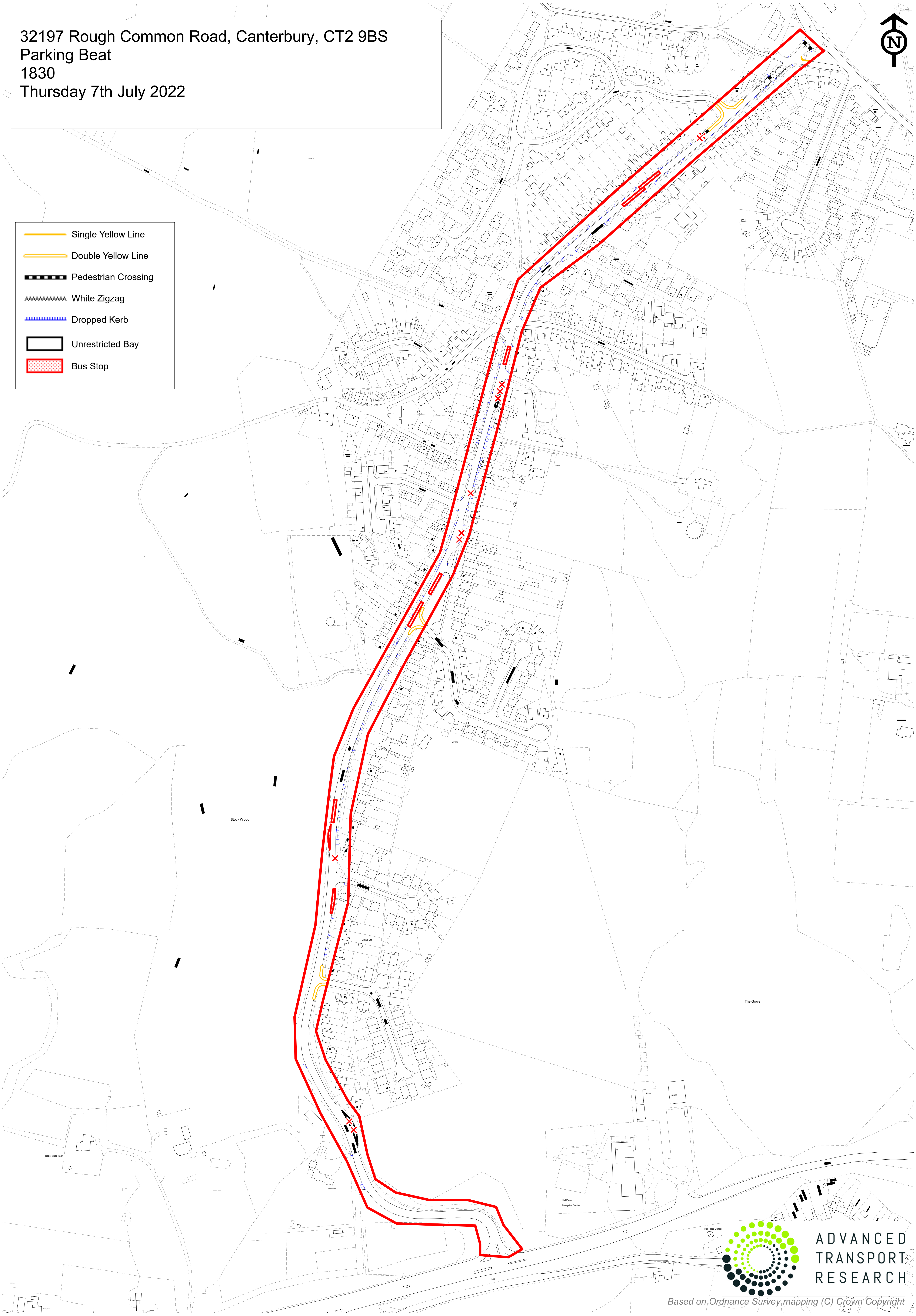

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Parking Beat
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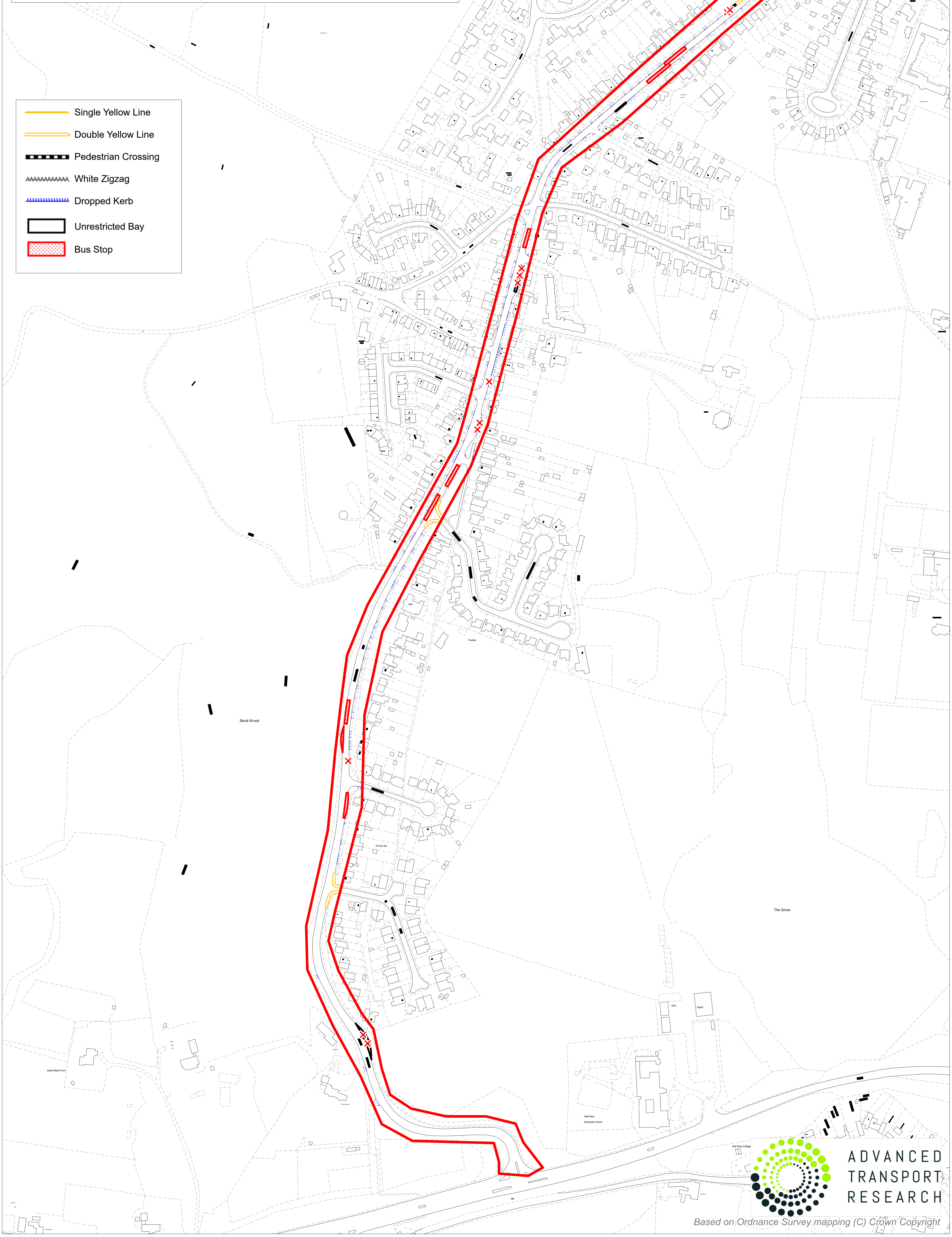
Thursday 7th July 2022



Appendix L

Trip Generation

The AM and PM peak person trip rates (per dwelling) extracted from TRICS are shown in **Table L1** along with the resultant person trip generation.

Table L1 – Residential Person Trip Rates and Person Trip Generation

	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Person Trip Rate (per dwelling)	0.173	0.754	0.927	0.590	0.300	0.890	3.557	3.621	7.178
Person Trip Generation (2000 dwellings)	346	1,508	1,854	1,180	600	1,780	7,114	7,242	14,356

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. This methodology was unchanged from the 2023 PTA.

The methodology utilised the National Travel Survey (NTS0502) data which identified journey purpose by time of day as shown in **Table L2**.

Table L2 – NTS0502 Journey Purpose by Start Time (2019)

Journey Purpose	AM Peak (08:00 – 09:00)	PM Peak (17:00 – 18:00)	Daily
Commuting	20%	32%	18%
Business	3%	3%	4%
Education	29%	3%	9%
Escort Education	23%	2%	8%
Shopping	4%	12%	17%
Other work, other escort or personal business	14%	20%	19%
Visiting friends / entertainment / sport	3%	20%	18%
Holiday / Day Trip / Other	4%	8%	9%

Table L3 presents the residential person trip generation split by journey purpose based upon the person trip generation shown in **Table L2**.

Table L3 - Residential Person Trip Generation by Journey Purpose

	Commuting / Business	Retail	Education	Education Escort	Other work, visiting friends, holiday	**Total**
AM Peak 08:00 – 09:00	424	78	530	424	399	**1,854**
PM Peak 17:00 – 18:00	633	214	53	39	841	**1,780**
Daily	3,198	2,374	1,400	1,148	6,236	**14,356**

Table L4 - Residential Person Trip Generation by Journey Purpose (incl. internalisation)

	Commuting / Business	Retail	Education	Education Escort	Other work, visiting friends, holiday	**Total**
AM Peak 08:00 – 09:00	424	70	530	0	399	**1,422**
PM Peak 17:00 – 18:00	633	193	53	0	841	**1,720**
Daily	3,198	2,137	1,400	0	6,236	**12,970**

Table L5 - Residential Person Trip Generation by Journey Purpose 2040 (incl. internalisation)

Year	Time Period	Commuting / Business	Retail	Education	Education Escort	Other work, visiting friends, holiday	**Total**
2040	AM Peak 08:00 – 09:00	348	70	530	0	399	**1,346**
	PM Peak 17:00 – 18:00	519	193	53	0	841	**1,606**
	Daily	2,622	2,137	1,400	0	6,236	**12,395**

Table L6 – NTS Mode Shares

Mode	NTS 9908 – 2018/2019 South-East
Rail (including underground)	2%
Bus	9%
Taxi	0%
Motorcycle	0%
Car Driver	39%
Car Passenger	
Bicycle	3%
Foot	42%
Other	1%
Total	**100%**

Table L7 – Education Trip Generation

Mode	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	15	65	79	5	3	8	87	123	210
Taxi	0	0	0	0	0	0	0	0	0
Motorcycle	0	0	0	0	0	0	0	0	0
Car Driver / Car Passenger	39	168	207	14	7	21	226	320	546
Bicycle	3	13	16	1	1	2	17	25	42
Foot	42	181	222	15	7	22	244	345	588
Other	1	4	5	0	0	1	6	8	14
Total	**99**	**431**	**530**	**35**	**18**	**53**	**580**	**820**	**1400**

Table L8 - 2011 Census Travel to Work Mode Share

Mode	%
Rail (including underground)	5.41%
Bus	8.04%
Taxi	0.84%
Motorcycle	0.48%
Car Driver	58.33%
Car Passenger	4.9%
Bicycle	4.2%
Foot	17.8%
Other	0.0%
Total	100.0%

Table L9 – Retail, Other Work, Visiting Friends, Holiday Trip Generation

Mode	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	10	44	54	75	38	113	443	396	839
Taxi	1	3	3	5	2	7	28	25	52
Motorcycle	0	2	2	3	1	4	16	14	30
Car Driver	43	189	233	325	165	491	1922	1715	3637
Car Passenger	4	16	20	27	14	41	161	144	305
Bicycle	3	14	17	23	12	35	139	124	262
Foot	13	58	71	99	50	150	587	523	1110
Other	0	0	0	0	0	0	0	0	0
Total	**74**	**324**	**399**	**557**	**283**	**841**	**3295**	**2940**	**6236**

Table L10 – Commuting / Business Trip Generation

Mode	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)			Daily		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Public Transport	8	37	45	45	23	67	226	115	341
Taxi	0	2	2	2	1	3	10	5	15
Motorcycle	1	5	6	6	3	8	28	14	42
Car Driver	27	120	147	146	74	220	735	374	1109
Car Passenger	4	18	23	22	11	34	113	57	170
Bicycle	3	11	14	14	7	21	70	35	105
Foot	12	51	63	62	31	93	313	159	472
Other	0	0	0	0	0	0	0	0	0
Working mainly at home	9	40	49	48	24	73	243	124	367
Total	**65**	**283**	**348**	**344**	**175**	**519**	**1738**	**884**	**2622**

Other land use trip generation

The primary school is proposed to serve the needs of the Proposed Development. The only trips associated with this land use will therefore be staff trips and a limited number of servicing trips. A provisional external to site trip generation has been developed on the basis of provision of a three-form of entry primary school. This is an increase on the previously assumed two-form of entry primary school.

Table L11 presents the staff trip generation on the basis of the following assumptions:

- A three-form of entry primary school would have approximately 50 full time equivalent staff of which 69% would be teaching staff and 31% non-teaching staff.
- 20% of these staff are likely to live on the development site.
- 50% of teaching staff would arrive and depart in the peak hours. 90% of non-teaching staff would arrive in the AM peak and 10% would depart in the PM peak.
- External to site staff trips will be 100% via private vehicle.

Table L11 – Primary School Trip Generation

AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)			Daily		
Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
31	0	31	0	19	19	50	50	100

2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

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