

TA Addendum – Access, Layout & Traffic Impact Matters

Introduction

- 1.1 This Addendum to the Transport Assessment (TA) has been produced on behalf of Grainger Plc to address matters detailed in comments received from Hampshire County Council (HCC), dated 13th November 2024, in relation to the outline planning application (ref: APP/23/00471). The response, provided in **Appendix A**, raises a number of queries on highways and transport matters.
- 1.2 These matters are considered in the following documents submitted alongside this Addendum report:
- WCHAR
 - Technical Note – Cyclist Provision
 - Technical Note – Modal Filter
 - Drawing VT01/02 Tracking
 - Drawing SK02/03 Access
 - DR01 Drainage/SUDS provision
 - SUDS Design Document
 - Travel Plan – amended to reflect raised targets in line with HCC comments
- 1.3 This Addendum report seeks to address the matters raised by HCC in the following areas:
- Sustainable Access
 - Personal Injury Accidents (PIA)
 - Access and Servicing Arrangements
 - Peasgood Lane Modal Filter
 - Traffic Impact Matters
 - Travel Plan

Sustainable Access

- 1.4 HCC have requested additional information regarding the accessibility of the site by sustainable modes of transport. They have also requested that a WCHAR is undertaken to support the planning application.
- 1.5 A WCHAR has been produced and will be submitted alongside this TA Addendum to support the planning application.

- 1.6 It can be seen from **Figure 1.1** that a large number of local facilities and services are accessible within walking distance of the site. **Figure 1.1** also illustrates the wide range of school and employment opportunities within close proximity to the site. Both existing PRoW's and future footway/cycleway connections will facilitate walking and cycling trips to facilities within the Berewood development and beyond.
- 1.7 The detailed pedestrian and cycle facilities provided within the surrounding area are shown in the Accessibility Plan included within **Appendix B**.

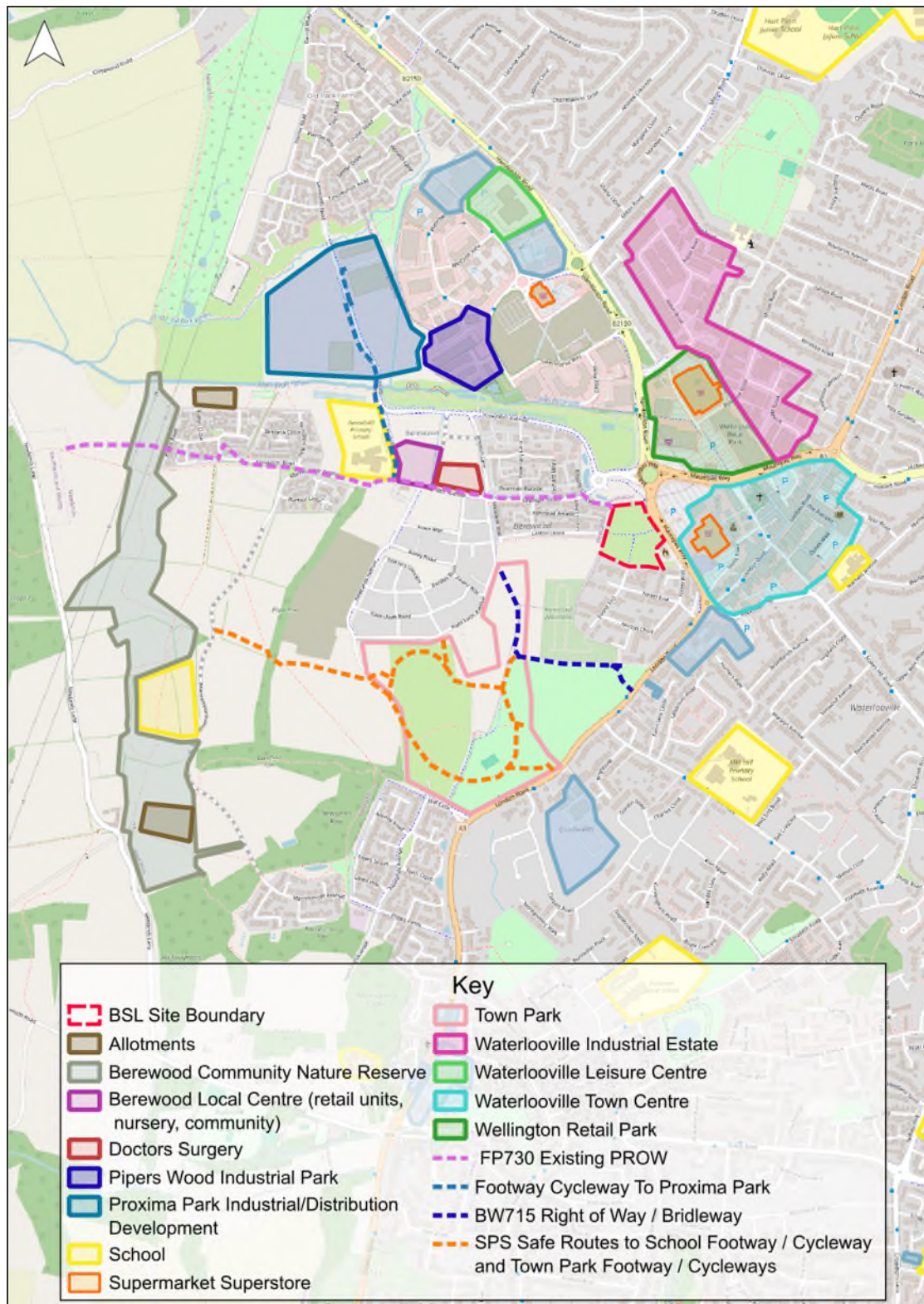


Figure 1.1: Facilities Local to the Application Site

1.8 The TA included a walking isochrone that indicated that a significant number of local amenities are located within a 400m walking distance of the site, while nearly the entirety of Waterlooville Town Centre is located within an 800m walking distance of the site. This

therefore includes amenities such as access to food, pharmacies, cash, leisure and community facilities and health services. The isochrone is provided at **Figure 1.2** for ease of reference.

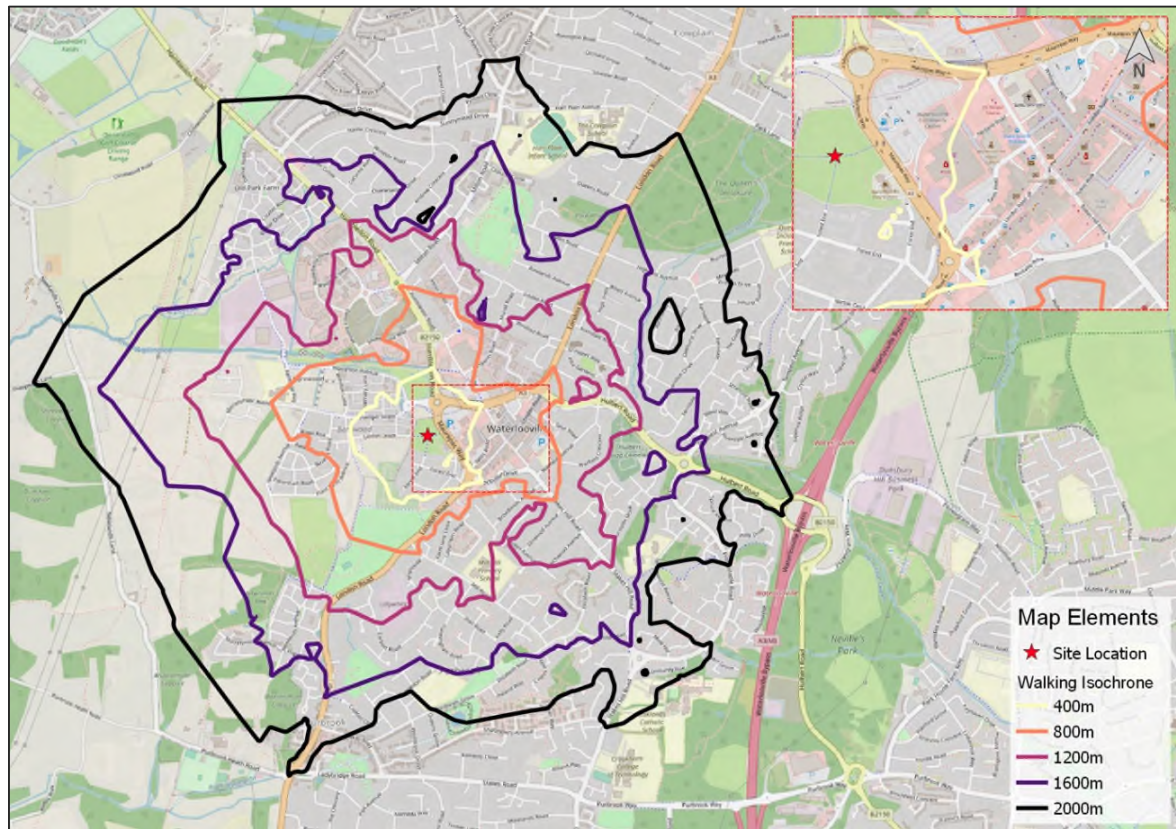


Figure 1.2: 2,000m Walking Isochrone

- 1.9 It is therefore considered that the site is in a highly accessible location, with significant opportunities for journeys to be undertaken on foot and by cycle.

Personal Injury Accidents (PIA)

- 1.10 HCC have requested that the CrashMap data provided within the TA is replaced with PIA data obtained from Hampshire Constabulary records for the latest 5 year period.
- 1.11 Road traffic accident data has been obtained from Hampshire Constabulary for the time period of 1st May 2019 to 30th April 2024. The study area with incident record is illustrated at **Figure 1.3** with the BSL parcel identified by a red star.

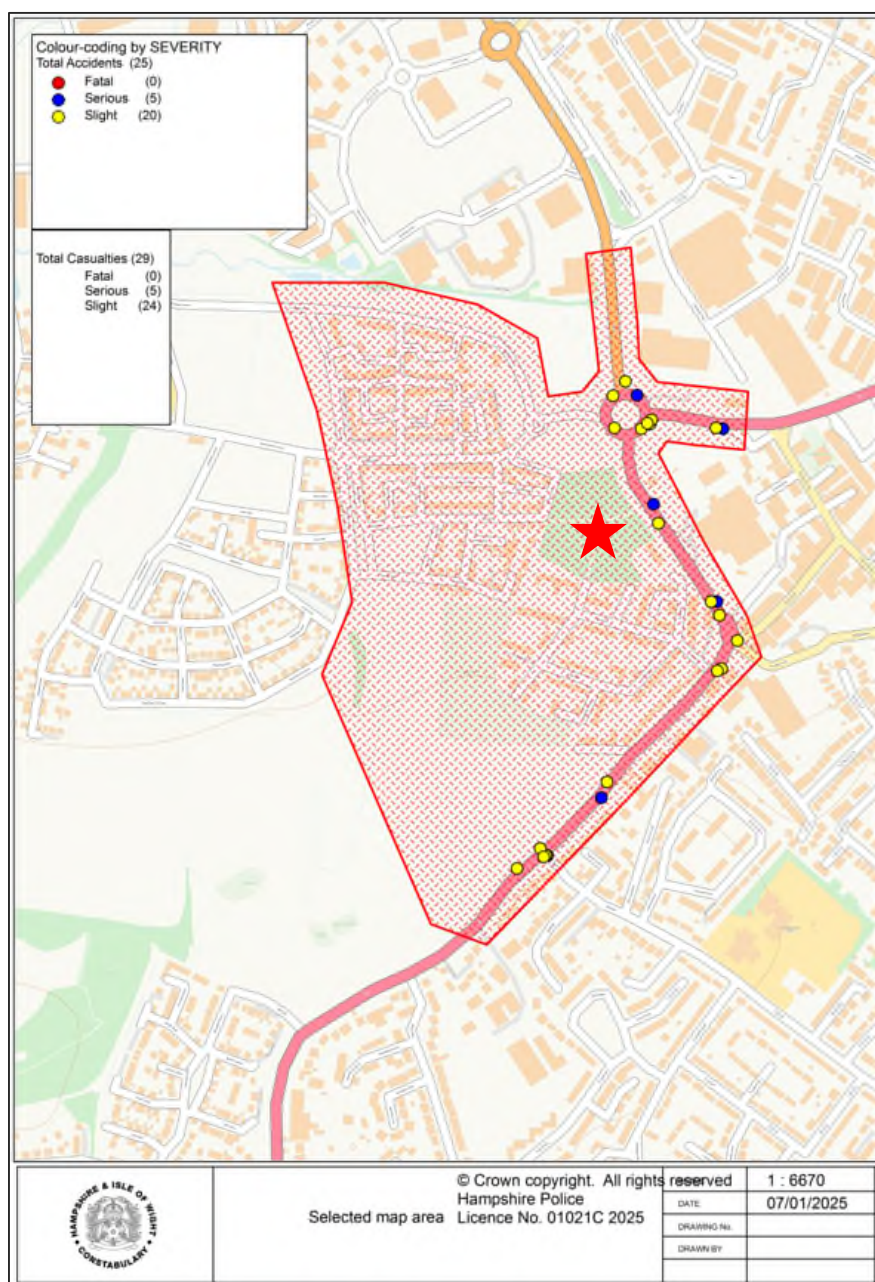


Figure 1.3: Collision Data Study Area

- 1.12 **Figure 1.3** illustrates that within the five year time frame, 20 slight incidents and 5 serious incidents have occurred within the study area. A small number have occurred on Maurepas Way adjacent to the BSL parcel, however none have occurred within the Berewood development and in particular, the proposed points of vehicle access to BSL.
- 1.13 A breakdown of incidents is provided in **Tables 1.1** and **1.2**.

	Fatal	Serious	Slight	Total
Motor vehicles only (excluding 2-wheels)	0	2	12	14
2-wheeled motor vehicles	0	1	4	5
Pedal cycles	0	2	4	6
Horses & other	0	0	0	0
Total	0	5	20	25

Table 1.1: Accident Vehicle Type

	Fatal	Serious	Slight	Total
Vehicle driver	0	1	10	11
Passenger	0	0	4	4
Motorcycle rider	0	1	4	5
Cyclist	0	2	4	6
Pedestrian	0	1	2	3
Other	0	0	0	0
Total	0	5	24	29

Table 1.2: Casualty Type

- 1.14 **Table 1.2** illustrates that just one serious incident involved a pedestrian and two involved cyclists.
- 1.15 The first serious incident involving a cyclist listed the following causation factors:
- Car driver with uncorrected, defective eyesight
 - Car driver disobeyed automatic traffic signal
- 1.16 The second serious incident involving a cyclist listed the following causation factors:
- Cyclist disobeyed pedestrian crossing facility and travelled into the path of a car
- 1.17 The serious incident involving a pedestrian cited the following causation factors:
- Car driver undertook poor turn or manoeuvre
 - Car driver disobeyed red traffic light at pedestrian crossing facility, colliding with pedestrian
- 1.18 Of the 6 slight incidents involving cyclist or pedestrian casualties, the following factors or reasons were given:
- Car failed to look properly and contravened amber light
 - Car entered roundabout and failed to notice cyclist, occurred during rain/sleet/snow or fog, with slippery road reported
 - Van failed to look properly, colliding with cyclist
 - Car exited petrol filling station and collided with pedestrian
 - Car entered roundabout into path of cyclist
 - Pedestrian failed to look properly and entered carriageway into path of car

- 1.19 On this basis, it is not considered that any accidents involving a pedestrian or cyclist were as a result of a deficiency with the local highway network.

Access and Servicing Arrangements

- 1.20 HCC have provided comments on the main site access layout and the emergency access layout and these have been addressed in the latest drawing GTWVILLE_BSL/SK/02 Rev F for the main site access and drawing GTWVILLE_BSL/SK/03 Rev C for the emergency access. Both drawings are provided in **Appendix C**.
- 1.21 HCC have also requested additional vehicle swept path analysis for accessing the proposed development via Laxton Leaze and these are provided in **Appendix D**.

Peasgood Lane Modal Filter

- 1.22 A standalone Technical Note has been prepared to provide a response to Hampshire County Council's (HCC) request for a modal filter to be provided to prevent vehicular access to the Blue Star Land (BSL) via Peasgood Lane.

Traffic Impact Matters

Existing Traffic Flows

- 1.23 The baseline traffic flows have been agreed with HCC.
- 1.24 The baseline traffic flows are detailed in **Diagrams A1.1** and **A1.2**

Background Traffic Growth

- 1.25 The TEMPro growth factors have been agreed with HCC.
- 1.26 TEMPro local growth factors have been applied to the 2023 observed traffic flows to predict the level of base traffic for the agreed future assessment year of 2029 (five years after registration of the planning application). The growth factors have been sourced through the National Transport Model (NTM) data within the TEMPro software package using TEMPro 8.0 datasets for the geographical area of Havant 004 (E02004765), using Core Strategy scenario. **Table 1.3** details the TEMPro growth factors.

Geographical Area	Year	Peak Period	TEMPro Growth Factor
E02004765 Havant 004	2023-2029	AM Peak	1.0324
		PM Peak	1.0299

Table 1.3: TEMPro Growth Factors

- 1.27 The resulting 2029 baseline traffic flows are detailed in **Diagrams A1.5** and **A1.6** for the AM and PM peak hour respectively.

Committed Development

- 1.28 For the purpose of this assessment the committed development has been assumed to be the remaining Berewood development still to be built out and occupied. This methodology has been agreed with HCC.
- 1.29 HCC have queried the resulting employment trips associated with the Proxima Park development detailed within the TA and requested further clarity on the differences outlined. The methodology is therefore detailed further within this section.

Employment Trips

- 1.30 In order to obtain the existing number of trips associated with the employment development, a series of Automatic Traffic Counters (ATCs) were placed on the accesses to the Proxima Park Business Park. From these surveys the number of existing trips was obtained for the occupied units within the Proxima Park Business Park.
- 1.31 **Table 1.4** provides details of the existing trip generation from the Proxima Park development.

Peak	Observed Employment Trip Generation		
	Arrivals	Departures	Total
AM Peak	26	14	40
PM Peak	8	86	94

Table 1.4: Observed Employment Trips

- 1.32 The predicted trip generation for the total employment units has been obtained by using trip rates from the 2010 TA, assuming the same B8/B1 split as for the occupied units. The employment trip rates obtained from the 2010 TA are detailed in **Table 1.5** for information.

Land Use	Employment Trip Rates (per 100sq.m)					
	AM Peak			PM Peak		
	Arrivals	Departures	Total	Arrivals	Departures	Total
B1	1.193	0.145	1.338	0.122	0.826	0.948
B8	0.099	0.054	0.153	0.054	0.107	0.161

Table 1.5: Forecast Total Employment Trips

(ref: Table 7.10 Total Target Employment Vehicle Trip Generation, 2010 TA)

- 1.33 The resulting total employment trips are detailed in **Table 1.6**.

Peak	Forecast Total Employment Trip Generation		
	Arrivals	Departures	Total
AM Peak	118	30	148
PM Peak	28	96	124

Table 1.6: Forecast Total Employment Trips

- 1.34 The resulting undeveloped employment trips have then been calculated as the difference between the observed trips and the total predicted trips as detailed in **Table 1.6**. the resulting undeveloped employment trips are detailed in **Table 1.7**.

Peak	Forecast Undeveloped Employment Trip Generation		
	Arrivals	Departures	Total
AM Peak	92	16	108
PM Peak	20	10	30

Table 1.7: Total Forecast Undeveloped Employment Trips

- 1.35 The total committed development trips are provided in **Diagrams A1.7** and **A1.8**.

Proposed Development

Residential Trips

- 1.36 HCC have queried the methodology used within the TA to predict the proposed development trips. In response to the comments received from HCC, the TRICS assessment has been revised to exclude data from sites surveyed in 2021 (COVID year) and to omit any surveys older than 5 years.
- 1.37 The resulting TRICS total person trip rates are detailed in **Table 1.8**.

Peak	TRICS Total Person Trip Rate - Residential		
	Arrivals	Departures	Total
AM Peak	0.213	0.790	1.003
PM Peak	0.595	0.258	0.853
Daily	3.965	3.977	7.942

Table 1.8: TRICS Total Person Trip Rates

- 1.38 The number of total person trips for the 69 dwellings proposed is detailed in **Table 1.9**.

Peak	Total Person Trips - Residential		
	Arrivals	Departures	Total
AM Peak	15	54	69
PM Peak	41	18	59
Daily	274	274	548

Table 1.9: TRICS Total Person Trip Rates

Multimodal Trip Generation

- 1.39 HCC have requested that the multimodal trip generation be revised to use total person trips as the starting point with the modal split obtained from either the 2011 Census journey to work data, TRICS multimodal trip rates or the modal split from the recent Travel Plan surveys for the adjacent Berewood development.

2011 Census Data

- 1.40 As detailed in the TA, the mode share was calculated using the modal split from the 2011 Census origin-destination journey to work data. The 2011 Census data reflects the local characteristics of the area and was considered to provide a more robust assessment than using multimodal trip rates direct from the TRICS database. The modal split from the 2011 Census data is shown at **Table 1.10**.

Travel Mode	Mode Split
Train	2%
Bus/Coach	3%
Motorcycle	1%
Driving a car or van	81%
Passenger in a car or van	6%
Bicycle	2%
Walk	5%

Table 1.10: Travel Modal Split from 2011 Census Data

TRICS Multimodal Trip Rates

- 1.41 Given the availability of more detailed local data on modal split specific to the area surrounding the BSL site, we have excluded TRICS multimodal trip rates from this assessment.

Berewood Travel Plan

- 1.42 The Year 4 Travel Plan Monitoring Report for the Berewood development produced by PBA, dated October 2024, provides details of the current modal split experienced within the Berewood development. This is considered to provide a representative modal split for use with the Blue Star Land development trips due to the close proximity of the two development sites.

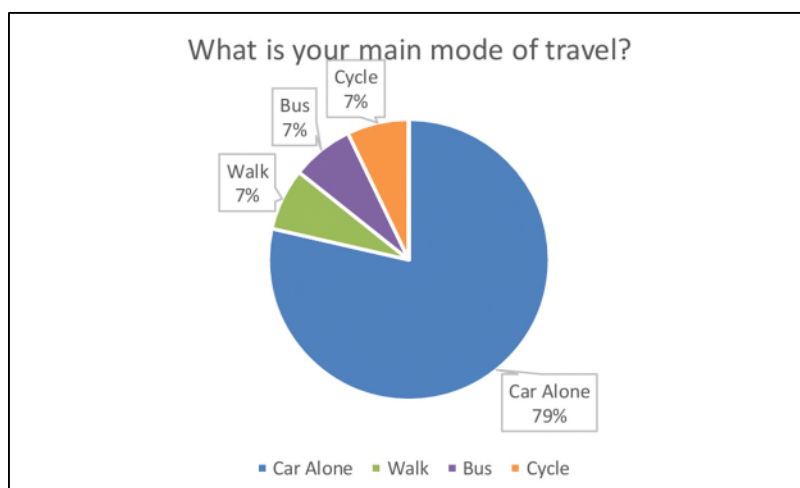


Figure 1.4: extract from PBA Yr 4 TP Monitoring Report

1.43 It can be seen from **Figure 1.4** that the existing modal split of the Berewood site comprises:

- 79% Car Driver
- 7% Walk
- 7% Cycle
- 7% Public Transport

1.44 The overall level of car driver trips (79%) is similar to that recorded in the 2011 Census, (81%) and the sustainable modes, walk (7%), cycle (7%) and public transport (7%) are increased slightly when compared to the 2011 Census (5%, 2% and 5% respectively). This reflects the location of the development site in relation to Waterloooville town centre, local schools and local bus facilities.

1.45 For the purpose of this assessment, it is considered appropriate to utilise the modal split from the Yr 4 Travel Plan Monitoring report from the wider Berewood development for the predicted development trips as the Blue Star Land development is expected to exhibit the same trip characteristics as the wider Berewood development.

1.46 **Table 1.11** details the resulting multimodal development trips for the Blue Star Land development.

Travel Mode	Mode Split
Car Driver	79%
Walk	7%
Cycle	7%
Public Transport	7%

Table 1.11: Travel Modal Split from 2024 Berewood TP Monitoring Report

- 1.47 It can be seen from **Table 1.11** that the existing sustainable modes, walking, cycling and public transport equate to 21% mode share for the existing Berewood development.
- 1.48 **Table 1.12** summarises the resulting multimodal development trips for the BSL development.

Travel Mode	Multimodal Development Trips								
	AM Peak			PM Peak			Daily		
	Arr	Dep	Total	Arr	Dep	Tot	Arr	Dep	Tot
Car Driver	12	43	55	32	14	46	216	217	433
Walk	1	4	5	3	1	4	19	19	38
Cycle	1	4	5	3	1	4	19	19	38
Public Transport	1	4	5	3	1	4	19	19	38
Total	15	55	70	41	18	59	274	274	548

Table 1.12: Development Trips based on Modal Split from 2024 Berewood TP Monitoring Report

- 1.49 HCC have stated in their comments that an increase in the mode share to sustainable modes should be realised through the “decide and provide” approach. HCC have suggested that the future target mode share of between 30-40% is not unreasonable for the BSL site if supported through appropriate infrastructure improvements.
- 1.50 HCC have confirmed that this can include all future works that are programmed as part of the wider Berewood development as these will benefit the BSL development and will provide access and connectivity to the wider area for sustainable modes.
- 1.51 For the purpose of this assessment, it is considered appropriate to target an increase in sustainable modes by a further 10%, resulting in a total of 31% by sustainable modes. The revised future modal split taking into account the target of 31% is provided in **Table 1.13**.

Travel Mode	2024 Berewood TP Mode Split	Adjustment	Resulting Future Mode Split
Car Driver	79%	-10%	69%
Walk	7%	+4%	11%
Cycle	7%	+3%	10%
Public Transport	7%	+3%	10%

Table 1.13: Future Target Travel Modal Split

- 1.52 The target adjusted modal split percentages have then been applied to the multimodal development trips provided in **Table 1.12**. **Table 1.14** details the resulting future modal split of the proposed development trips.

Travel Mode	Multimodal Development Trips – Adjusted								
	AM Peak			PM Peak			Daily		
	Arr	Dep	Total	Arr	Dep	Tot	Arr	Dep	Tot
Car Driver	10	38	48	28	12	40	189	189	378
Walk	2	6	8	5	2	7	30	30	60
Cycle	2	6	8	4	2	6	28	28	56
Public Transport	1	5	6	4	2	6	27	27	54
Total	15	55	70	41	18	59	274	274	548

Table 1.14: Development Trips based on future Target Modal Split

Traffic distribution

- 1.53 HCC have requested that key workplace destinations are provided within the TA and summarised to key areas so that any resulting split can be considered with some geographic context regarding locations. HCC have suggested that the distribution diagrams may need to extend further than the A3 Maurepas Way/Hambledon Road Roundabout depending on the distribution splits.
- 1.54 The distribution has been revised to address HCC's comments and the methodology used has been summarised within this section.
- 1.55 The QGIS Software has been utilised to analyse the origin-destination 2011 census journey to work data to understand the distribution of vehicular traffic at the Maurepas Way/Hambledon Road roundabout. The selected origin for this study was MSOA E02004765: Havant 004 (2011 super output area – middle layer) and the analysis focused specifically on the 'Car Driver' output from the origin-destination dataset.
- 1.56 The destination MSOA's has been imported into QGIS, each containing the number of car drivers who started their journey in the MSOA2004765 and travelled to work within the destination MSOA. Any destination MSOA's with zero car drivers were excluded from the analysis.
- 1.57 A 25km buffer was applied to refine the study area. The key routes to MSOA's from the application site were then identified, these were:
- North using Hambledon Road
 - East using Maurepas Way East
 - South using Maurepas Way South then Rockville Drive
 - South using Maurepas Way South then London Road
 - South using Maurepas Way South then Ladybridge Road
- 1.58 Google journey planner, using the 8am-9am peak hour, was subsequently utilised to identify the likely driving route from the application site to each destination MSOA. The fastest route

was selected for all route assignments and the route to the main identified employment area within that MSOA was used. The destination MSOA was then assigned to the corresponding route identified above.

- 1.59 **Figure 1.5** illustrates the key employment destinations within the MSOA's local to the application site.

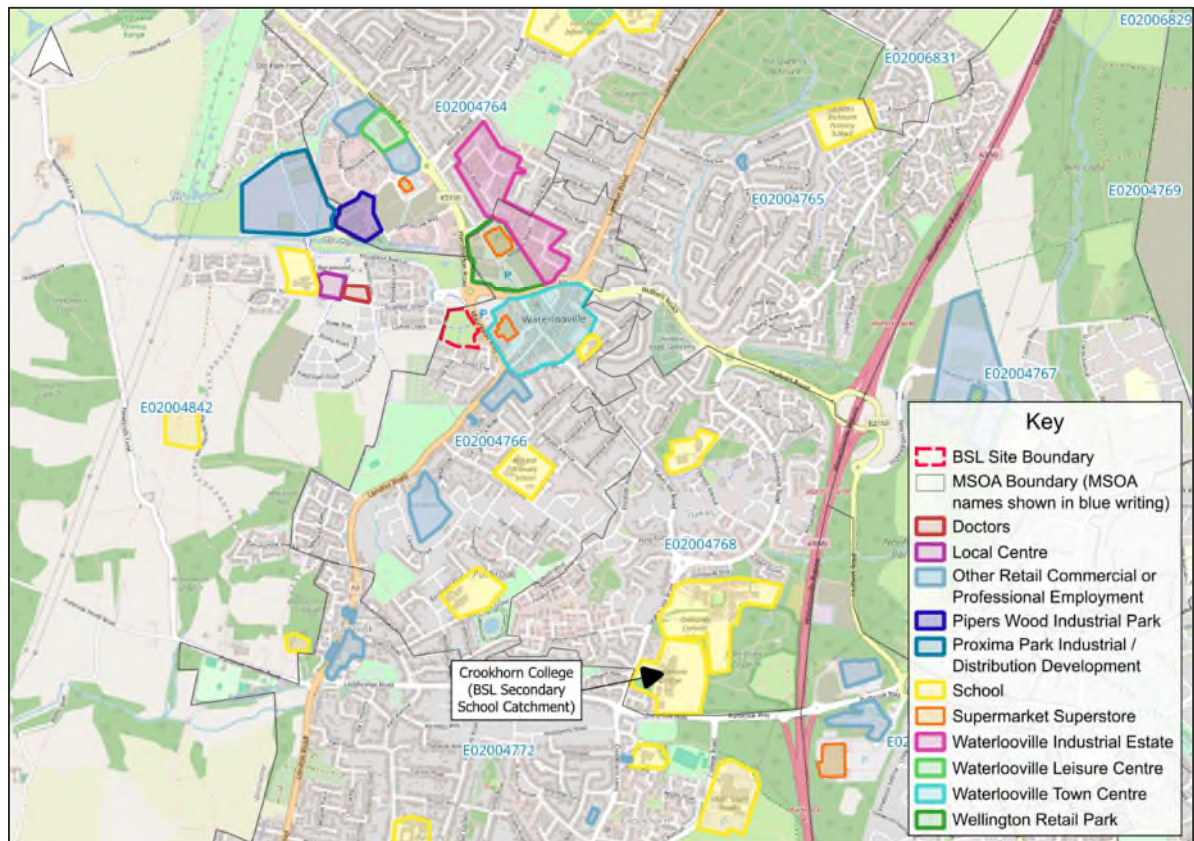


Figure 1.5: Key Employment Destinations within Local MSOA's

- 1.60 As exemplified in **Figure 1.5**, for MSOA E02004768, the key employment areas would be Crookhorn College and Oaklands Catholic School. From the application site, drivers would use Maurepas Way South, London Road and subsequently Ladybridge Road to access the College and School.
- 1.61 After assigning each MSOA to a route, the total number of car drivers (as per the journey-to-work data) was extracted for each route. This allowed for an analysis of traffic distribution at the Maurepas Way/Hambledon Road roundabout
- 1.62 **Figure 1.6** provides an extract of the GIS mapping showing the 2011 Census car driver distribution for trips originating in MSOA 2004756.

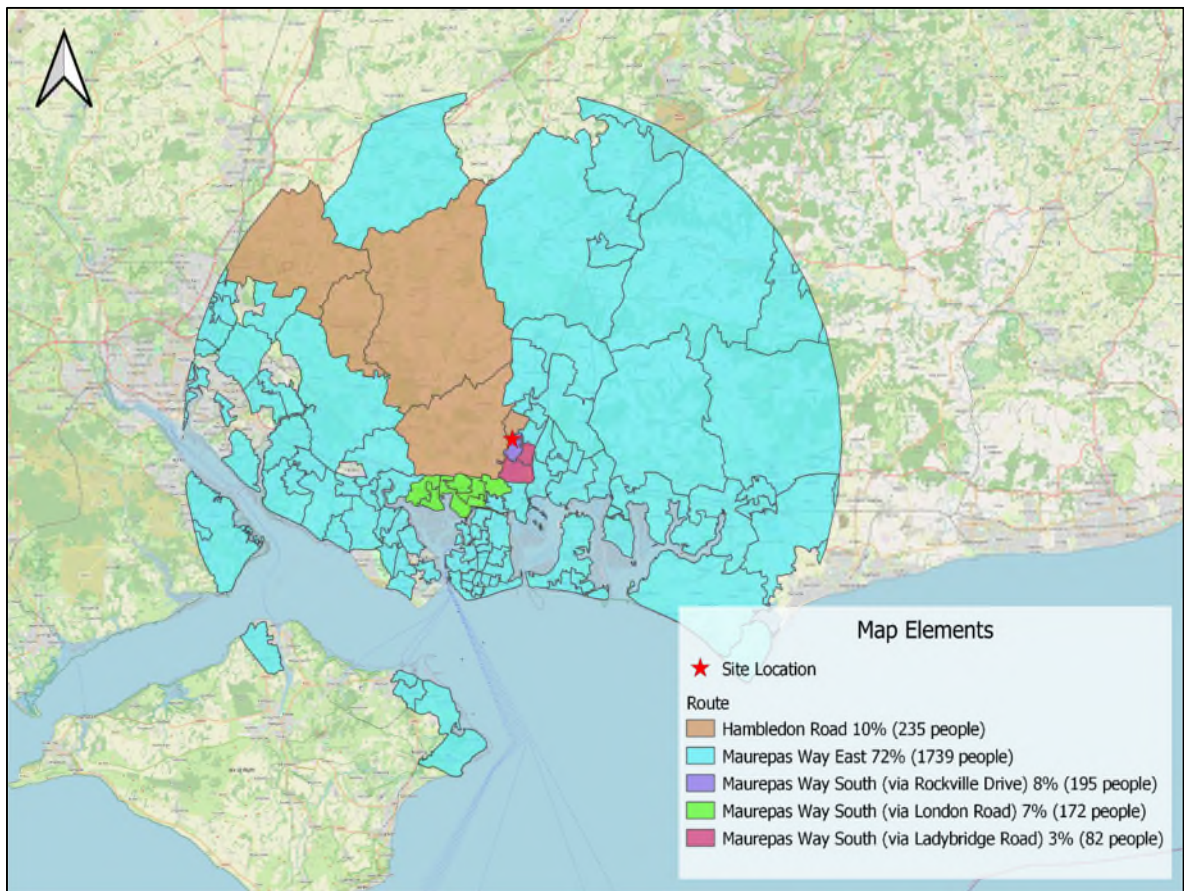


Figure 1.6: 2011 Census car driver distribution for trips originating in MSOA 2004756

- 1.63 After assigning each MSOA to a route, the total number of car drivers (as per the journey-to-work data) was extracted for each route. This allowed for an analysis of traffic distribution at the Maurepas Way/Hambledon Road roundabout and south towards the Ladybridge Roundabout. **Table 1.15** details the resulting distribution split by route.

Route	Percentage Split
North on Hambledon Road	10%
East on Maurepas Way (to A3(M))	72%
South on Maurepas Way (via Rockville Drive)	8%
South on Maurepas Way (via London Road)	7%
South on Maurepas Way (via Ladybridge Road)	3%

Table 1.15: Distribution Split by Route

- 1.64 The development traffic distribution methodology is detailed in **Diagram A1.13** at the back of this note.

Distribution of Committed Development

- 1.65 HCC have requested clarification on the methodology detailed within the TA regarding the distribution of the committed development traffic.
- 1.66 The committed development traffic flows have been distributed onto the local highway network based on the method agreed for the outline planning consent between the Northern Access, Main Access, Milk Lane Access and the Southern Access with the additional employment trips via the Main Access only.

Distribution of Proposed Development

- 1.67 The Blue Star Land development trips have been distributed onto the local highway network via the Main Access only.
- 1.68 The resulting traffic distribution, based on the methodology detailed within this section, is provided in **Diagram A1.14** at the back of this note.
- 1.69 The resulting BSL development proposed traffic flows are provided in **Diagrams A1.15** and **A1.16** and **Diagrams A1.17** and **A1.18** for the future with mitigation (reduced car trips) development flows.

Junction Capacity Assessments

- 1.70 The TA focused on capacity assessments for the forecast years of 2025 opening year and 2029 five years after planning submission. HCC have confirmed that whilst the opening year of 2025 is no longer appropriate for the proposals the future year of 2029 remains appropriate, and they have advised that no revisions to the modelling scope are therefore required and that this is agreed.
- 1.71 The junction capacity assessments have been rerun to take account of the revised trip rate calculations and the revised distribution profiles for the 2029 forecast year only.
- 1.72 An additional scenario has been included in the revised assessments. This represents the trip generation resulting from the future target modal split with a proposed reduction in car use, resulting in 31% of development trips via sustainable modes.
- 1.73 The following scenarios have been considered:
- 2029 Future year base scenario – five years after submission
 - 2029 Future year development scenario
 - 2029 Future year development scenario with mitigation (proposed reduction in car use)
- 1.74 The resulting traffic flows are detailed in **Diagrams A1.11** to **A1.12** provide the 2029 future year base with committed development, **Diagrams A1.21** to **A1.22** detail the 2029 future

year base with committed and proposed development and **Diagrams A1.23 to A1.24** for the 2029 future year base with committed and proposed development with mitigation (reduced car trips).

1.75 Capacity assessment have been undertaken for the two future year scenarios for both the AM and PM peak hours at the following junctions:

- Houghton Avenue/Grainger Street roundabout
- Grainger Street/Laxton Leaze priority junction
- A3 Maurepas Way/Hambledon Road/Houghton Avenue roundabout

Houghton Avenue/Grainger Street Roundabout

1.76 The Houghton Avenue/Grainger Street Roundabout has been assessed using the ARCADY module of the Junctions 10 software suite.

1.77 A copy of the ARCADY output is provided in **Appendix E**.

1.78 **Table 1.16** and **Table 1.17** detail the results for the 2029 future base, future base with development, and future base with development with mitigation scenarios.

Arm	AM Peak					
	2029 Forecast Base + Committed Dev		2029 Forecast Base + Committed Dev + Proposed Dev)		2029 Forecast Base + Committed Dev + Proposed Dev) – with Mitigation (proposed reduction in car use)	
	RFC	Q	RFC	Q	RFC	Q
Houghton Avenue East	0.43	0.8	0.44	0.8	0.44	0.8
Unused Access Road	-	-	-	-	-	-
Grainger Street	0.38	0.6	0.42	0.7	0.42	0.7
Houghton Avenue North	0.19	0.2	0.19	0.2	0.19	0.2

Table 1.16: ARCADY Results: Houghton Avenue/Grainger Street Roundabout - AM Peak – 2029

1.79 **Table 1.16** illustrates that the roundabout continues to operate within capacity in the 2029 future year with development scenario, with a maximum RFC of 0.44 on the Houghton Avenue East arm and queues between 0.2 and 0.8 vehicles.

Arm	PM Peak					
	2029 Forecast Base + Committed Dev		2029 Forecast Base + Committed Dev + Proposed Dev		2029 Forecast Base + Committed Dev + Proposed Dev) – with Mitigation (proposed reduction in car use)	
	RFC	Q	RFC	Q	RFC	Q
Houghton Avenue East	0.43	0.7	0.45	0.8	0.45	0.8
Unused Access Road	-	-	-	-	-	-
Grainger Street	0.22	0.3	0.24	0.3	0.23	0.3
Houghton Avenue North	0.14	0.2	0.14	0.2	0.14	0.2

Table 1.17: ARCADY Results: Houghton Avenue/Grainger Street Roundabout - PM Peak – 2029

- 1.80 During the PM peak of the 2029 future year with development scenario, the roundabout continues to operate within capacity with a maximum RFC of 0.45 on the Houghton Avenue East arm and queues of between 0.2 and 0.8 vehicles.

Grainger Street/Laxton Leaze Priority Junction

- 1.81 The Grainger Street/Laxton Leaze junction has been assessed using the PICADY module of the Junctions 10 software suite.
- 1.82 A copy of the PICADY output is provided in **Appendix F**.
- 1.83 **Table 1.18** and **Table 1.19** detail the results for the 2029 future base, future base with development, and future base with development with mitigation scenarios.

Arm	AM Peak					
	2029 Forecast Base + Committed Dev		2029 Forecast Base + Committed Dev + Proposed Dev		2029 Forecast Base + Committed Dev + Proposed Dev) – with Mitigation (proposed reduction in car use)	
	RFC	Q	RFC	Q	RFC	Q
B-AC Laxton Leaze Left/Right turn	0.04	0.0	0.17	0.2	0.16	0.2
C-AB Grainger Street Ahead/Right turn	0.00	0.0	0.00	0.0	0.00	0.0

Table 1.18: PICADY Results: Grainger Street/Laxton Leaze - AM Peak – 2029

Arm	PM Peak					
	2029 Forecast Base + Committed Dev		2029 Forecast Base + Committed Dev + Proposed Dev		2029 Forecast Base + Committed Dev + Proposed Dev) – with Mitigation (proposed reduction in car use)	
	RFC	Q	RFC	Q	RFC	Q
B-AC Laxton Leaze Left/Right turn	0.02	0.0	0.05	0.1	0.05	0.1
C-AB Grainger Street Ahead/Right turn	0.00	0.0	0.00	0.0	0.00	0.0

Table 1.19: PICADY Results: Grainger Street/Laxton Leaze - PM Peak – 2029

- 1.84 The Grainger Street/Laxton Leaze junction continues to operate within capacity in all development scenarios assessed for both the AM and PM peak periods for the future year of 2029.

A3 Maurepas Way/Hambledon Road/Houghton Avenue Roundabout

- 1.85 The A3 Maurepas Way/Hambledon Road Roundabout has been assessed using the ARCADY module of the Junctions 10 software suite.
- 1.86 A copy of the ARCADY output is provided in **Appendix G**.
- 1.87 **Table 1.20** and **Table 1.21** detail the results for 2029 future base, future base with development, and future base with development with mitigation scenarios.

Arm	AM Peak					
	2029 Forecast Base + Committed Dev		2029 Forecast Base + Committed Dev + Proposed Dev		2029 Forecast Base + Committed Dev + Proposed Dev) – with Mitigation (proposed reduction in car use)	
	RFC	Q	RFC	Q	RFC	Q
Houghton Avenue	0.56	1.3	0.57	1.3	0.57	1.3
Hambledon Road	0.72	2.5	0.72	2.6	0.72	2.6
A3 Maurepas Way	0.77	3.3	0.78	3.4	0.78	3.4
A3 Maurepas Way (S)	0.61	1.5	0.65	1.9	0.65	1.8

Table 1.20: ARCADY Results: A3 Maurepas Way Roundabout - AM Peak – 2029

- 1.88 **Table 1.20** illustrates that the roundabout continues to operate within capacity in the 2029 future year with development scenarios, with a maximum RFC of 0.78 on the A3 Maurepas Way arm and queues between 1.3 and 3.4 vehicles.

Arm	PM Peak					
	2029 Forecast Base + Committed Dev		2029 Forecast Base + Committed Dev + Proposed Dev		2029 Forecast Base + Committed Dev + Proposed Dev – with Mitigation (proposed reduction in car use)	
	RFC	Q	RFC	Q	RFC	Q
Houghton Avenue	0.68	2.1	0.68	2.1	0.68	2.1
Hambledon Road	0.77	3.3	0.78	3.4	0.76	3.2
A3 Maurepas Way	0.84	5.0	0.85	5.3	0.84	4.9
A3 Maurepas Way (S)	0.38	0.6	0.39	0.6	0.39	0.6

Table 1.21: ARCADY Results: A3 Maurepas Way Roundabout - PM Peak – 2029

- 1.89 During the PM peak of the 2029 future year with development scenario, the roundabout continues to operate within capacity with a maximum RFC of 0.85 on the Maurepas Way arm and queues of between 0.6 and 5.3 vehicles on all arms.
- 1.90 **Table 1.22** and **Table 1.23** detail the total traffic flow on each approach and the percentage increase due to the proposed development for the AM and PM peak hours respectively for the future year of 2029 with the proposed development.

Approach Arm	AM Peak			
	2029 Base + Committed Dev (Total Vehicles)	2029 Forecast Base + Committed + Proposed Dev (Total Vehicles)	Increase (Vehicles)	Increase (%)
Houghton Avenue	585	628	43	6.9%
Hambledon Road	1,305	1,306	1	0.1%
A3 Maurepas Way	1,610	1,618	8	0.5%
A3 Maurepas Way (S)	1,071	1,073	2	0.2%

Table 1.22: Increase in Traffic at the Maurepas Way Roundabout – AM Peak 2029

Approach Arm	PM Peak			
	2029 Base + Committed Dev (Total Vehicles)	2029 Forecast Base + Committed + Proposed Dev (Total Vehicles)	Increase (Vehicles)	Increase (%)
Houghton Avenue	336	350	14	4.0%
Hambledon Road	1,707	1,710	3	0.2%
A3 Maurepas Way	1,657	1,681	23	1.4%
A3 Maurepas Way (S)	1,157	1,162	6	0.5%

Table 1.23: Increase in Traffic at the Maurepas Way Roundabout – PM Peak 2029

- 1.91 It can be seen from **Table 1.22** that the proposed development is predicted to result in a maximum increase of 6.9% on the Houghton Avenue approach to the roundabout during the AM peak resulting in an additional vehicle approximately every 1.5 minutes.

- 1.92 During the PM peak, as detailed in **Table 1.23**, this is decreased to 4.0% on the Houghton Avenue approach, resulting in an additional one vehicle approximately every 4 minutes.
- 1.93 **Table 1.24** and **Table 1.25** detail the total traffic flow on each approach and the percentage increase due to the proposed development for the AM and PM peak hours respectively for the future year of 2029 with the proposed development with mitigation (reduced car trips).

Approach Arm	AM Peak			
	2029 Base + Committed Dev (Total Vehicles)	2029 Forecast Base + Committed + Proposed Dev with Mitigation (Total Vehicles)	Increase (Vehicles)	Increase (%)
Houghton Avenue	585	622	38	6.0%
Hambledon Road	1,305	1,306	1	0.1%
A3 Maurepas Way	1,610	1,617	7	0.5%
A3 Maurepas Way (S)	1,071	1,073	2	0.2%

Table 1.24: Increase in Traffic at the Maurepas Way Roundabout – AM Peak 2029 with Mitigation

Approach Arm	PM Peak			
	2029 Base + Committed Dev (Total Vehicles)	2029 Forecast Base + Committed + Proposed Dev (Total Vehicles)	Increase (Vehicles)	Increase (%)
Houghton Avenue	336	349	12	3.5%
Hambledon Road	1,707	1,710	3	0.2%
A3 Maurepas Way	1,657	1,678	20	1.2%
A3 Maurepas Way (S)	1,157	1,162	5	0.4%

Table 1.25: Increase in Traffic at the Maurepas Way Roundabout – PM Peak 2029 with Mitigation

- 1.94 It can be seen from **Table 1.24** that the proposed development with mitigation is predicted to result in a maximum increase of 6.0% on the Houghton Avenue approach to the roundabout during the AM peak resulting in an additional vehicle approximately every 1.6 minutes.
- 1.95 During the PM peak, as detailed in **Table 1.25**, this is decreased to 3.5% on the Houghton Avenue approach, resulting in an additional one vehicle approximately every 5 minutes.

Summary

- 1.96 The capacity assessments have shown that Houghton Avenue/Grainger Street roundabout, Grainger Street/Laxton Leaze priority junction and the Maurepas Way Roundabout presently all operate well within capacity will all continue to operate within capacity in the future year of 2029 with the additional committed and proposed development traffic.

- 1.97 The main access to the Berewood development, Maurepas Way roundabout, will see a maximum increase in vehicle flows of 6.9% in the AM peak hour and 4.0% in the PM peak hour on the Houghton Avenue arm. This will likely have no material impact on the operation of the roundabout. These increases reduced to 6.0% in the AM peak hour and 3.5% in the PM peak hour on the Houghton Avenue arm with the mitigation.
- 1.98 The proposed development is unlikely to have a material impact on the operation of the surrounding local highway network.

Travel Plan

- 1.99 HCC have acknowledged that the revised Travel Plan submitted with the planning application has been updated to address all previous comments, but they have requested that the Travel Plan is updated to reflect the revised targets based on a decide and provide approach.
- 1.100 The Travel Plan has been updated to reflect the revised targets from the TA Addendum report.

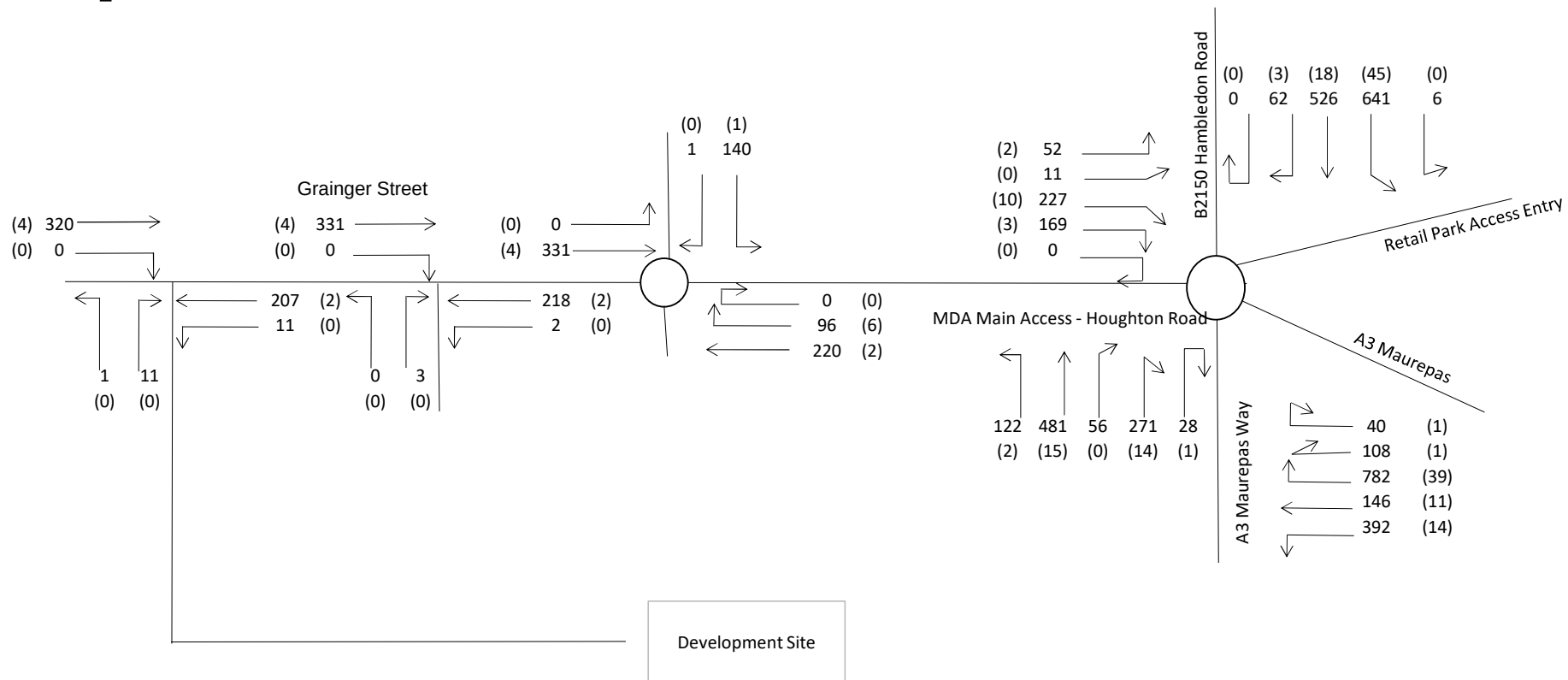
Summary and Conclusion

- 1.101 This Addendum to the Transport Assessment (TA) has been produced on behalf of Grainger Plc to address matters detailed in comments received from Hampshire County Council (HCC), dated 13th November 2024, in relation to the outline planning application (ref: APP/23/00471).
- 1.102 It is considered that the comments provided by HCC have been adequately addressed in this TA Addendum and associated notes / drawings that have been submitted alongside. It has been demonstrated that the proposed BSL development site benefits from a high level of connectivity for sustainable modes of travel both within the Berewood development site itself and the wider local area. Based on the content of this TA Addendum, it is considered that the proposed access and the impact of the development on the local transport network is acceptable.

Author: Nikki Eyles

Date: 28th February 2025

DIAGRAMS



Key
232 Total Vehicles
(2) HGV's

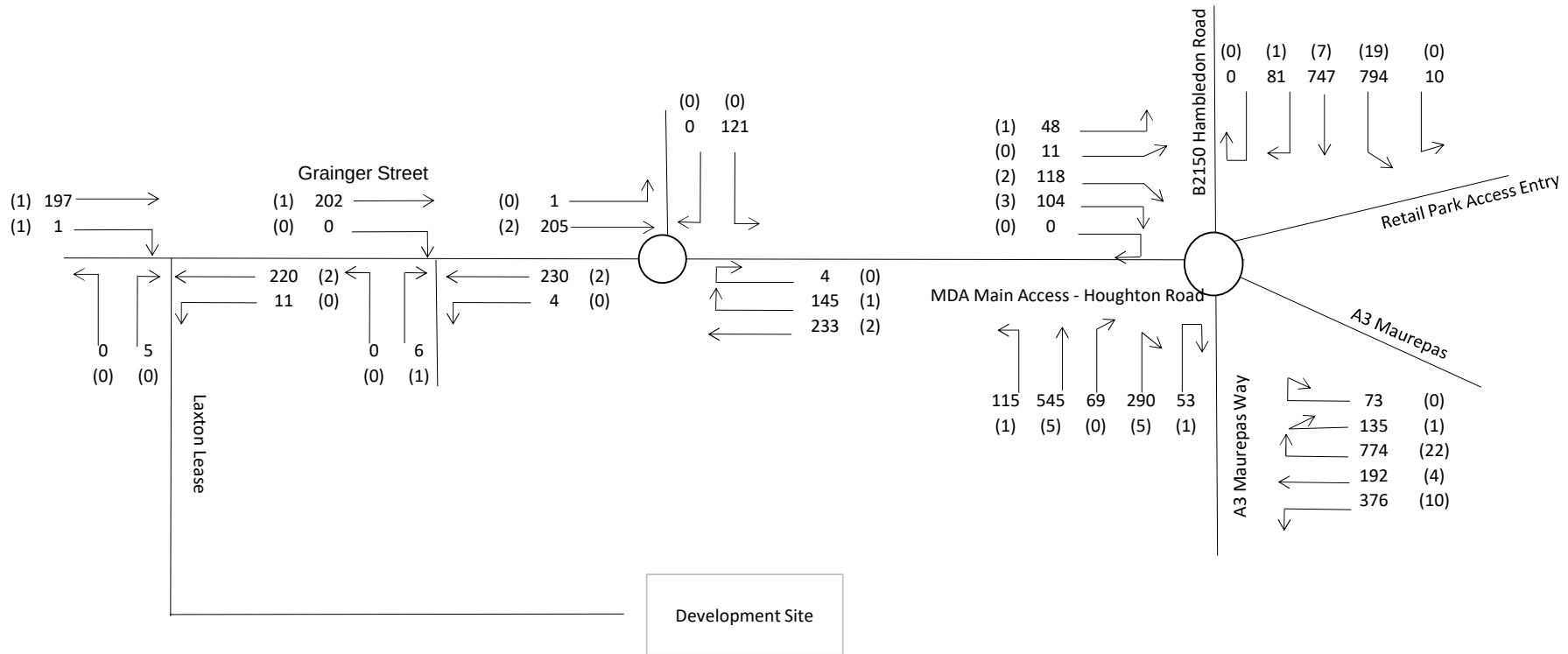


Grainger Plc
Blue Star Land, Waterloooville

2023 Observed Traffic Flows
AM Peak (08:00-09:00)

Scale NTS

Diagram A1.1



Key
232 Total Vehicles
(2) HGV's

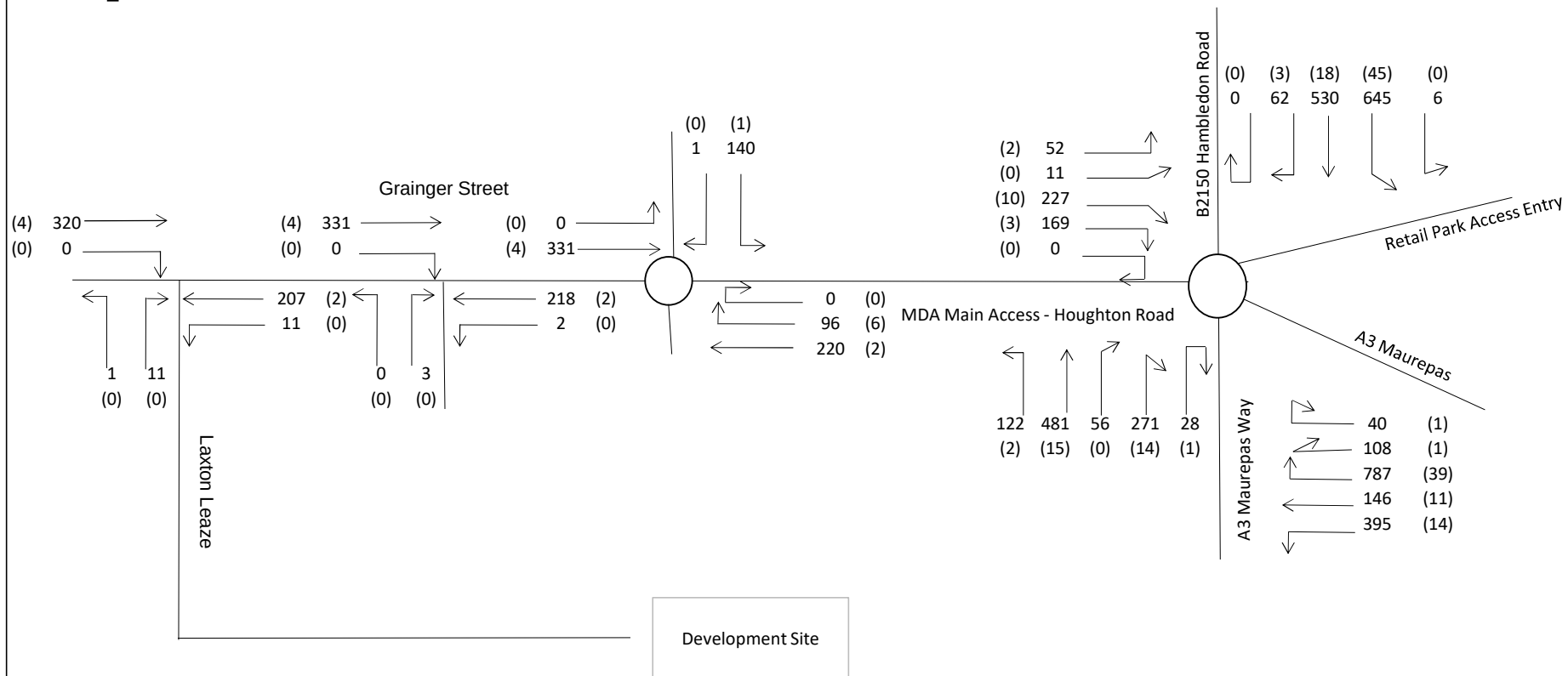


Grainger Plc
Blue Star Land, Waterloooville

2023 Observed Traffic Flows
PM Peak (16:30-17:30)

Scale NTS

Diagram A1.2



Key
232 Total Vehicles
(2) HGV's

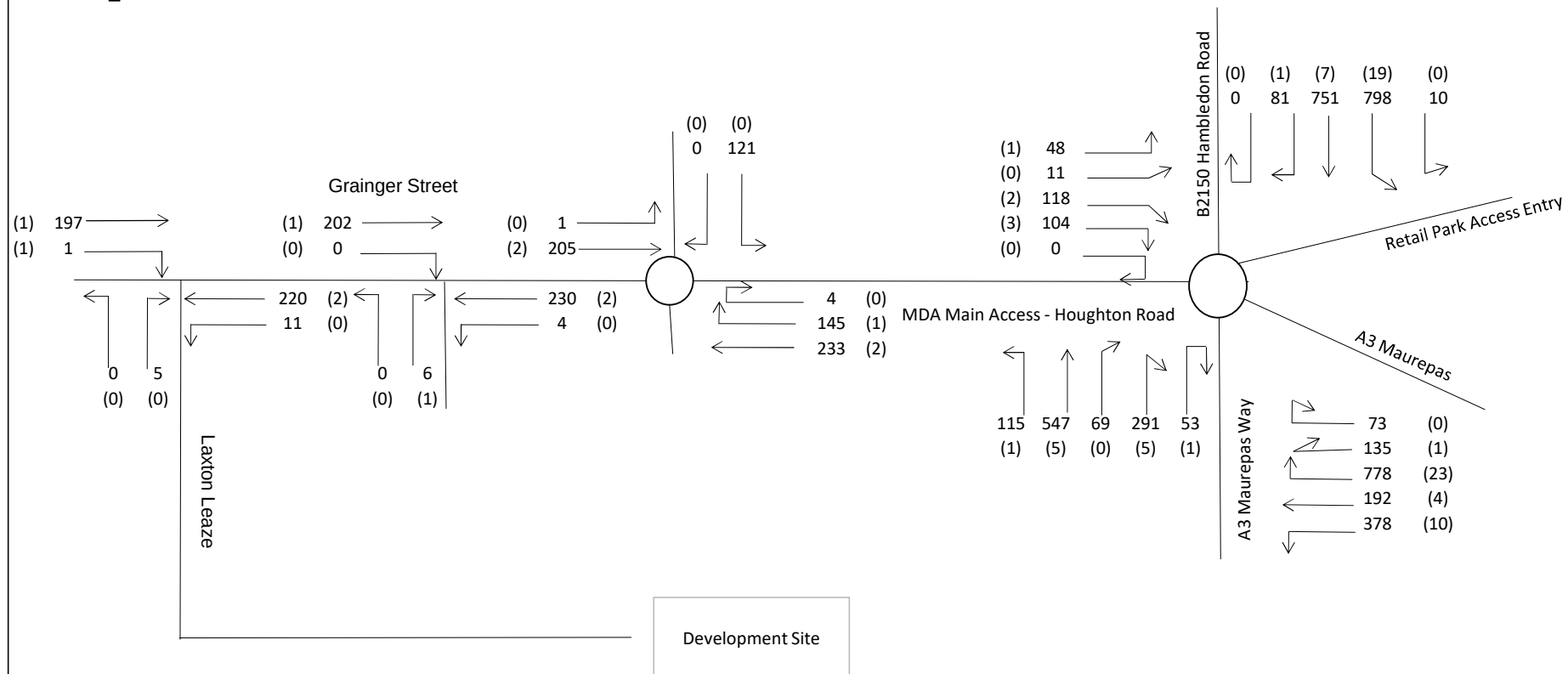


Grainger Plc
Blue Star Land, Waterloooville

2025 Base Traffic Flows
AM Peak (08:00-09:00)

Scale NTS

Diagram A1.3



Key
232 Total Vehicles
(2) HGV's

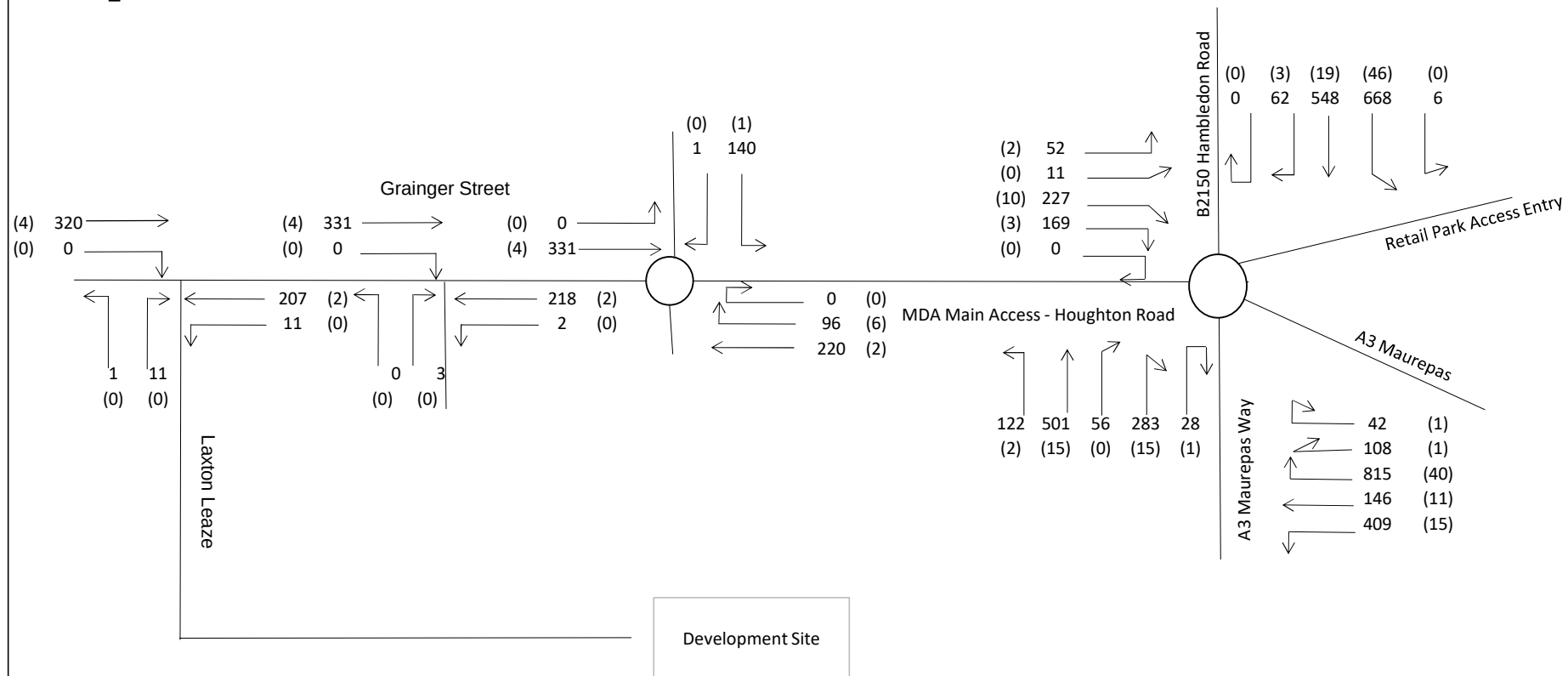


Grainger Plc
Blue Star Land, Waterloooville

2025 Base Traffic Flows
PM Peak (16:30-17:30)

Scale NTS

Diagram A1.4

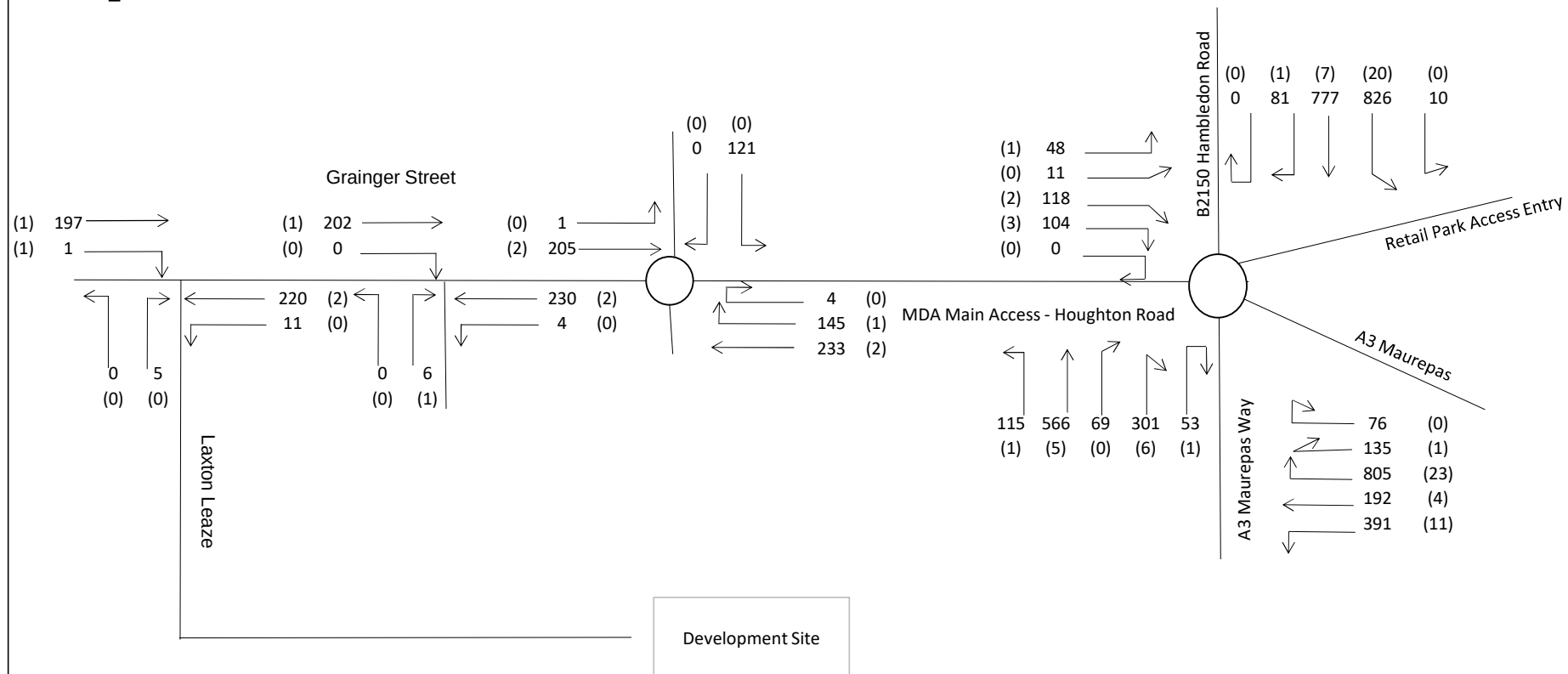


Grainger Plc
Blue Star Land, Waterloooville

2029 Base Traffic Flows
AM Peak (08:00-09:00)

Scale NTS

Diagram A1.5



Key
232 Total Vehicles
(2) HGV's

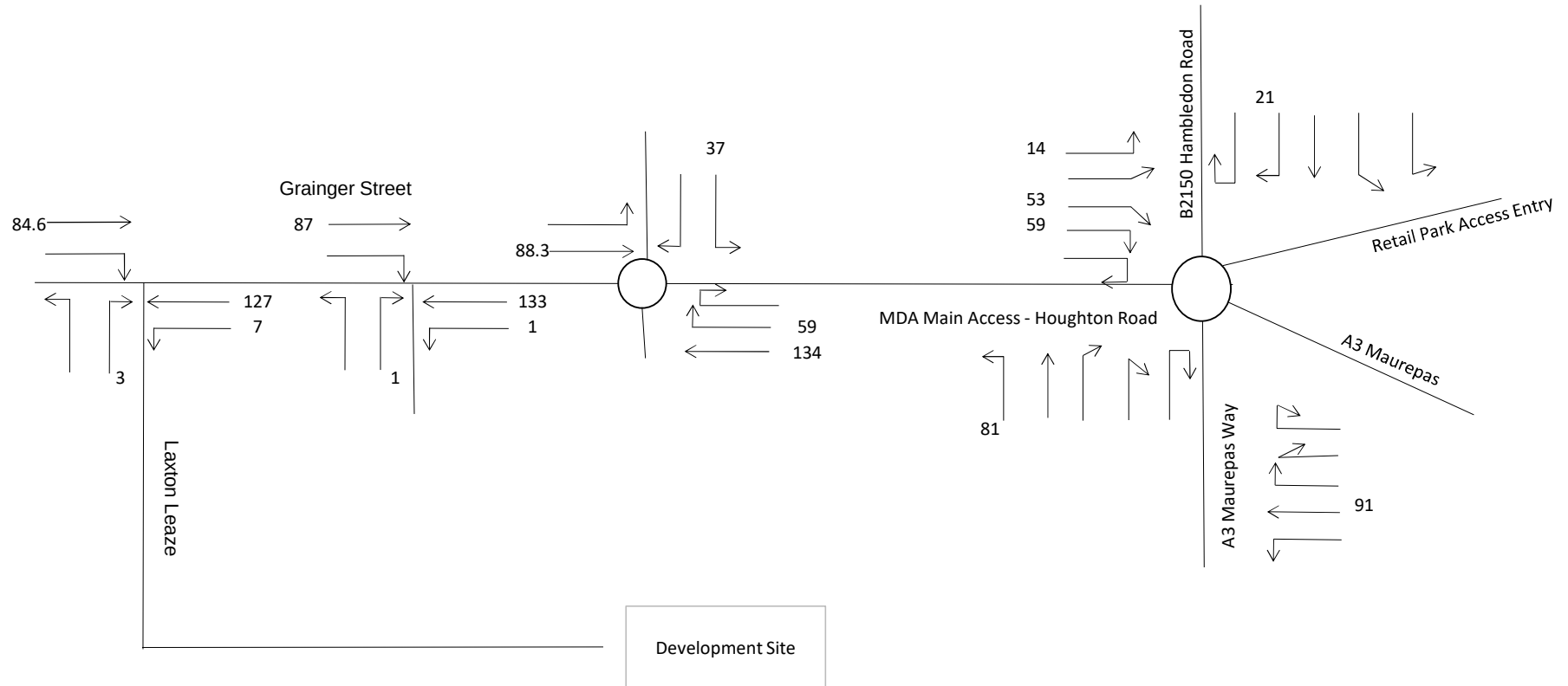


Grainger Plc
Blue Star Land, Waterloooville

2029 Base Traffic Flows
PM Peak (16:30-17:30)

Scale NTS

Diagram A1.6



Note: Committed Development has been assumed to be the remaining Berewood Development still to be built out and occupied as of Sept 2023

Key
232 Total Vehicles

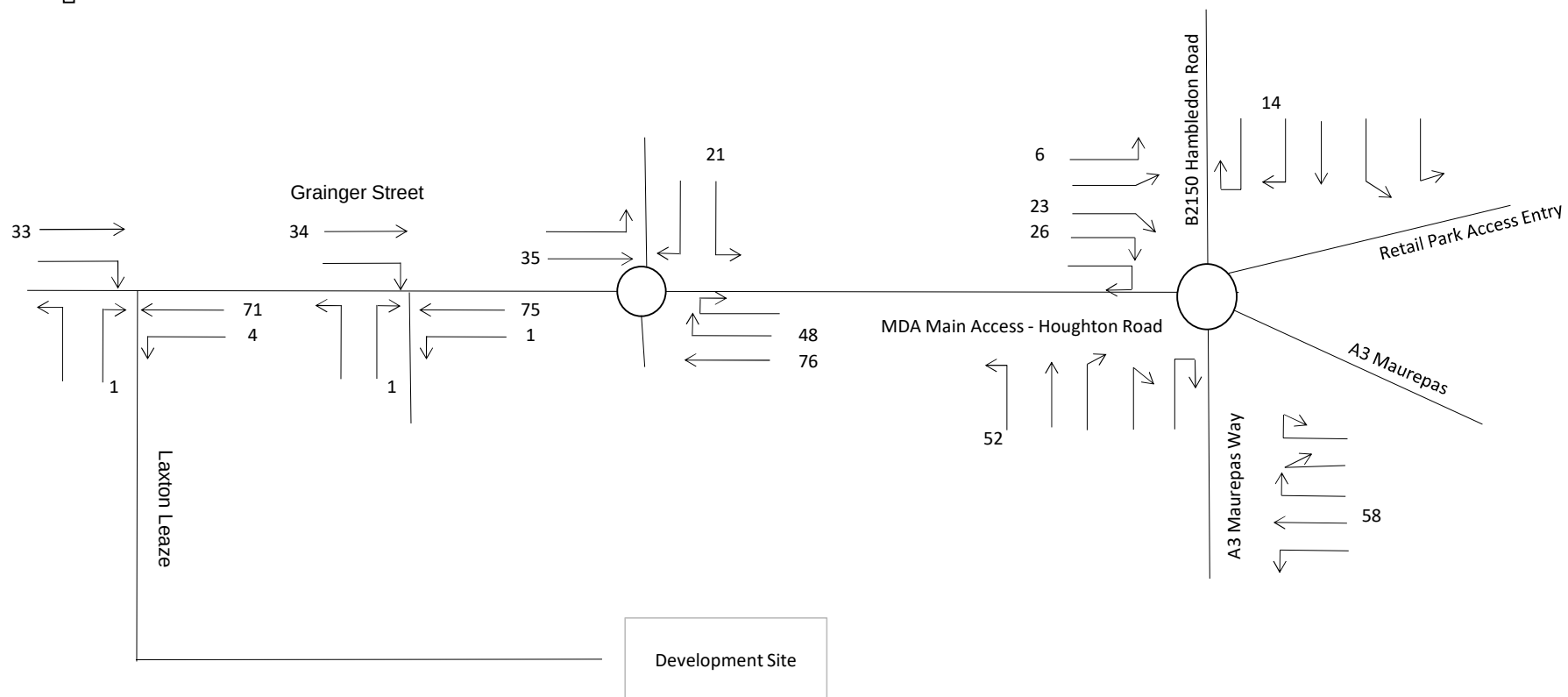


Grainger Plc
Blue Star Land, Waterloooville

Committed Development Traffic Flows
AM Peak (08:00-09:00)

Scale NTS

Diagram A1.7



Note: Committed Development has been assumed to be the remaining Berewood Development still to be built out and occupied as of Sept 2023

Key
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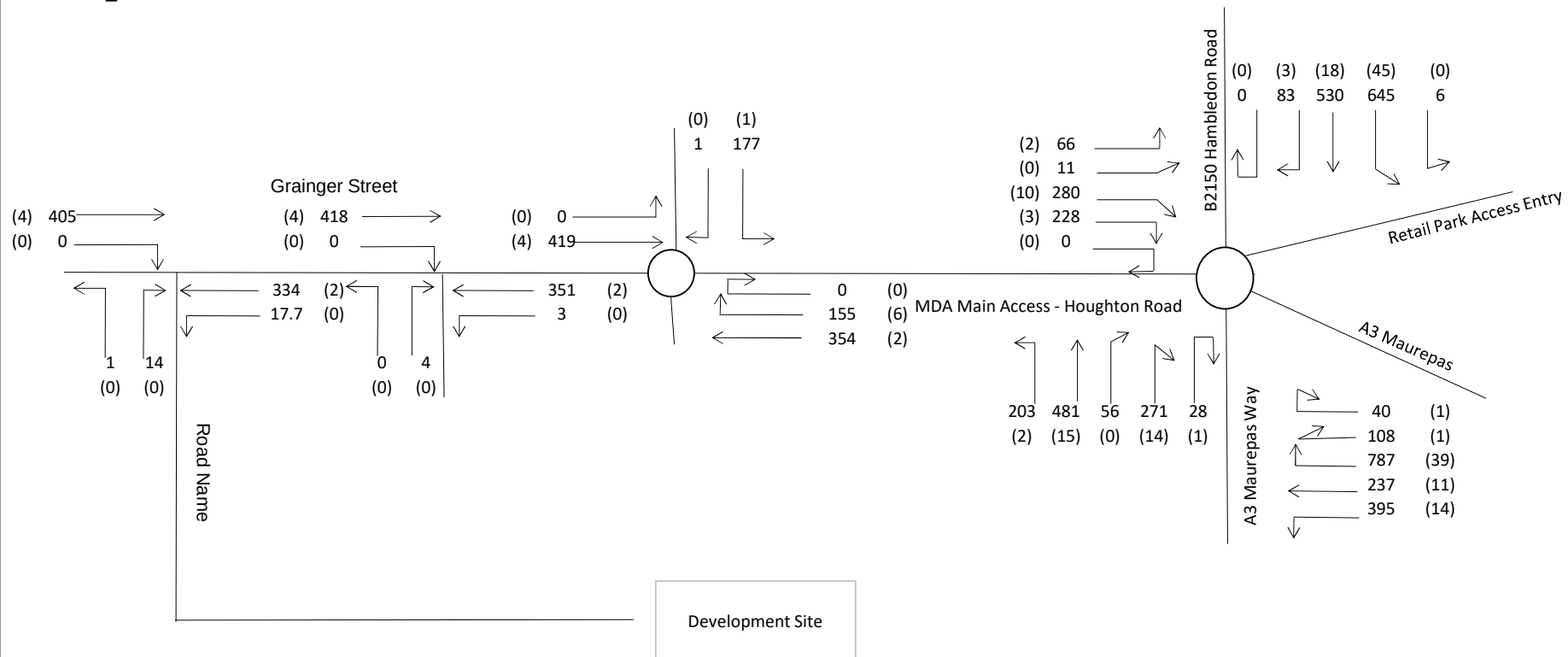


Grainger Plc
Blue Star Land, Waterloooville

Committed Development Traffic Flows
PM Peak (16:30-17:30)

Scale NTS

Diagram A1.8



Key
232 Total Vehicles
(2) HGV's

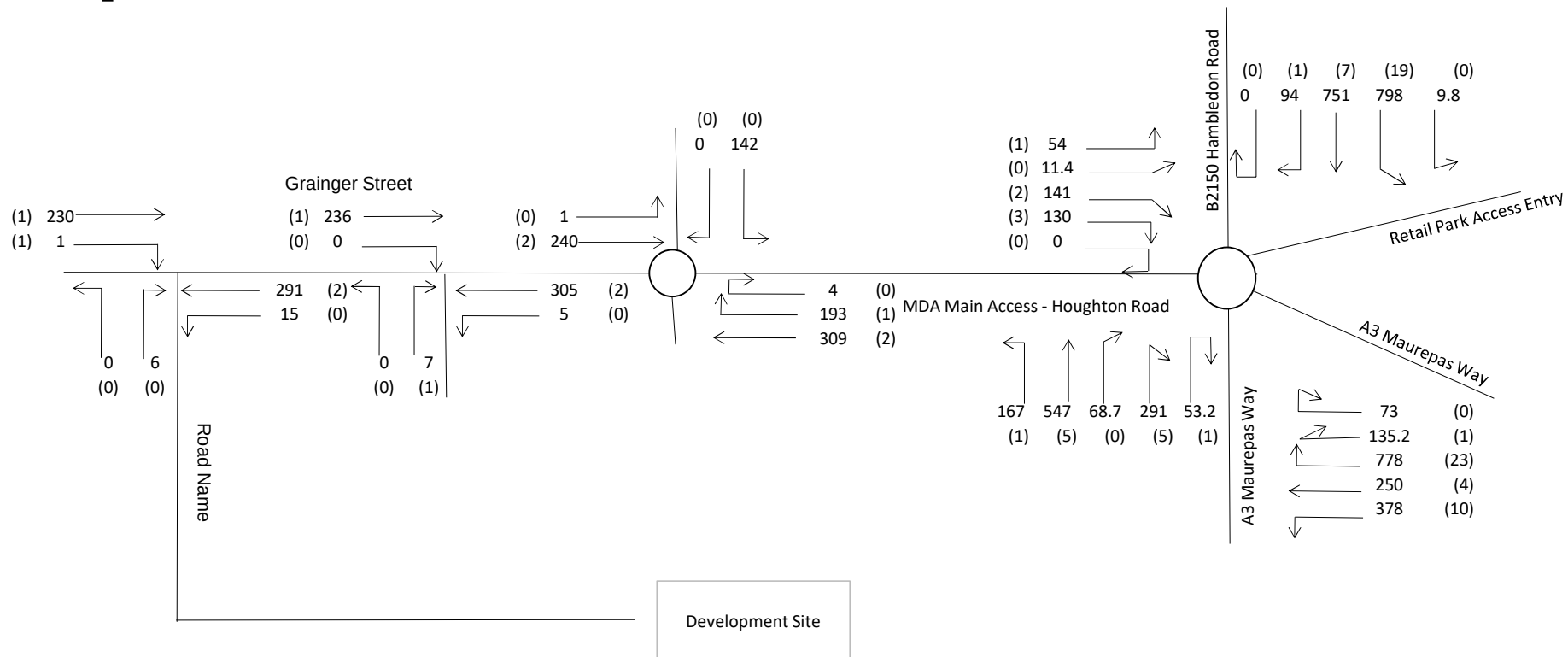


Grainger Plc
Blue Star Land, Waterloooville

2025 Base + Committed Dev Traffic Flows
AM Peak (08:00-09:00)

Scale NTS

Diagram A1.9

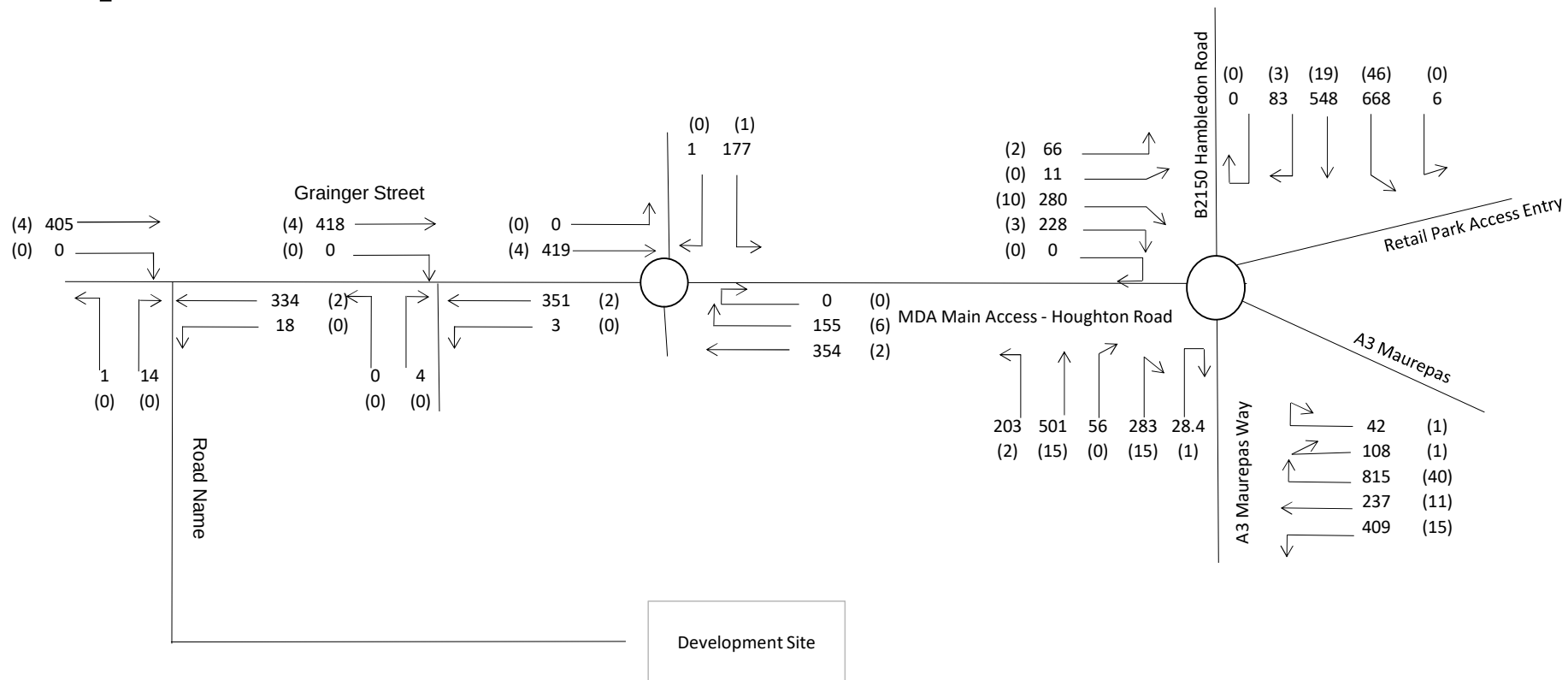


Grainger Plc
Blue Star Land, Waterloooville

2025 Base + Committed Dev Traffic Flows
PM Peak (16:30-17:30)

Scale NTS

Diagram A1.10



Key
232 Total Vehicles
(2) HGV's

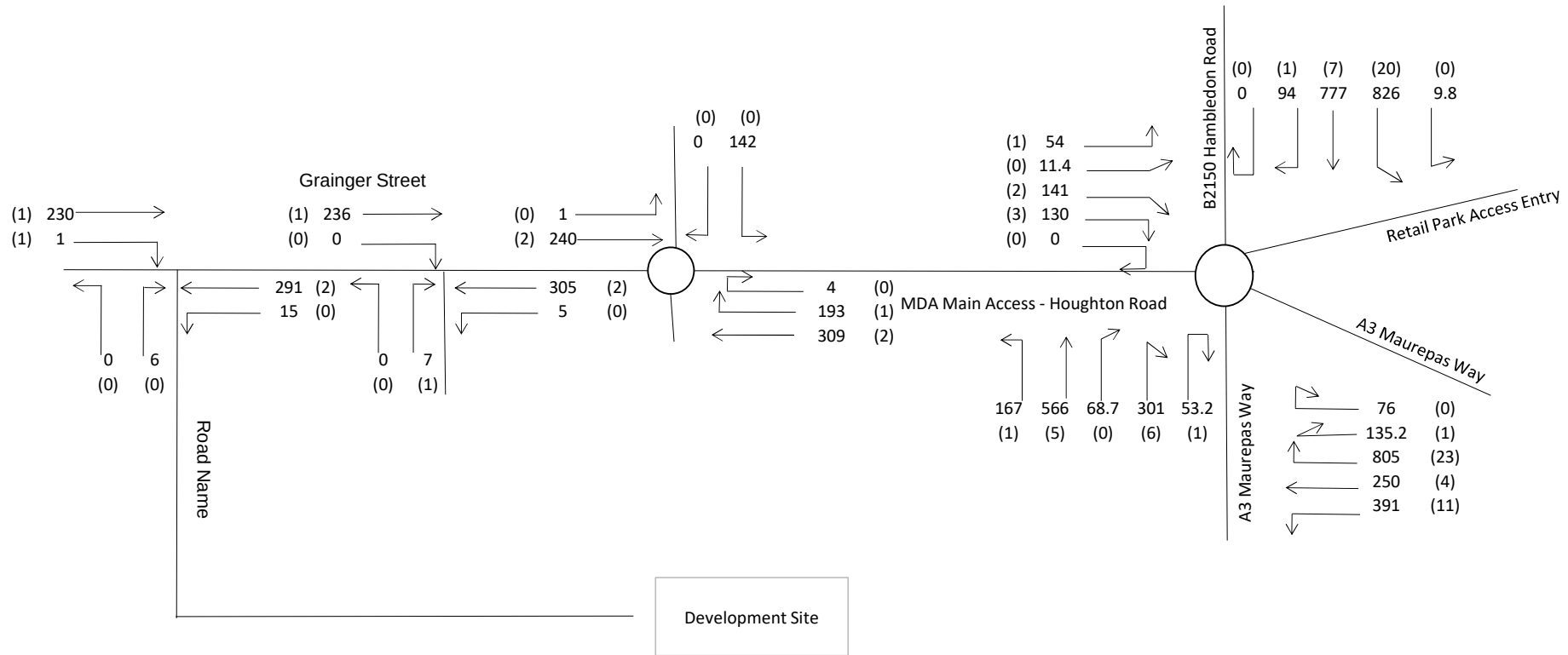


Grainger Plc
Blue Star Land, Waterloooville

2029 Base + Committed Dev Traffic Flows
AM Peak (08:00-09:00)

Scale NTS

Diagram A1.11



Key
232 Total Vehicles
(2) HGV's

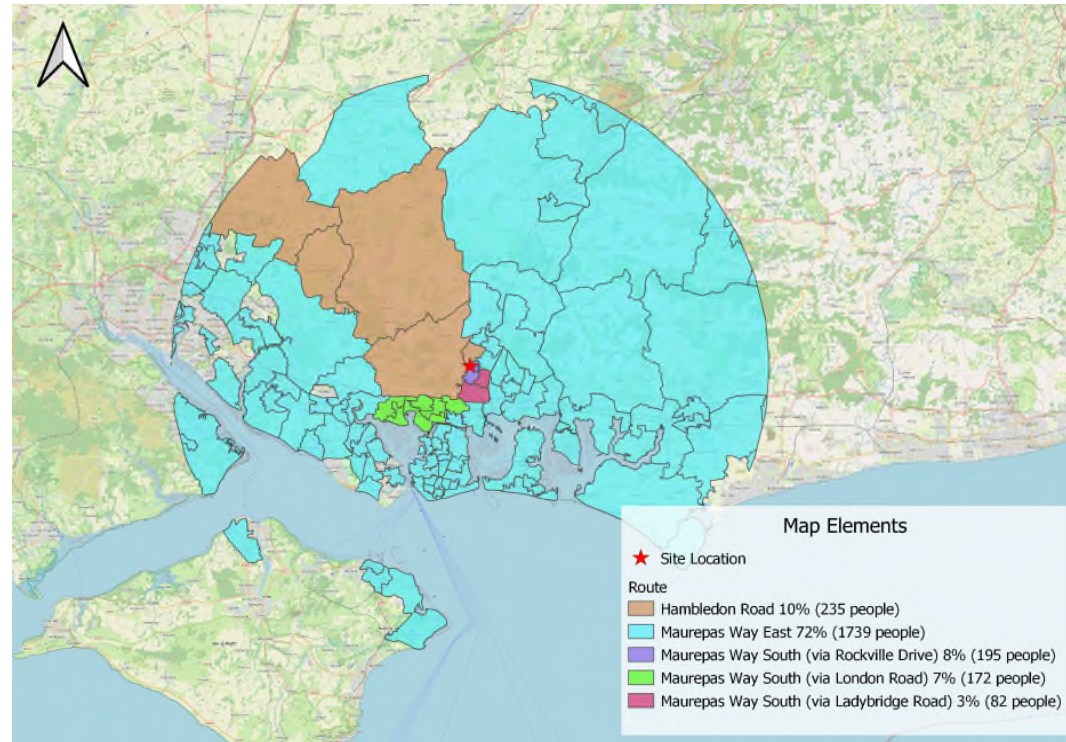
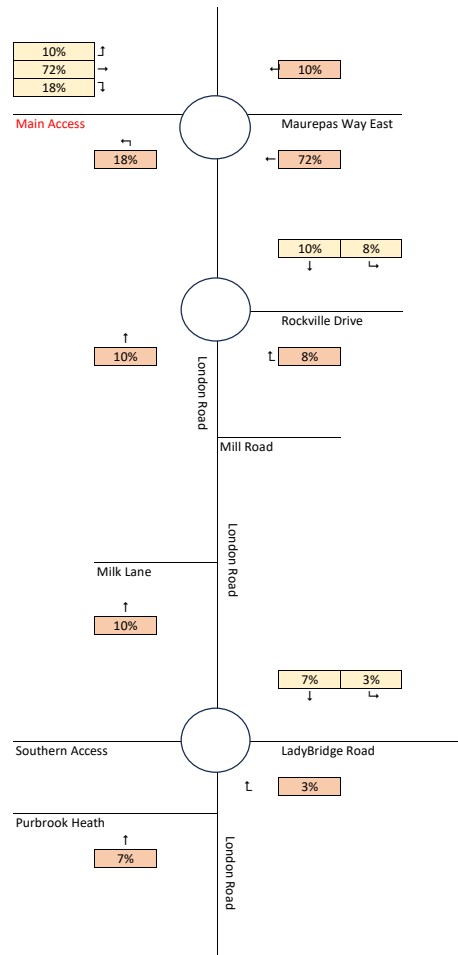


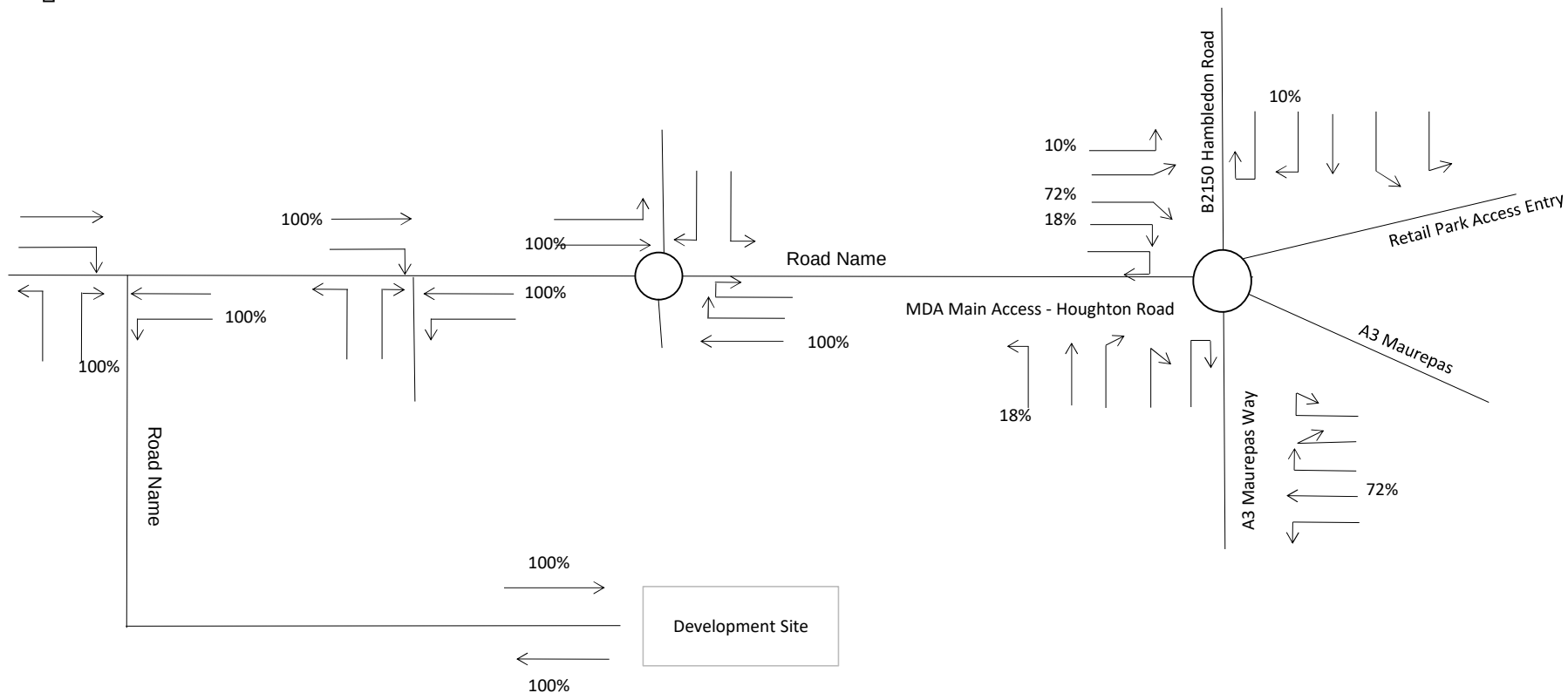
Grainger Plc
Blue Star Land, Waterloooville

2029 Base + Committed Dev Traffic Flows
PM Peak (16:30-17:30)

Scale NTS

Diagram A1.12





Key
232 Total Vehicles
(2) HGV's

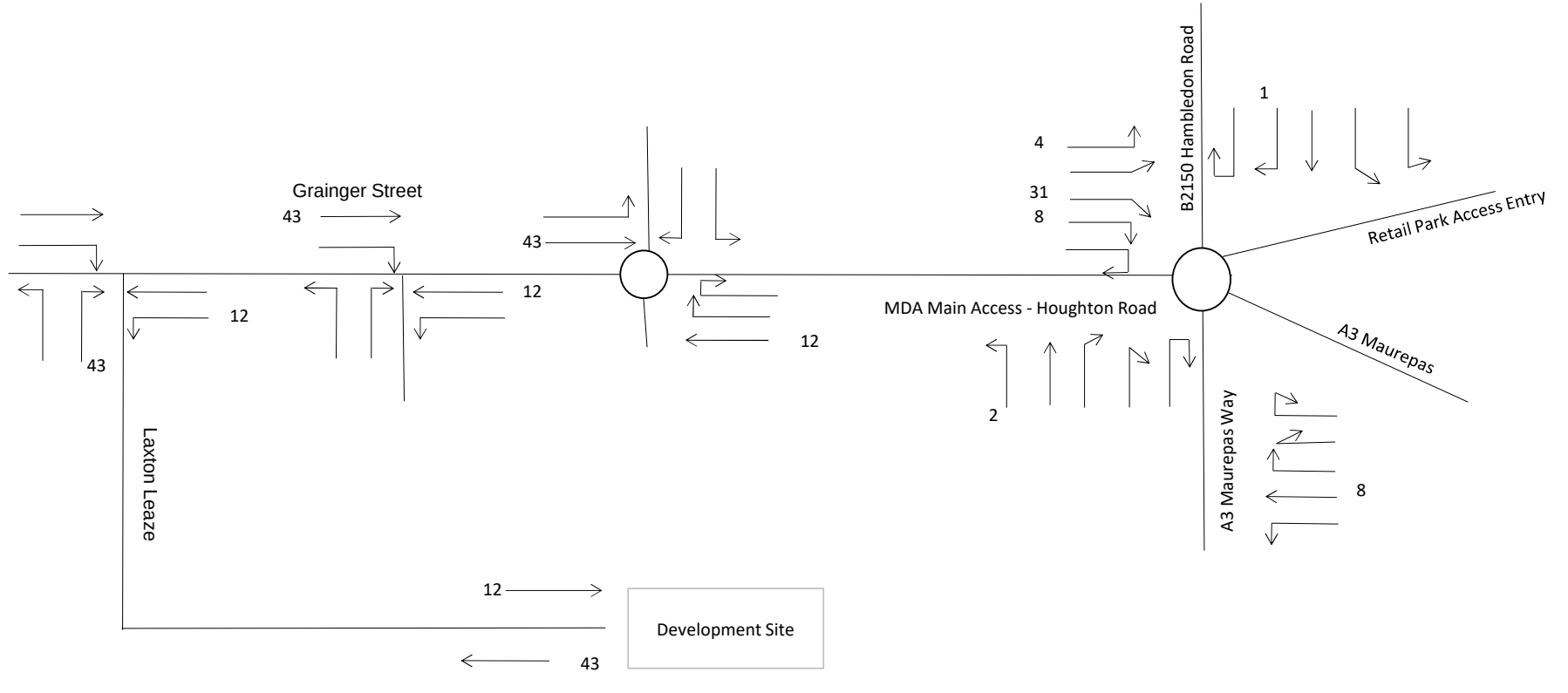


Grainger Plc
Blue Star Land, Waterlooville

Distribution - BSL Development Trips

Scale NTS

Figure A1.14



Key
232 Total Vehicles

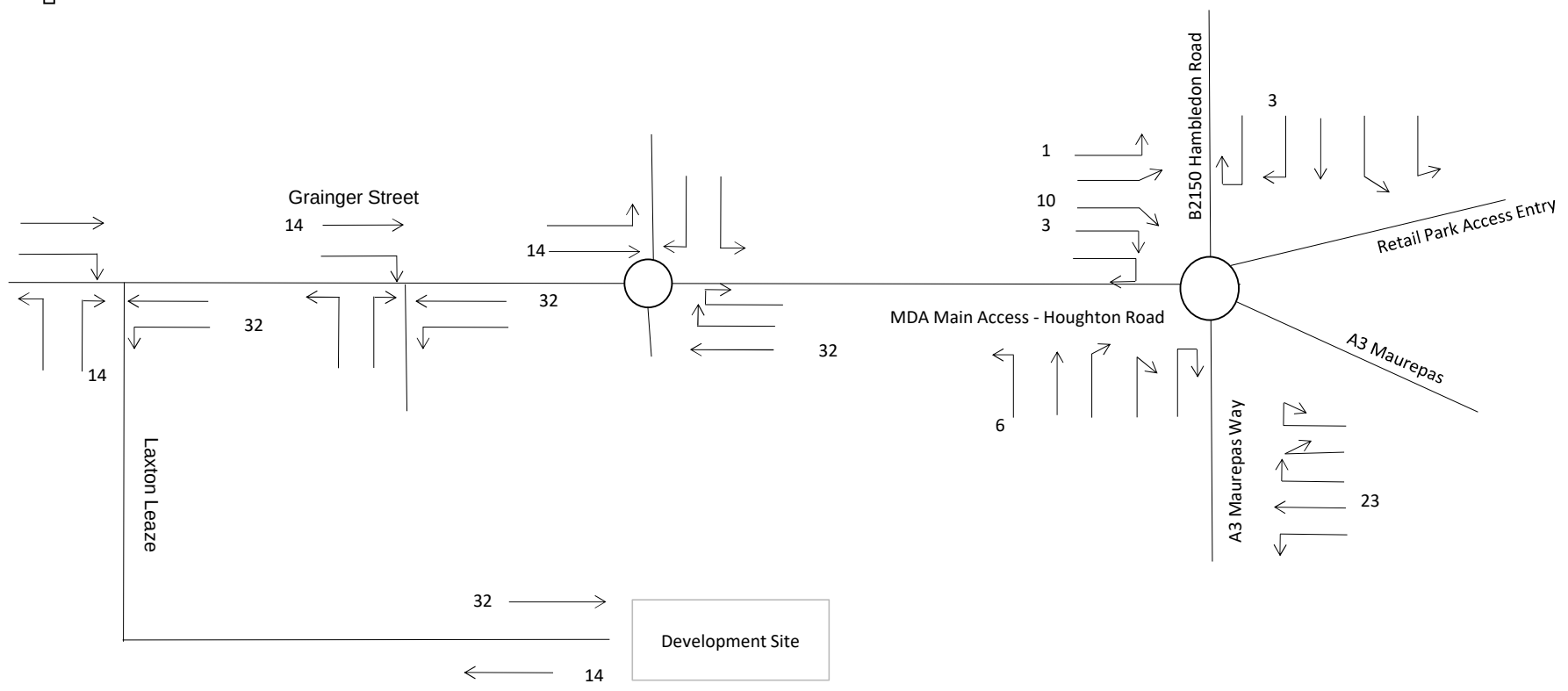


Grainger Plc
Blue Star Land, Waterloooville

Proposed Development Traffic Flows
AM Peak (08:00-09:00)

Scale NTS

Diagram A1.15



Key
232 Total Vehicles

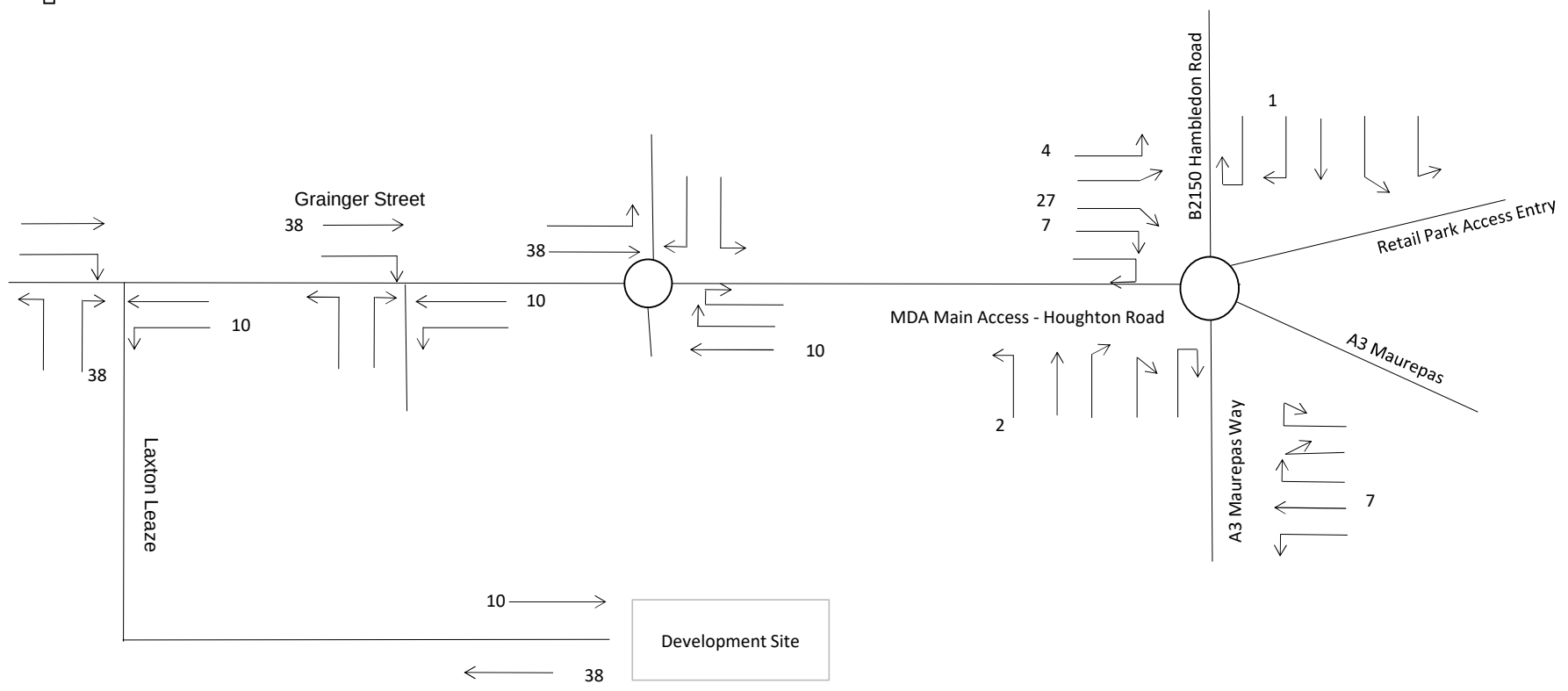


Grainger Plc
Blue Star Land, Waterloo

Proposed Development Traffic Flows
PM Peak (16:30-17:30)

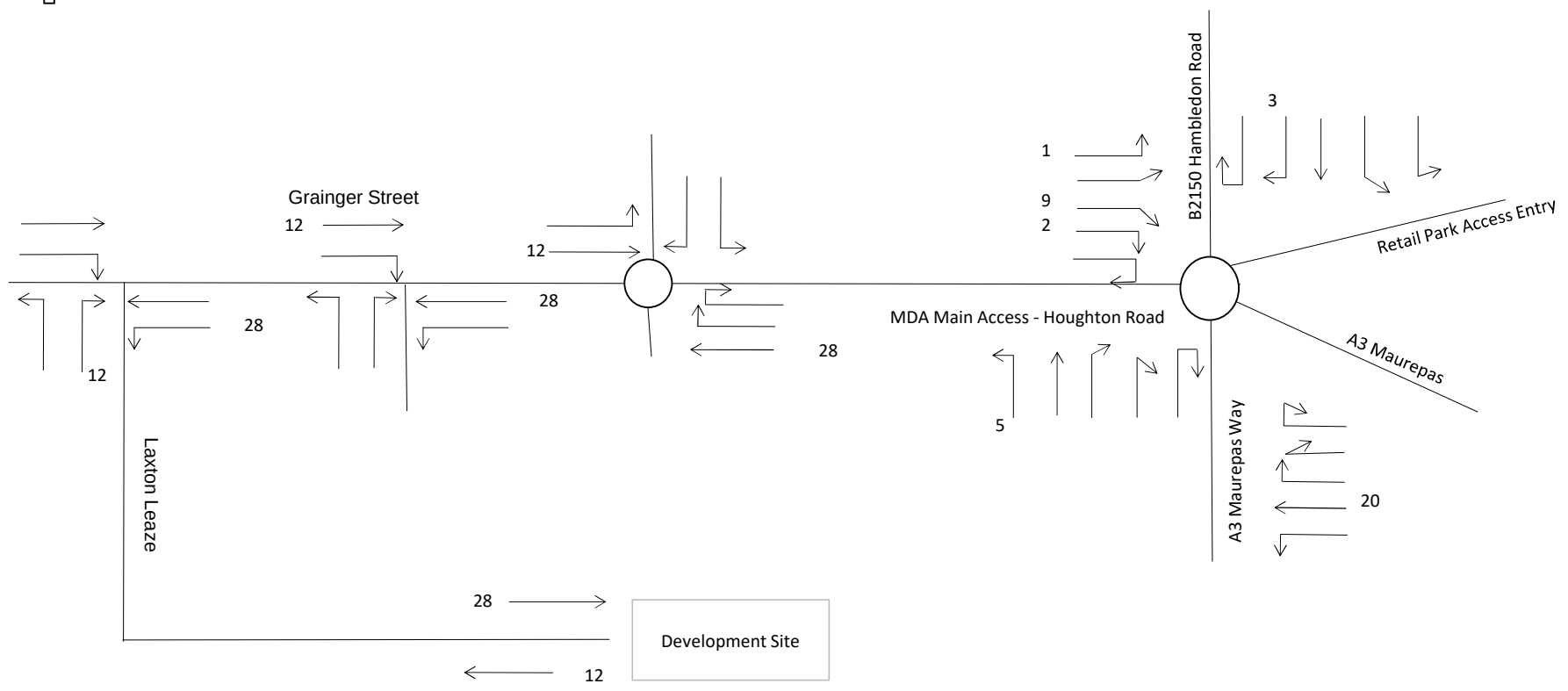
Scale NTS

Diagram A1.16



Key
232 Total Vehicles

	Grainger Plc Blue Star Land, Waterloooville
	Proposed Development with Mitigation AM Peak (08:00-09:00)
	Scale NTS Diagram A1.17



Key
232 Total Vehicles

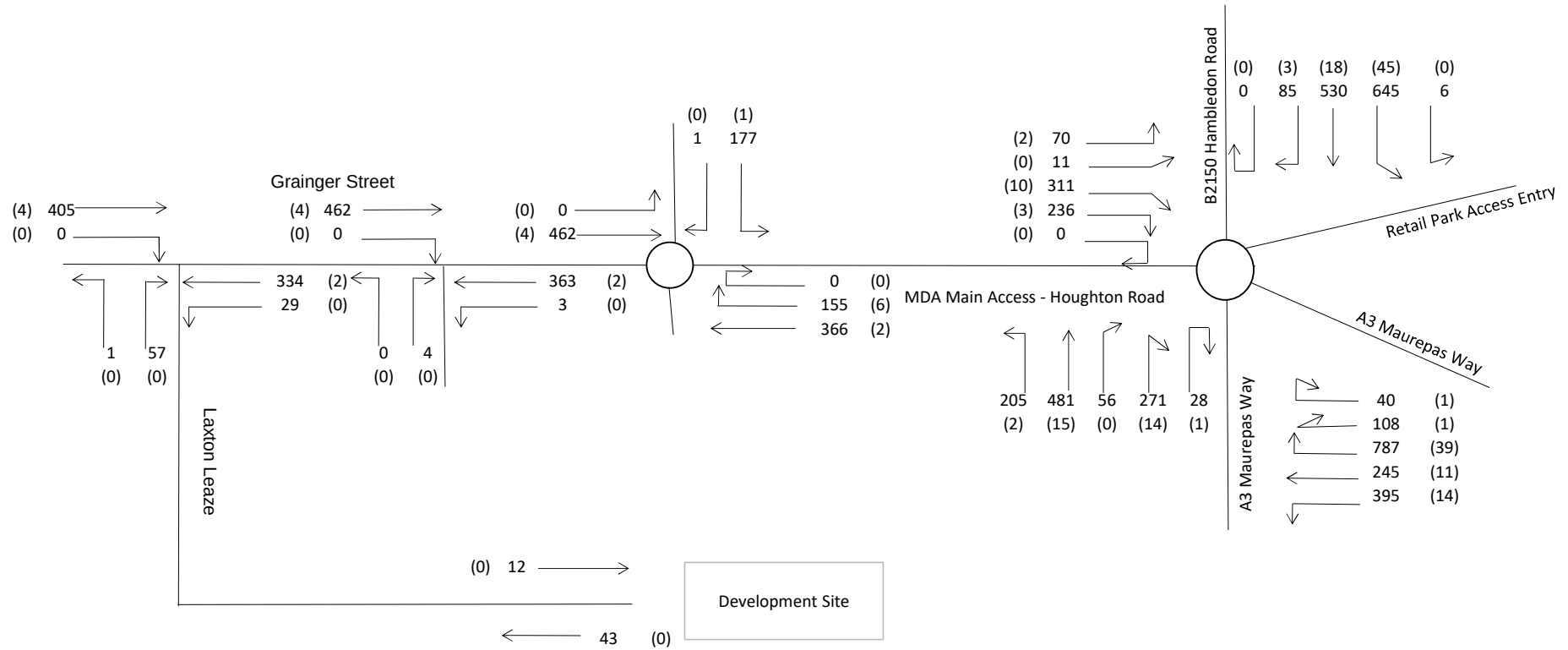


Grainger Plc
Blue Star Land, Waterloooville

Proposed Development with Mitigation
PM Peak (16:30-17:30)

Scale NTS

Diagram A1.18



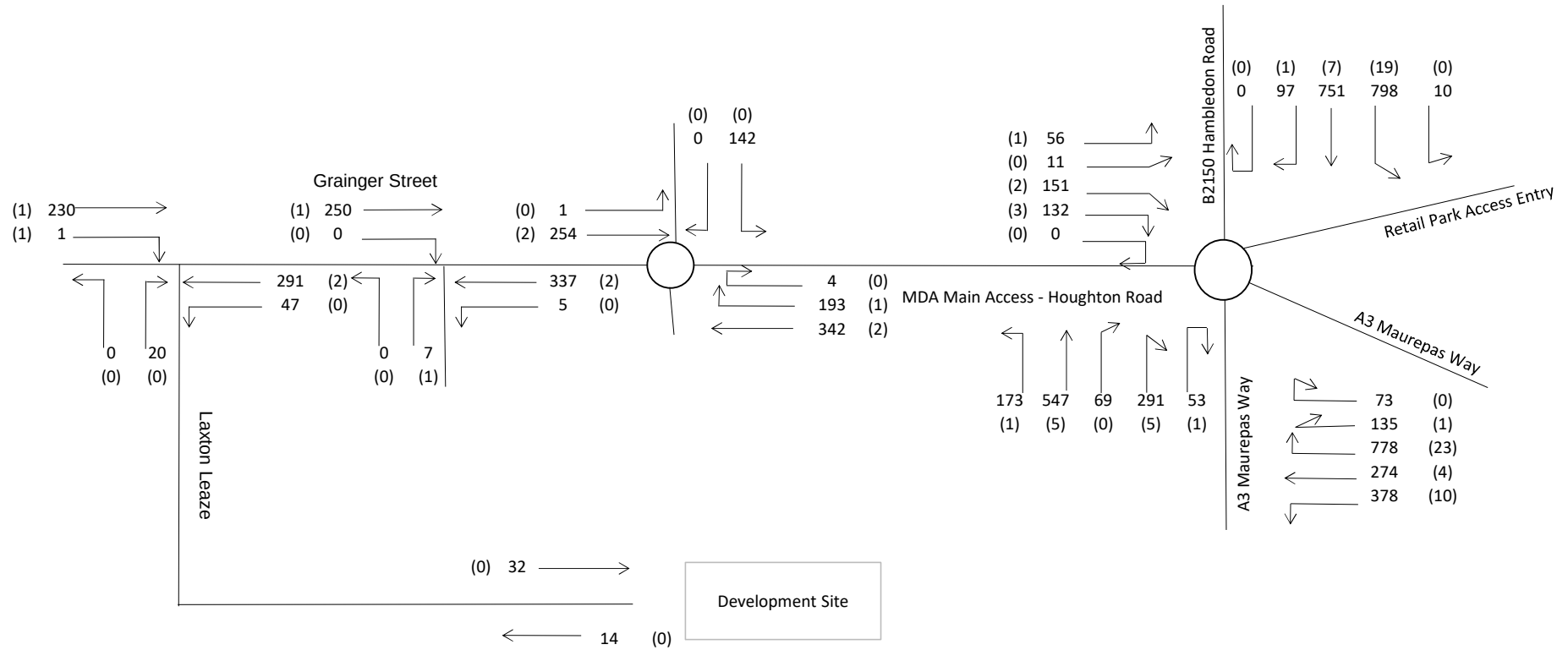
Key
232 Total Vehicles
(2) HGV's



Grainger Plc
Blue Star Land, Waterloooville

2025 Base + Committed + Proposed Dev Traffic
Flows
AM Peak (08:00-09:00)
Scale NTS

Diagram A1.19



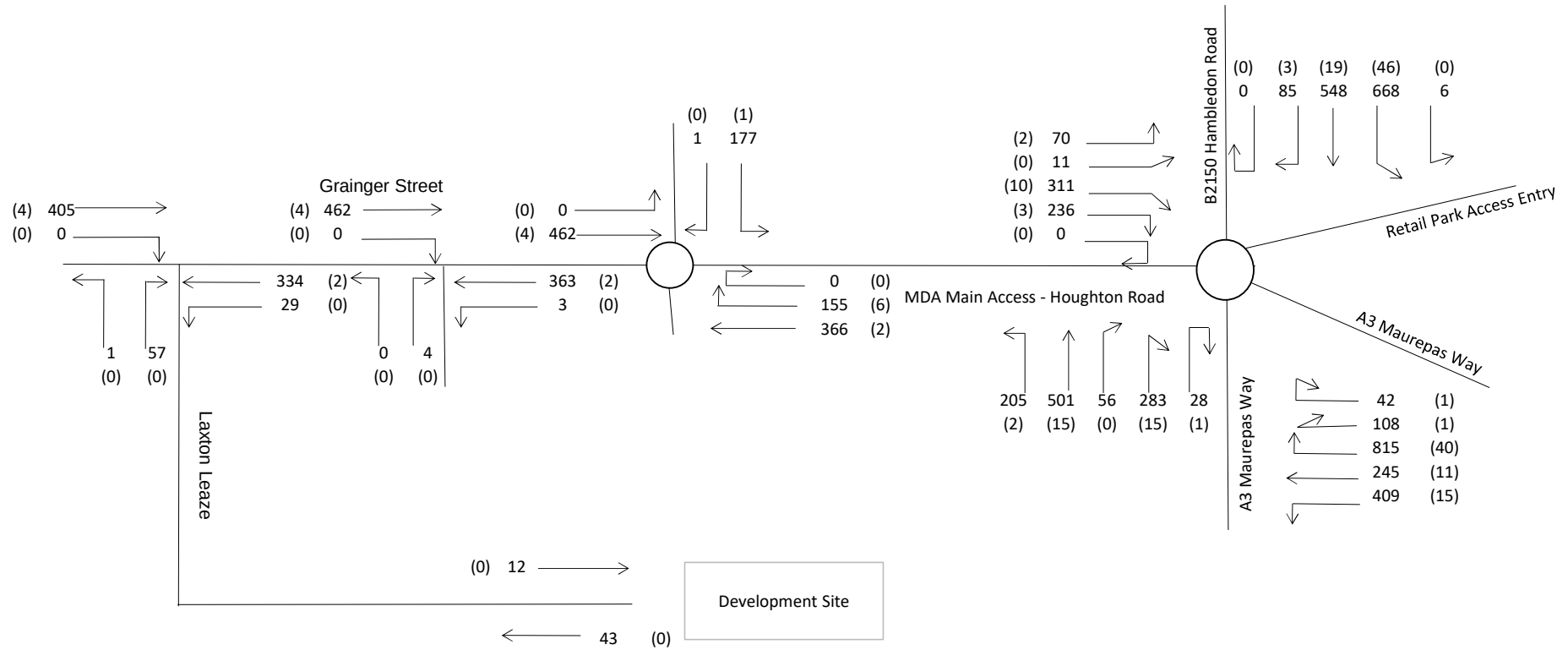
Key
232 Total Vehicles
(2) HGV's



Grainger Plc
Blue Star Land, Waterloooville

2025 Base + Committed + Proposed Dev Traffic
Flows
PM Peak (16:30-17:30)
Scale NTS

Diagram A1.20



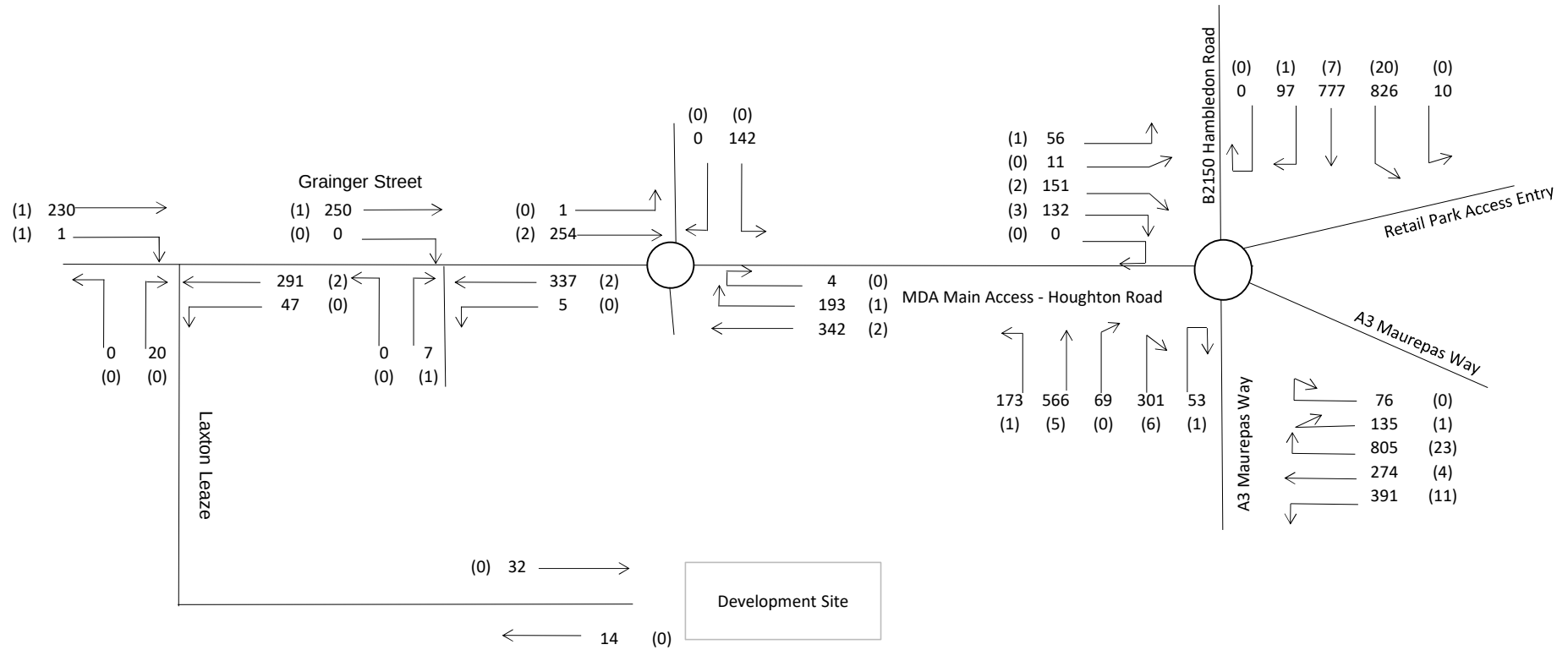
Key
232 Total Vehicles
(2) HGV's



Grainger Plc
Blue Star Land, Waterloooville

2029 Base + Committed + Proposed Dev Traffic
Flows
AM Peak (08:00-09:00)
Scale NTS

Diagram A1.21



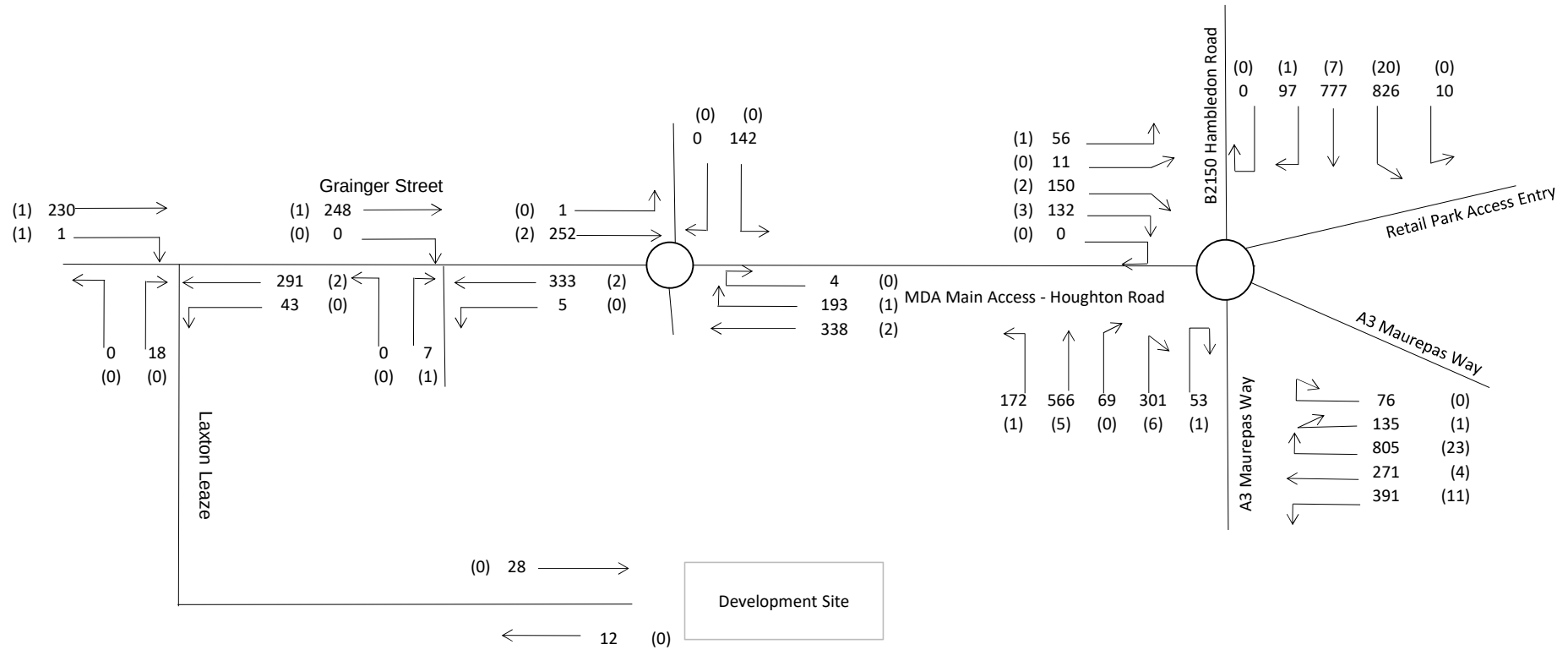
Key
232 Total Vehicles
(2) HGV's



Grainger Plc
Blue Star Land, Waterloooville

2029 Base + Committed + Proposed Dev Traffic
Flows
PM Peak (16:30-17:30)
Scale NTS

Diagram A1.22



Key
232 Total Vehicles
(2) HGV's



Grainger Plc
Blue Star Land, Waterloooville

2029 Base + Committed + Proposed Devwith
Mitigation (reduced Car Trips) Traffic Flows
PM Peak (16:30-17:30)
Scale NTS

Diagram A1.24

APPENDIX A: HCC Response

Head of Development Planning
Havant Borough Council
Civic Offices
Civic Centre Road
Havant
PO9 2AX

Winchester City Council
The Guildhall
City Offices
Colebrook Street
Winchester
SO23 9LJ



Hampshire
County Council

Hampshire 2050
The Castle
Winchester, Hampshire SO23 8UL

Telephone 0300 555 1 375
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Enquiries to	Sophie Osborne	My reference	6/3/13/346
Direct Line	N/A	Your reference	APP/23/00471 23/01457/OUT
Date	13 November 2024	Email	sophie.osbone@hants.gov.uk

For attention of Ms A Miszewska and Ms R Chapman

Dear Madam(s),

Re: Outline planning application for a residential development of up to 69 dwellings with access from Laxton Leaze and emergency access from Ellisons Crescent and all other matters reserved. | Land of North of Fire Station (Blue Star Land), Waterloooville

Thank you for your consultation on the above outline planning application. As per the previous formal response dated 09 October 2023, the Highway Authority have been engaged in direct discussions with the applicant in a meeting held in July 2023. In response to these discussions and site visit held with the applicant in April 2024, the applicant has submitted a revised Transport Assessment (TA) dated July 2024 along with commentary on the changes made to both the TA and the site access design. The Highway Authority have reviewed this information and have the following comments to make.

It is noted that since the previous consultation the quantum of development has reduced from 90 dwellings to 69.

Policy Status

The application site was allocated in the now withdrawn Havant Borough Council emerging local plan under policy reference H42. The policy suggested that H42 has the capacity to provide residential development for circa 90 dwellings when supported by suitable measures. It is noted that the number of proposed dwellings falls below this allocation number. Specifically in relation to the H42 allocation, and the highway matters, the policy required:

- Transport Assessment and Travel Plan;

Director of Hampshire 2050
Gary Westbrook

- The design and layout secures an acceptable relationship between the new dwellings and the A3 through separation and/or other appropriate mitigation measures; and
- The design and layout provides for the integration of cycle and pedestrian routes to and from Waterlooville Town Centre and Berewood

The TA, which supports this application, provides a summary of the relevant transport planning policies.

Site Location

The site is located to the east of the Berewood MDA, and is bound to the south by residential properties, to the east by the A3 and Waterlooville Fire Station with greenspace to the north. It is understood that the area to the north is currently allocated for future employment use.

Currently a shared use footway/cycleway runs through the centre of the site providing a traffic free connection between Berewood, Waterlooville Town Centre and Forest End. This shared use path has been identified on the Berewood MDA core infrastructure and non-car accessibility plan as secured within the outline s106 agreement. Retaining this route on its existing alignment as much as possible is therefore a key consideration of this planning application, and is discussed further below

Transport Assessment Scope

Whilst this application has been live, Hampshire LTP4 policy was adopted in February 2024. LTP4 seeks to reduce car dependency and with a focus on modal shift towards the use of sustainable modes. In line with this guidance, the Highway Authority are therefore seeking for a more balanced analysis of the transport proposals within the TA work, aligned with the Decide and Provide approach. This would assess and prioritise opportunities to significantly improve sustainable transport provision for all modes (walking, cycling and public transport) before determining if there are remaining significant residual impacts to safe and efficient highway operation. The TA assessment work should therefore follow the decide and provide model setting out the target mode share provision for the site, establishing against current known modal share within the area and identifying any appropriate enabling works to increase sustainable mode share and reduce car dependency.

Sustainable Access

Walking and Cycling:

A WCHAR has not been undertaken to support this planning application. The applicant suggests that as this is not a requirement as these are typically undertaken on larger highway schemes and given the sites close proximity to the Berewood MDA development. Whilst technically the site does not meet the criteria of a WCHAR assessment, a WCHAR style walking and cycling audit is required to support this application in accordance with TG19. Furthermore, whilst the developments close linkages with the Berewood MDA are acknowledged, given that this site is a standalone application appropriate

walking and cycling infrastructure improvements are considered necessary to support this planning application.

Limited narrative has been provided on the local facilities and services available to the development and the distance of these from the centre of the site has not been provided within the TA. Active Travel England identify that a site should have a sufficient number and range of local facilities within an 800m (10-minute walking distance) via an accessible walking route.

Due to the proximity of this site to Berewood and Waterloo Town Centre, the site benefits from the above facilities and services within the recommended walking distance. Once constructed the Berewood Town Park will provide appropriate opportunities for outdoor recreation activities to accord with this guidance. Notwithstanding the base level of infrastructure required by Active Travel England, considerations must also be given to access secondary school and employment opportunities albeit it is considered appropriate for these to be beyond the 800m walking distance.

The WCHAR should also include a Healthy Streets Audit and consideration should also be given to the use of ATE's Route Check Tool to consolidate the requirements of the WCHAR and the Healthy Streets Assessment. A hybrid approach utilising these methods with a bespoke sustainable access assessment should be agreed with the Highway Authority. It is noted that paragraph 5.27 of the TA outlines that a Healthy Streets assessment has not been undertaken as the site falls within an existing residential area. Healthy Streets assessments can be undertaken on existing infrastructure and improvements to the infrastructure to increase the Healthy Streets score should be identified through this process alongside the WCHAR.

The requested WCHAR (or walking and cycling audit) will need to assess the walking and cycling routes to key facilities and identify any deficits within the existing infrastructure that would benefit from improvements to reduce the reliance on the private car. Narrative should be provided on the locations along these routes where substandard provision is provided as set out within the Highway Authorities TG10, LTN1/20 and ATE guidance. Opportunities to improve compliance with this guidance should be identified throughout the review process.

In general, limited narrative is provided within the TA on the walking and cycling infrastructure within the vicinity of the site, both on and off-site. The TA outlines that the site benefits from 'good' pedestrian and cycle infrastructure however no narrative has been provided on the quality of these routes, widths and whether these will benefit from any improvements.

On-site accessibility (including the Berewood MDA):

It is acknowledged that the site benefits from the infrastructure delivered and secured from the Berewood MDA.

2.0m footways flank both sides of Laxton Leaze providing connections to the wider footway infrastructure along Plant Farm Crescent and Houghton Avenue. A 2.0m width accords with the minimum footway widths as set out in HCC TG10. These are therefore acceptable. Given the quantum of development proposed, it has been considered that Laxton Leaze is

conducive to on carriageway cycling with no dedicated cycle infrastructure present.

Whilst the infrastructure within the direct vicinity of the site is acceptable, the Highway Authority are aware of a clear deficit within the infrastructure where Laxton Leaze meets Plant Farm Crescent. Currently only a pedestrian connection is in place between Plant Farm Crescent and Laxton Leaze. Widening should occur where cyclists are able to drop on carriageway to Laxton Leaze with pedestrians remaining on the footway provision. This was discussed on site with the applicant. It is therefore requested that a drawing is submitted to support this planning application identifying these proposed improvement works. Alterations to the kerbing will be required to facilitate cyclists given that a 25mm upstand is currently present. It is understood that Phase 1 residential is in the process of being adopted through the S38 process. Relevant delivery mechanisms of this link should therefore be discussed directly with the Highway Authority.

The Southern Brambles link as identified within the s106 for the Berewood MDA is currently at the feasibility stage. The link will significantly reduce walking distances and provide connectivity between Houghton Avenue and Elettra Avenue which offers suitable employment and leisure opportunities for future residents. The route in the absence of this link being delivered is highly trafficked and unattractive for use by sustainable modes, encouraging uptake of the private car. The cost of delivering these works is c. £700,000 and there is currently a shortfall in funding for the implementation of this link.

Additionally, the Houghton Avenue parallel crossing point as identified on the s106 is awaiting delivery. This will provide a controlled crossing facilities to replace the existing uncontrolled provision improving the safety for pedestrians and cyclists at main MDA access point. Provision of the crossing point will also improve connectivity for future residents accessing the Brambles Industrial site including utilising the Southern Brambles Link as this comes forward. The scheme is awaiting costs however a shortfall is anticipated. These matters should be considered through the sustainable access assessment work, a contribution towards these schemes from the site is considered an appropriate from this development.

Off-site Accessibility:

Where the on-site shared use facility meets Maurepas Way, two toucan crossings are present. These provide appropriate crossing facilities for both pedestrians and cyclists to access the Asda Supermarket and Waterlooville Town Centre. The route into Waterlooville Town Centre from this point is convoluted and unclear and the route should be included as part of the audit process.

The Havant Cycle Map outlines the off-carriageway infrastructure along Maurepas Way as part of the signed cycle network which offers a good level of service for cyclists. The shared use provision terminates to the south of Forest End with a designated cycle crossing facility provided on the A3 London Road to access the on-carriageway facilities on the opposite side. To the east the signed network connects into NCN Route 222.

The Highway Authority are aware of an emerging scheme identified on the Havant LCWIP to improve the cycle and pedestrian connectivity and bus access around the Forest End roundabout and the A3 London Road. This would improve sustainable access into Waterlooville Town Centre as well as improving connectivity to access the on-carriageway cycle infrastructure traveling south on the A3 towards Portsmouth. Study work is currently ongoing however it is understood that there is a shortfall in funding for the delivery of the scheme.

The provision of wayfinding to make the routes clear towards Berewood Primary School, Waterlooville Town Centre and the Brambles Industrial Area for example would also benefit the site. Wayfinding has been found to be beneficial to encourage modal shift from the private car to sustainable modes as it makes it clear of the route to take, provides the time in which it takes to walk or cycle therefore increasing the attractiveness of use of sustainable modes.

Whilst the Highway Authority are aware of relevant schemes as set out above we welcome further discussions on the full sustainable transport package to be secured from this development upon receipt of the requested assessment work.

Public Rights of Way (PRoW):

Narrative has not been provided within the TA regarding the interaction of the site with the PRoW network. It is understood that FP711 currently runs through the centre of the site and is proposed to be diverted in order to accommodate the development proposals however the connection points onto the A3 and Ellisons Crescent as existing. This diversion has been agreed in principle with the applicant during on-site discussions in April 2024. It was also discussed about diverting the current alignment to the rear of the fire station onto the shared use provision throughout the site due to the current nature of the PRoW. It is acknowledged that Hampshire Countryside Services have responded separately to this planning application. It is noted that the discussed diversion on site has not been raised within these comments and should also be considered through the review process.

Buses:

The 'Victoria Road' bus stops are the closest to the development site located c. 350m and c. 400m to the east for northbound and southbound services respectively. It is noted that the distance to the bus stops falls within the recommended walking distances as laid out by Active Travel England (400m).

Both stops are served by several bus services including the 37, 39, D1, D2, 7 and 8 providing connections to Havant, Clanfield, Petersfield and Portsmouth. The most regular services, 39, 7 and 8 provide services every 15 minutes Monday-Friday with at least 2 services an hour at weekends. School service 654 also runs from these stops providing services during typical school pick up and drop off periods.

The northbound stop consists of a flagpole and limited timetable information only, with the westbound bus stop subject to a shelter. Both stops would benefit from the provision of RTI timetable provision. Given the proximity of the bus stops from the site and the frequency of the services, there is a real opportunity to encourage travel via bus for future residents. Improvements to

these bus stops and along the route to access them should be investigated through the WCHAR.

The D1 and D2 service also runs from the 'Winston Lane' bus stops along Grainger Street which are in a closer proximity to the Victoria Road stops (c. 310m) and may provide an alternative opportunity for residents wishing to use these services.

Rail:

The TA suggests that Bedhampton railway station is the closest to the proposed development site at 4.0km. The Highway Authority disagree with the measurements provided and consider it to be located c. 6.0km to the southeast. With the above in mind, Cosham railway station is the closest to the site c. 5.0km to the south just outside of the 5km cycling isochrone provided within Figure 5.4 of the TA. The station can be accessed on bicycle via the A3 London Road and by bus service 7 and 8. Given its distance from the development and the scale of the development rail is unlikely to be a mode choice which does not also rely on the private car.

Personal Injury Accidents (PIA)

The applicant has provided PIA data for a 3-year period using the CrashMap data base with Hampshire Constabulary records to be provided at the RM stage. The use of CrashMap data is not agreed and all PIA data should be obtained from Hampshire Constabulary records for the most recent 5-year period. Given that the outline planning application is fixing the principles of the development, the correct PIA data should be obtained.

Stage One Road Safety Audit (RSA1)

No RSA1 has been submitted to support the access arrangements. The applicant suggests that this can be appropriate conditioned through the reserved matters stage which is not agreed. The Highway Authority need to be satisfied that a safe and suitable access arrangement is agreed and secured through the outline consent and therefore this should be supported by an RSA1 in the interest of highway safety. Any comments regarding the site access at this stage are subject to the findings of an RSA1. This should be submitted along with a designer's response for consideration. An RSA1 must also be provided for the internal road network at the reserved matters stage.

Site Access(es)

It is understood that the development is being offered for adoption by the Highway Authority and therefore comments have been provided on this basis.

Main Site Access:

Vehicular access into the site is proposed via an extension of Laxton Leaze. The access arrangement is shown within drawing GTWVILLE_BSL/SK/02 Rev B. The Highway Authority have reviewed this drawing and have the following comments to make.

Given the interactions with the shared use path which runs through the development site, it was initially requested that alternative access into the site was sought from the Houghton Avenue/Grainger Street roundabout where an access stub is currently present. It is however understood that access from this point is not feasible and therefore, remains as proposed.

The access into the site comprises of a 5.5m carriageway to accord with the existing widths before narrowing to 4.8m to the east of the proposed raised table. A 4.8m carriageway is narrow and does not accord with the minimum carriageway widths as provided within HCC TG2 (5.0m). Given that the development site is to be offered for adoption, the 5.0m width should be adhered to and the access arrangement should therefore be revised.

A raised table is provided, presumably to reduce vehicle speeds upon entering the development given the straight alignment of Laxton Leaze. No construction details have been provided which should be confirmed and accord with adoptable design standards. There are concerns with the use of the raised table given the interaction of the shared use facility as discussed above. Whilst a raised table is considered appropriate to reduce vehicle speeds, this should be provided at grade with Laxton Leaze to minimise the impact this will have on cyclists.

The 2.0m footway on the southern side of the Laxton Leaze is to extend into the site with the shared use provision to incorporate the existing infrastructure provided on the northern side of the carriageway. On the northern side of the carriageway, the existing shared use provision is realigned with dedicated off-carriageway shared use provision provided. The design is currently convoluted and unclear which will lead to conflicts between pedestrians and cyclists accessing and egressing the shared use infrastructure. It is also noted that a 3.0m shared use facility is proposed when the Highway Authority have requested that an LTN 1/20 compliant segregated shared use path is provided. It is considered that provision of the segregated facility will eliminate the current poor design as shown. The Highway Authority welcome a further discussion with the applicant on this matter.

A vehicle crossover arrangement is suggested within the development site to the right of the proposed pedestrian crossing point. It is unclear on its intended purpose and whether any access is required. If an access is proposed, its use should be confirmed and supported by vehicular visibility, pedestrian intervisibility and swept path analysis for vehicles requiring access.

The site access arrangement crosses over an existing culvert. It was previously unclear as to whether the culvert was to remain as per its existing width or whether alterations were required to facilitate the development proposals. The

applicant outlines that alterations to the culvert length are to be undertaken with it being extended from 15.0m to 16.40m. The cover depth of the culvert is c. 300mm which appears to be shallow. Appropriate carriageway and footway construction over the culvert will be required and any design should accord with adoptable design standards. The applicant will be required to obtain OWC consent for the extension to the culvert. Conversations should be sought with the HCC OWC team to discuss the culvert and the implications that the site access may have on this. It is understood based on the comments provided from the LLFA in September 2024 that there are concerns on the proposed culvert arrangements at the access.

Visibility:

The visibility splays provided at the main site access demonstrated within drawing GTWVILLLE_BSL/SK/02 Rev B are confusing and unclear. Vehicular visibility splays provided at Peasgood Lane given the need for a modal filter as discussed further below will not be required, however should be supported by cycle visibility splays given that this route could be utilised via bicycles.

Pedestrian visibility splays of 1.5m X 25m have been provided at the tactile crossing point in accordance with a 20mph design speed. This is considered appropriate. The cycle visibility splays whilst based on a 20mph design speed will require refinement once the interaction of the shared use infrastructure with the access road have been agreed. These have therefore not been provided in detail at this stage.

Refuse and Servicing Arrangements:

Swept Path Analysis has been provided within drawing GTWVILLLE_BSL/VT/01. Tracking speeds have not been provided and should be undertaken at a minimum speed of 10mph. This should be appropriately annotated on a drawing. Notwithstanding this, the Highway Authority have reviewed the submitted drawings and have the following comments to make.

It is noted that the tracking provided for the delivery vehicle, fire tender and large car utilises Peasgood Lane to access the proposed development site which for reasons as discussed below is not agreed to form part of the access arrangement.

Only the refuse vehicle is shown to access via Laxton Leaze, albeit all possible manoeuvres have not been demonstrated and this should be provided. Additionally, tracking also does not demonstrate the ability of a refuse vehicle to access the development via the extension of Laxton Leaze. It is currently unclear whether the access arrangement can appropriately accommodate the required vehicle movements.

Tracking should therefore be provided for all vehicles in accordance with TG2 utilising Laxton Leaze to access the proposed development. All vehicles provided accord with TG2 except for the private car. The dimensions required are laid out within section 3.2.6 of the guidance. Whilst HCC TG2 does not specifically require a refuse vehicle and fire tender to pass a car throughout the entirety of the internal road network, suitable passing places should be

identified and appropriate intervisibility. The swept path analysis drawings should therefore be updated.

Peasgood Lane Modal Filter:

It has been discussed with the applicant both within a meeting held in July 2023 and on-site in April 2024 that a modal filter would be required at Peasgood Lane to the south of Dennison Dean in the interest of highway safety. Ellisons Crescent/Peasgood Lane have not been designed to be used as a cut through to access the development parcel and is not considered suitable. Furthermore, there are concerns with the implications and interaction with pedestrians and cyclists at the site access arrangement should vehicles be accessing the land parcel via this route. This is further confirmed by the swept path analysis drawings (drawing GTWVILLE_BSL/VT/01) which demonstrates that movements cannot occur appropriately for all vehicles. The implementation of a modal filter is therefore necessary to be delivered in the interests of safe and suitable access. A drawing should be provided of the proposed modal filter to support this planning application and be supported by swept path analysis in accordance with HCC TG2 to ensure that there is appropriate space for the refuse vehicle, fire tender, delivery vehicle and private car to manoeuvre appropriately within the revised layout of Peasgood Lane.

It is understood that Phase 1 residential is in the process of being adopted through the S38 process. Relevant delivery mechanisms of this link should therefore be discussed directly with the Highway Authority.

Emergency Access:

An emergency access is also proposed into the development via Ellisons Crescent. It is intended that this is also to be utilised via pedestrians and cyclists. This arrangement is shown within drawing GTWVILLE_BSL/SK/03 Rev B which includes the provision of 2 lockable bollards and bollard either side of the access to prevent errant vehicle access. The drawing also outlines swept path analysis for a fire tender which shows the ability of this vehicle to use the arrangement.

It has been observed both during site visits and using Google Maps, that vehicles are currently parking on the footway within the vicinity of the emergency access/shared use connection onto Peasgood Lane. The applicant suggests that this is an existing issue and not a requirement for this development to resolve. Whilst it is acknowledged that the errant parking is existing, this will prevent emergency and pedestrian and cycle access into the site in this location. It is therefore considered a requirement in the interests of highway safety should any access remain in this location that a TRO contribution is secured through this planning application.

Visibility:

Visibility splays at the emergency access are demonstrated within drawing GTWVILLE_BSL/SK/03 Rev B. For clarity, splays should be shown along Peasgood Lane south to ensure that the required visibility can be achieved either within land to be offered up for adoption through the S38 process or

within the applicant's ownership. Cycle visibility splays should also be provided.

Materials

It is noted that block paving is proposed for the emergency access and on the raised table at the main site access. Block paving on raised tables can cause a maintenance liability and it is requested that this is removed. With regard to the emergency access, should this be offered for adoption by the Highway Authority then applicant should be made aware that the use of block paving will be subject to commuted sums.

Internal Road Network

Matters regarding the internal network are to be agreed at the reserved matters stage. Notwithstanding, as raised above, an existing shared use facility currently runs through the centre of the site in a 'T' shape providing connections to Maurepas Way to the east and Forest End to the south. Given the connections of the shared use footway cycleway onto Laxton Leaze is to be fixed through the outline stage, it was requested that the alignment of this shared use facility was indicatively shown with the details to be secured through a s106 agreement and provide at the RM stage. Given the proposed severance of this currently traffic free route, in order to improve the level of service given the addition of the proposed development, segregated shared use provision is proposed which is acceptable to the Highway Authority. The details of this at the RM stage should ensure that this segregation is LTN1/20 compliant.

The route as shown on the design and access statement in principle is the maximum deviation that would be acceptable to the Highway Authority. The revised indicative design of the internal road network mean that crossings of this well-established traffic-free route have been minimised where possible. Through the RM stage, priority crossings for pedestrians and cyclists should be considered, and the internal road network should be designed to ensure appropriate visibility and intervisibility can be achieved for all users. Additionally, opportunities to straighten the route further to improve the alignment and improve the priority for east-west movements should also be considered at this stage. The indicative alignment should be shown on a separate drawing for inclusion within the s106 agreement.

The Highway Authority offer a pre-application advice service on the internal layout, and it is strongly recommended that the applicant engages in this service at the earliest stage possible to ensure feedback can be integrated into the design before the layout is fixed. The Healthy Streets approach should be considered and embedded within any future internal layout design. This framework is identified within TG10. Introduction of places to stop and rest and things to see and do for example can improve the placemaking and social cohesion of the area.

Refuse and Servicing Arrangements:

The TA outlines that at the RM stage, the layout will be designed to ensure that refuse vehicle can enter and exit the site in forward gear through the

provision of turning heads where required. The applicant should also ensure that the refuse and fire tender are able to access dwellings appropriately in accordance with the distances as laid out within Manual for Streets.

Parking Provision:

Whilst parking is a matter to be agreed through at the RM stage, the TA provides an outline of the parking strategy for the proposed development. Given previous concerns raised on the use of Waterloooville Town Centre parking standards, the applicant confirms that they will be providing vehicle and cycle parking at the RM stage in accordance with Havant Borough Council minimum residential parking standards which is agreed as acceptable.

Existing Traffic Flows

To establish the baseline traffic flows on the local road network, turning count surveys were undertaken at the following junctions between February 2023 and September 2023 (Maurepas Way roundabout):

- Maurepas Way Roundabout;
- Houghton Avenue / Grainger Street roundabout;
- Grainger Street / Ellisons Crescent priority junction; and
- Grainger Street / Laxton Leaze priority junction

From the assessment works undertaken the peak hours have been identified as 08:00-09:00 and 16:30-17:30 for the AM and PM peak periods respectively. These peak hours have been utilised for modelling and traffic distribution to cover the busiest periods as identified within the above assessment. This is agreed.

TEMPro Growth Factors:

TEMPro growth factors have been applied to the 2023 observed traffic flows to provide background traffic growth for 2025 and 2029 for the Havant 004 Super Output Area. The use of this output area has been agreed elsewhere for the Berewood development and is therefore agreed. It is highly unlikely that the development is to be constructed and open for use by 2025, however the future year scenario of 2029 (5-years post planning submission) is appropriate. No further TEMPro growth rates are therefore necessary given that the future year scenario is the key consideration on the junction operation. The agreed growth rates for 2023-2029 are as follows:

- AM peak – 1.0324
- PM Peak – 1.0299

Committed Development:

The applicant has assumed the remaining Berewood development yet to be built and occupied as a committed development. Undeveloped dwellings and employment land have been calculated based on the trip rates for the outline planning application (reference 10/02862/OUT and APP/10/00828). This is an agreed method. At the September 2023 surveys 1,113 dwelling and 16% of Proxima Park was occupied. Utilising the trip rates agreed within the 2010 TA for the 1,512 unoccupied dwellings and the 84% undeveloped employment use, the undeveloped trips to be included as committed development are as follows:

	AM Peak (08:00-09:00)			PM Peak (16:30-17:30)		
	Arr.	Dept.	Total	Arr.	Dept.	Total
Residential						
Trip Rate	0.116	0.305	0.421	0.288	0.160	0.448
Trip Generation (1,512 dwellings)	175	461	637	435	242	677
Employment						
Trip Rate (B1)	1.193	0.145	1.338	0.122	0.826	0.948
Trip Rate (B8)	0.099	0.054	0.153	0.054	0.107	0.161
Trip Generation (100% occupied)	118	30	148	28	96	124
Trip Generation (84% undeveloped)	92	16	108	20	10	30

Whilst the residential trip rates for inclusion as a committed development are agreed, the total undeveloped trips for the employment uses do not appear to accord with 84% of the total. Using the trip rate provided from the surveys undertaken, 84% would equate to total trips of 124 and 104 respectively in the AM and PM peak periods. Clarity is requested on these differences outlined.

Trip Generation

Vehicular Trips:

To estimate the proposed trip generation for the site, the applicant has compared the figures from the TRICS database with those trip rates approved as part of the outline planning consent for the Berewood MDA.

Historically Approved Trip Rates:

	AM Peak (08:00-09:00)			PM Peak (16:30-17:30)		
	Arr.	Dept.	Total	Arr.	Dept.	Total
Trip Rate	0.116	0.305	0.421	0.288	0.160	0.448
Trip Generation (69 dwellings)	8	21	29	20	11	31

Proposed Trip Rates:

Using the TRICS database the proposed trip generation for the site is as follows:

	AM Peak (08:00-09:00)		PM Peak (16:30-17:30)		Daily (12-hour)	
	Arr.	Dept.	Arr.	Dept.	Arr.	Dept.

Trip Rate	0.156	0.339	0.339	0.152	2.424	2.427
Trip Generation (69 dwellings)	11	23	23	10	167	167

The Highway Authority consider that the 2021 surveys should be removed from the TRICS assessment considering the presence of several lockdown periods where vehicle levels recorded are likely to be skewed. Additionally, older surveys from over 5-years ago should be removed from the assessment. There would still be sufficient sites surveys to provide a more accurate trip generation forecast should sites be used between 2019 and 2022-2023. TRICS assessment should be revised in light of these comments. The TRICS assessment once agreed will provide an appropriate baseline of mode share for the decide and provide approach.

Multimodal trip generation:

Notwithstanding the position set out above regarding vehicular trip rates, multi-modal trip rates have been derived using travel to work data. It should be noted that this does not reflect all trip types and those that may be more attractive by sustainable modes such as journeys to school. The method of calculating the multimodal trip generation using vehicular trip rates as laid out within the TA is not agreed. This should instead be based on a total person trip rate with the modal split from the Travel to Work Census Data then applied after. The multimodal trip rates should be revised utilising the above method. Alternatively a multimodal trip rate could be derived from TRICS or the Travel Plan survey data.

The mode split proposed suggests that 13% will travel via sustainable modes. This uptake of sustainable modes is low when compared to the national target of half of all trips to be undertaken by sustainable modes by 2030 (ATE). Through the decide and provide approach, an increase in the mode share to sustainable modes should be realised. Recent monitoring of the Berewood MDA development, has demonstrated an achieved modal split of 18% of trips being undertaken by sustainable modes in June 2023. It is acknowledged that the site is still yet to be fully built out and all the off-site sustainable infrastructure secured yet to be delivered. Given the benefits of the land parcel with its close proximity to Waterlooville Town Centre, a target modal share of 30-40% of all trips from the site being undertaken by sustainable travel modes would not seem unreasonable, if supported through appropriate infrastructure improvements as identified through this response.

Traffic Distribution/Assignment

The applicant has estimated trip distribution based on the 2011 'Travel to Work' Census Data for Havant 004 MSOA. The method of distributing development trips on the network has not been confirmed. The main workplace destinations should be provided within the TA along with the assumed route of onward travel. This should be clearly laid out within the TA and summarised to key area so the any resulting split can be considered with

some geographical context and locations. The distribution diagrams therefore may need to extend further than the A3 Maurepas Way/Hambledon Road/Houghton Avenue roundabout dependent on the distribution splits shown,

The proposed distribution for development should be shown on a network diagram both with the percentage turning proportions and the number of trips to travel through these junctions using the scenarios for the capacity assessments laid out further within this response. Additional junction modelling may be necessary upon receipt of this assessment work.

With regard to committed development trips, a conflicting narrative is provided as to how these trips have been distributed on the network. The TA suggests that these have been distributed based on that agreed as part of the outline planning consent between the Northern Access, Main Access, Milk Lane Access and Southern Access. Later within the TA, it is suggested that all trips are distributed through the main site access for robustness. The narrative should be confirmed. The Highway Authority consider the distribution as per the outline consent through all 4 MDA accesses would be appropriate. Given the reliance on the Southern Access for committed distribution, and the impact on the Southern Access junction if additional development trips outside that agreed through the s106 DoV for the MDA are put through the junction, it will be appropriately conditioned through any future planning consent that the Southern Access will need to be in place prior to the occupation of any additional development. Given the status of the southern access and restrictions on the wider MDA site regarding occupations, a holistic approach to modelling should be provided, including demonstrating an appropriate southern access design.

Junction Assessments

The applicant has modelled the following junctions:

- Houghton Avenue/Grainger Street roundabout
- Grainger Street/Laxton Leaze priority junction
- A3 Maurepas Way / Hambledon Road / Houghton Avenue roundabout

With the scope of the modelling as follows:

- 2023 Observed
- 2025 Opening year base
- 2025 opening year development + committed development
- 2029 future year base
- 2029 future year development + committed development

The Highway Authority also welcome a discussion with the applicant on the modelling parameters in line with the decide and provide approach, however, would expect at a minimum an additional modelling scenario of:

- 2029 baseline + committed development + proposed development with mitigation (proposed reduction in car use)

As raised above whilst the 2025 opening year scenario is not agreed, the future year scenario if 2029 (5-years post planning submission) is appropriate. No revisions to the modelling scope are therefore required and is agreed.

All junctions have been modelled using Junctions 10. Whilst there are revisions required to the trip generation, distribution and committed developments included, the Highway Authority shall provide modelling comments on agreement to these parameters.

Travel Plan

Previous comments on the travel plan had been circulated to the applicant directly. A revised travel plan dated July 2024 has been submitted to support this planning application. The Highway Authority are content that all previous comments have been addressed. However, given that the Highway Authority have requested that the TA is based on a decide and provide approach, narrative should be provided as to what measures will be taken if the proposed reduction in car trips is not met. This should be included within the framework travel plan for agreement with the Highway Authority. The targets should also be amended to set out the monitoring requirements of a vision led TA and the targets sustainable mode share (circa 30-40% as set out above).

Recommendations

Further information is required from the applicant with regard to the site access arrangement and off-site traffic matters. The Highway Authority are yet to be satisfied that safe and suitable access into the site can be achieved and welcome further engagement with the applicant to resolve the outstanding matters as raised within the response.

In the meantime, should the Planning Authority wish to determine the planning application then the Highway Authority should be contacted for the reasons for refusal.

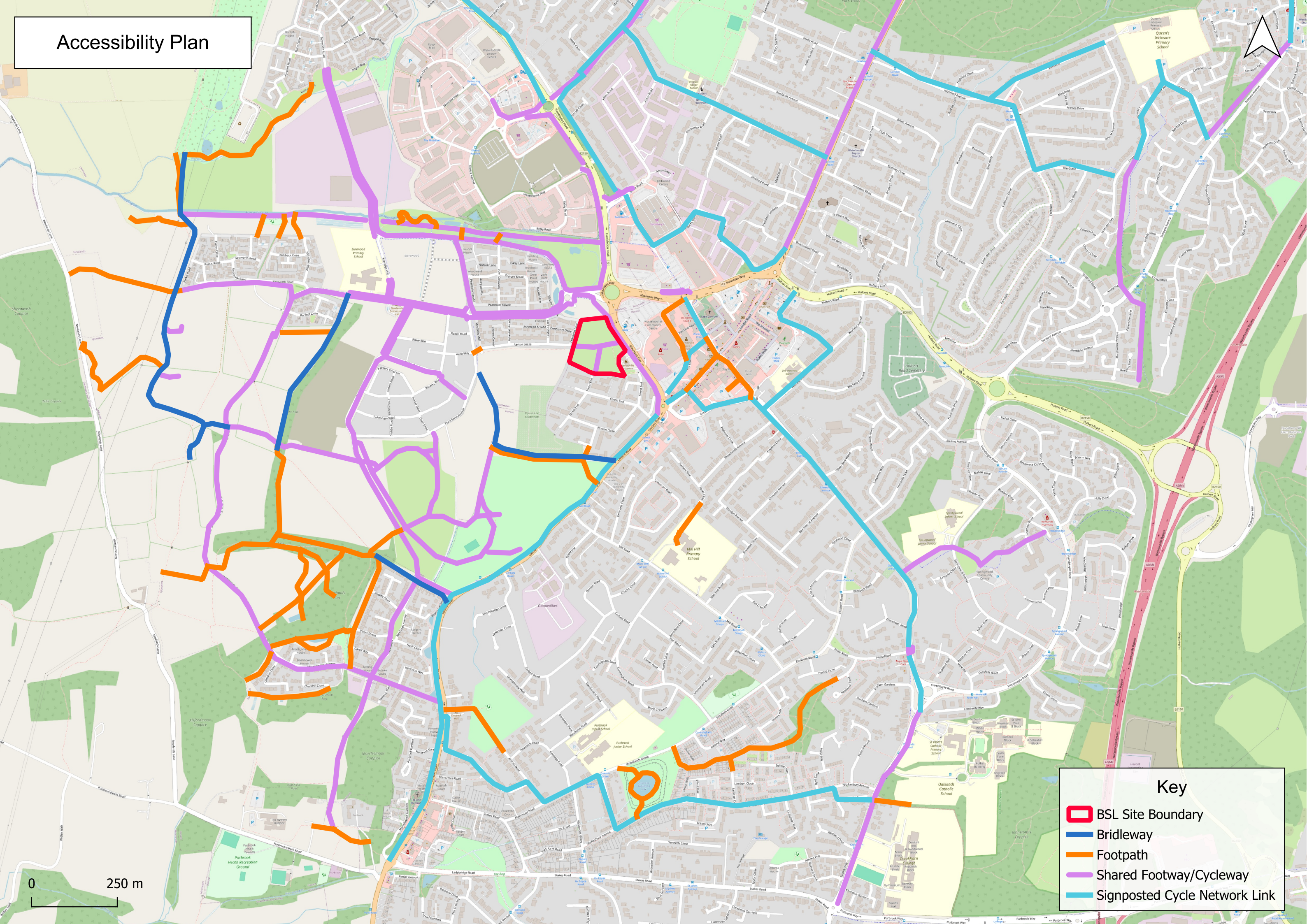
Yours sincerely,

Sophie Osborne

Senior Transport Planner – Highways Development Planning
Hampshire 2050

APPENDIX B: Accessibility Plan

Accessibility Plan



Key

BSL Site Boundary

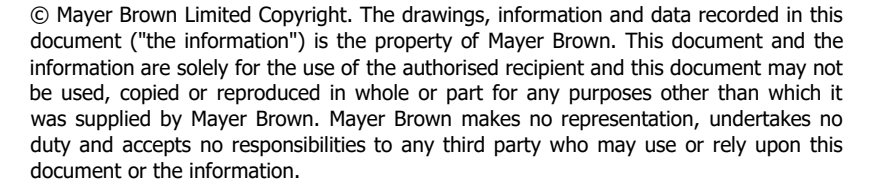
Bridleway

Footpath

Shared Footway/Cycleway

Signposted Cycle Network Link

APPENDIX C: Proposed Site Access Layout



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2.4 x 25m VIS	DEVELOPMENT BOUNDARY
2.5 x 25m VIS	VEHICULAR VISIBILITY SPLAY
1.5 x 25m VIS	PEDESTRIAN VISIBILITY SPLAY

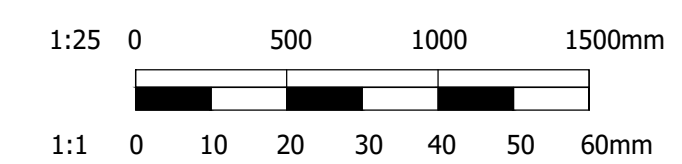


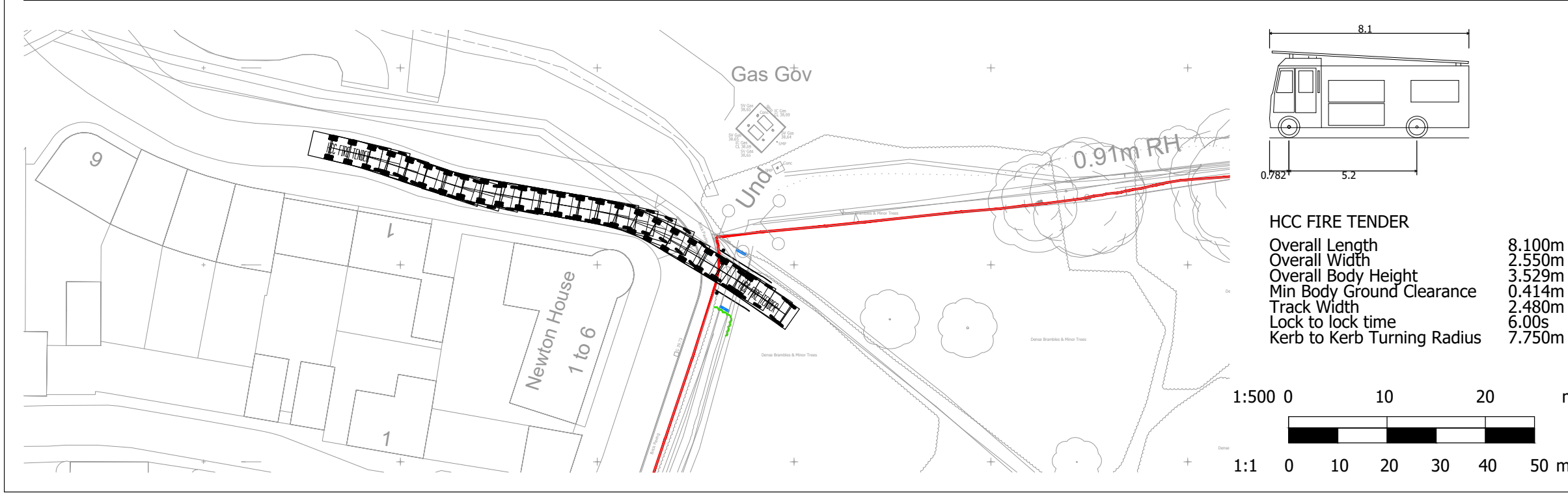
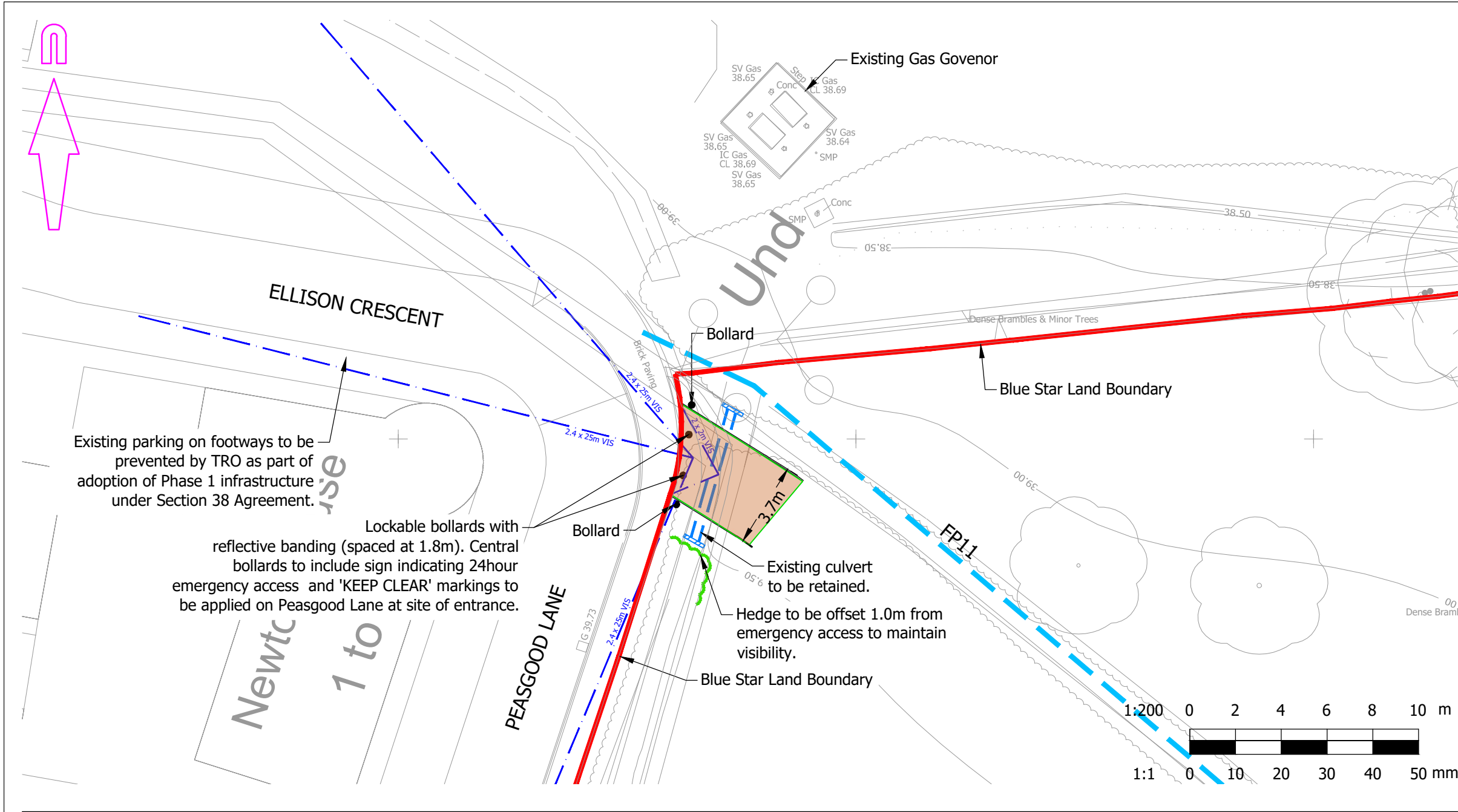
rev.	amendment	checked	date
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title

drawing number	rev.
GTWVILLE_BSL/SK/02	G





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A3 ORIGINAL

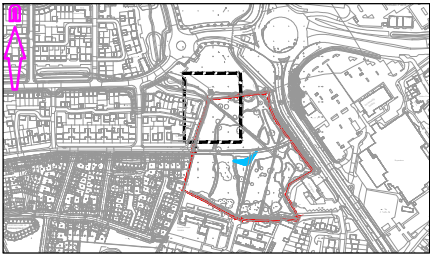
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NOTES

- Refer to Dwg. GTWVILLE_BSL/VT/01 for further vehicle tracking information.

KEY:

- Development Boundary
- Existing Right of Way



FOR APPROVAL
NOT FOR CONSTRUCTION

C	Rwvised post HA comments 14/11/24	RHA	27/01/2025
B	Visibility added.	RHA	23/07/2024
A	Further details added.	RHA	26/05/2023

rev.	amendment	checked	date
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project **BLUE STAR LAND
WATERLOOVILLE**

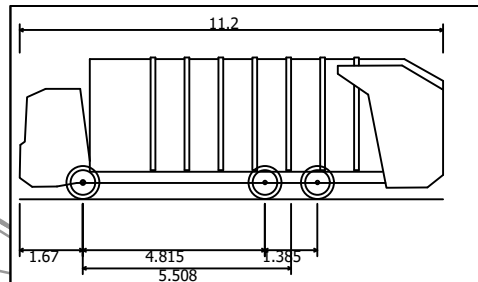
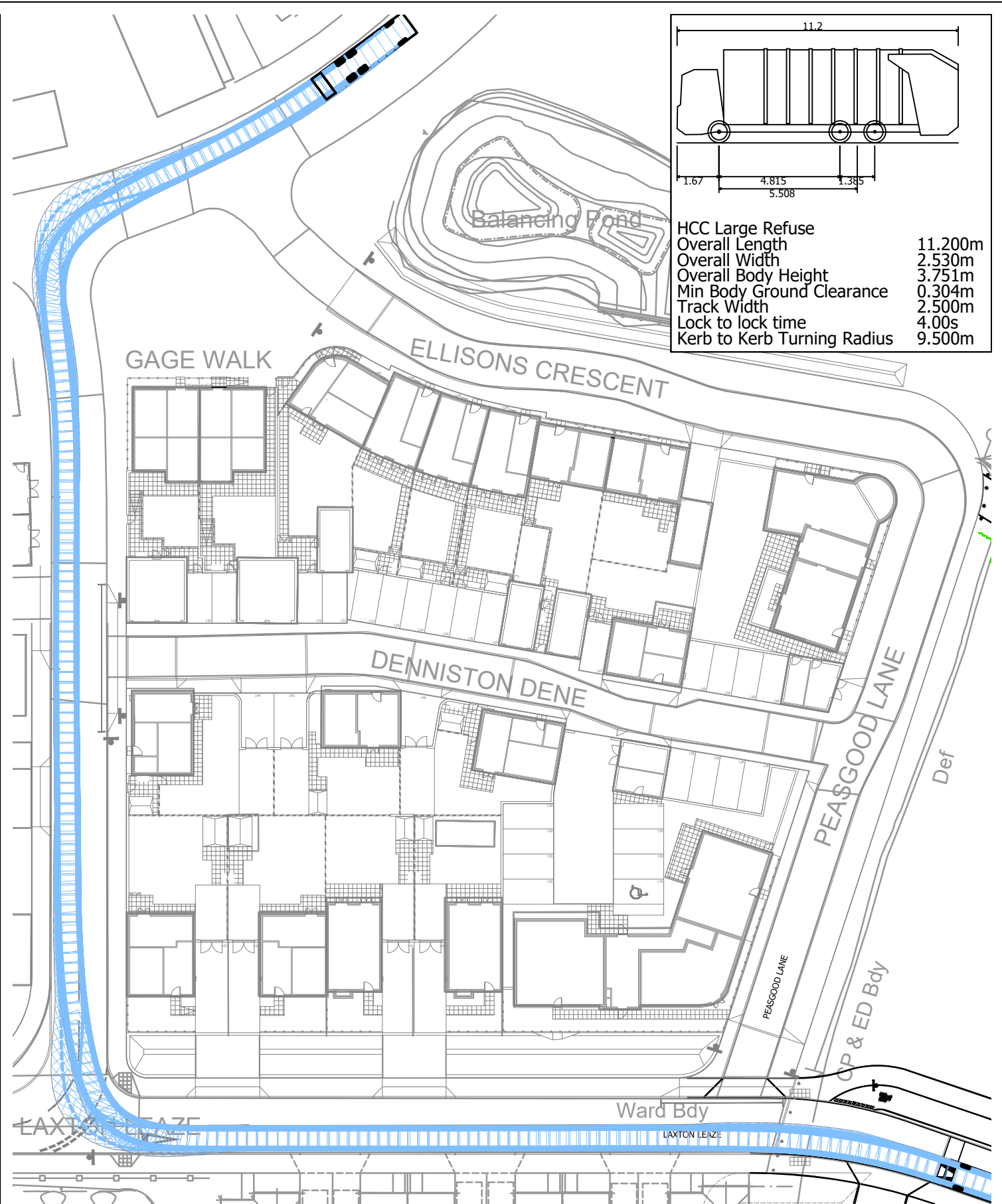
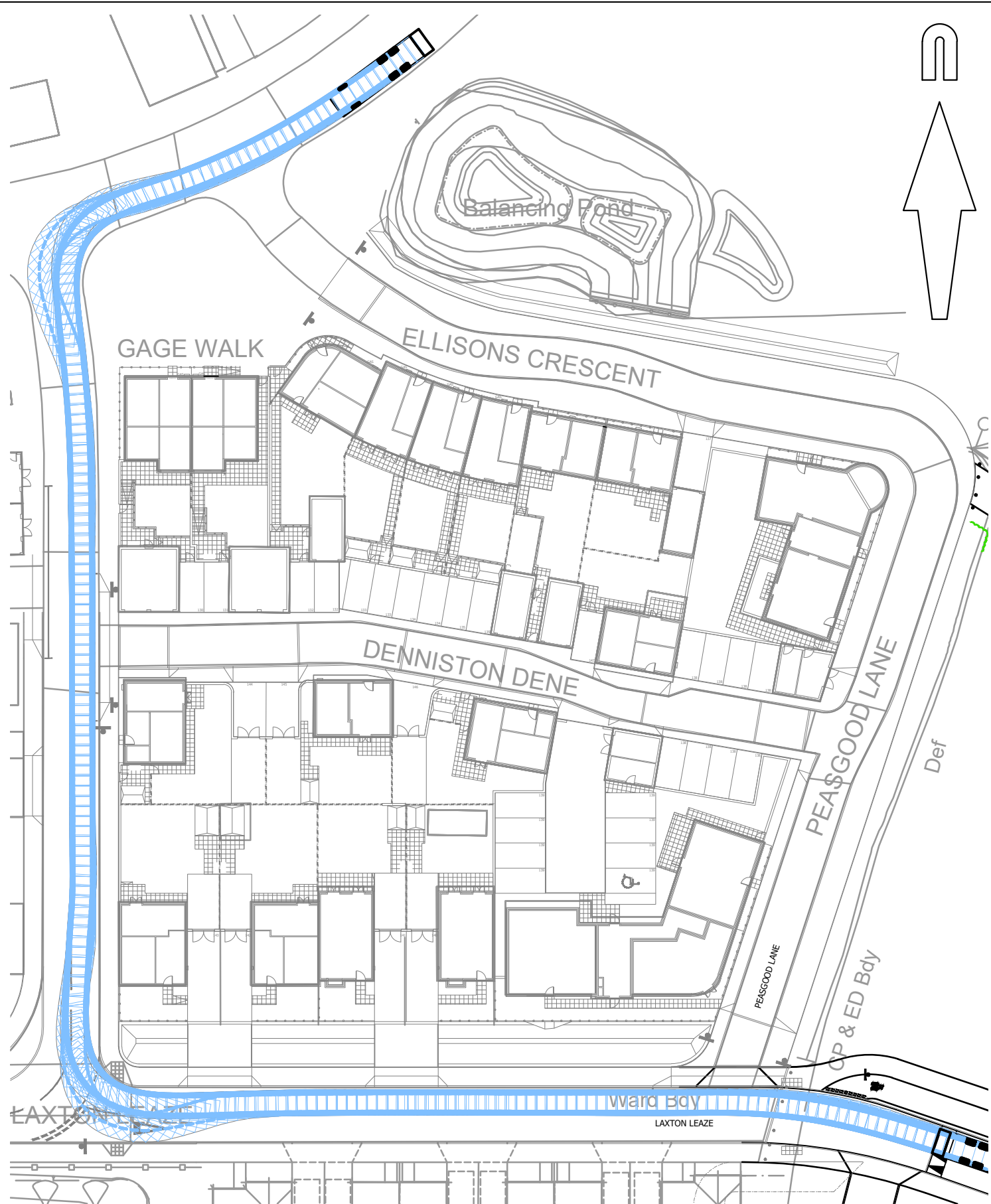
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date	MARCH 2023	cad file	SK_03.dwg		

title

PROPOSED EMERGENCY & PEDESTRIAN ACCESS

drawing number	GTWVILLE_BSL/SK/03	rev.	C
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APPENDIX D: Swept Path Analysis



HCC Large Refuse
Overall Length 11.200m
Overall Width 2.530m
Overall Body Height 3.751m
Min Body Ground Clearance 0.304m
Track Width 2.500m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 9.500m

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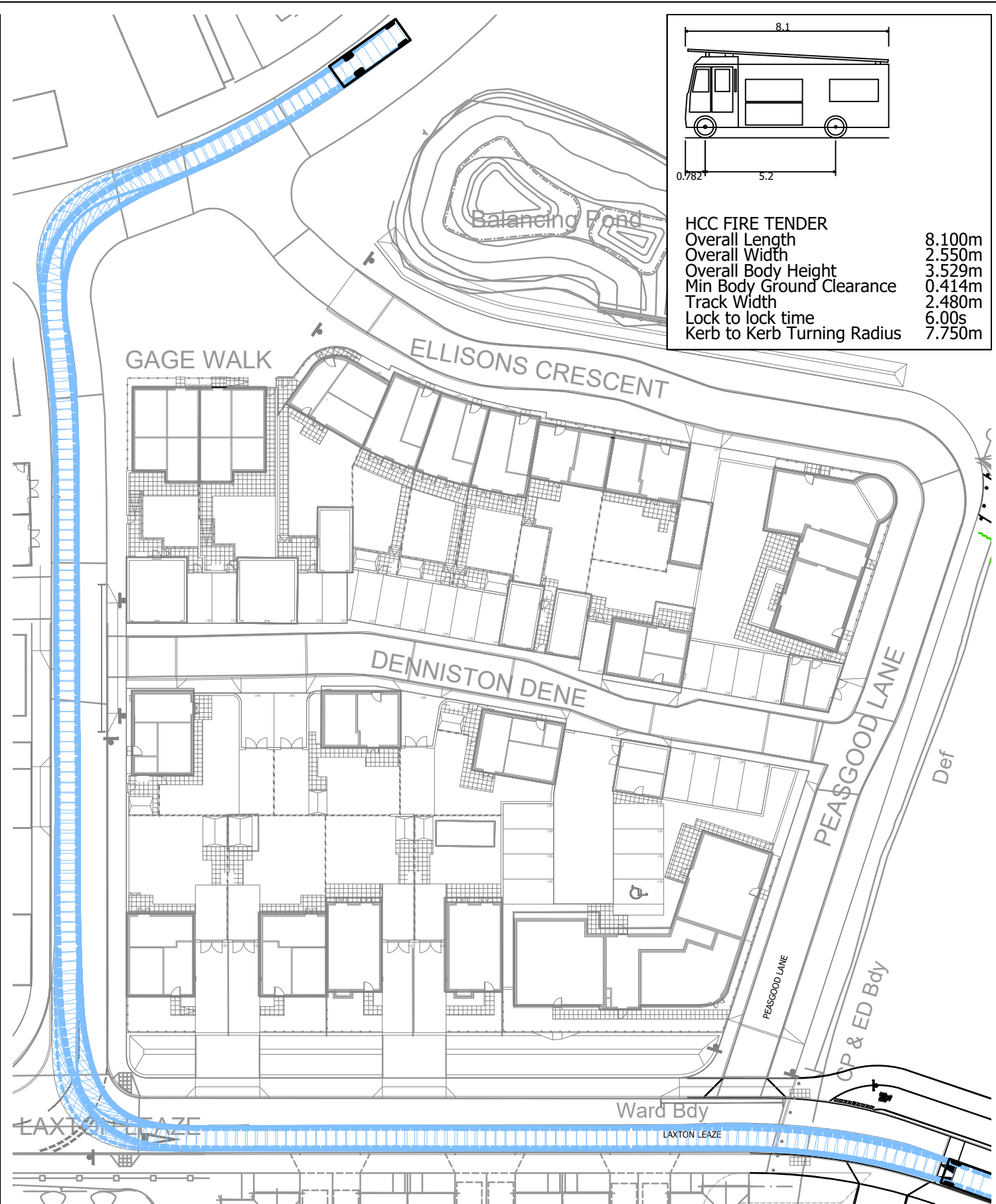
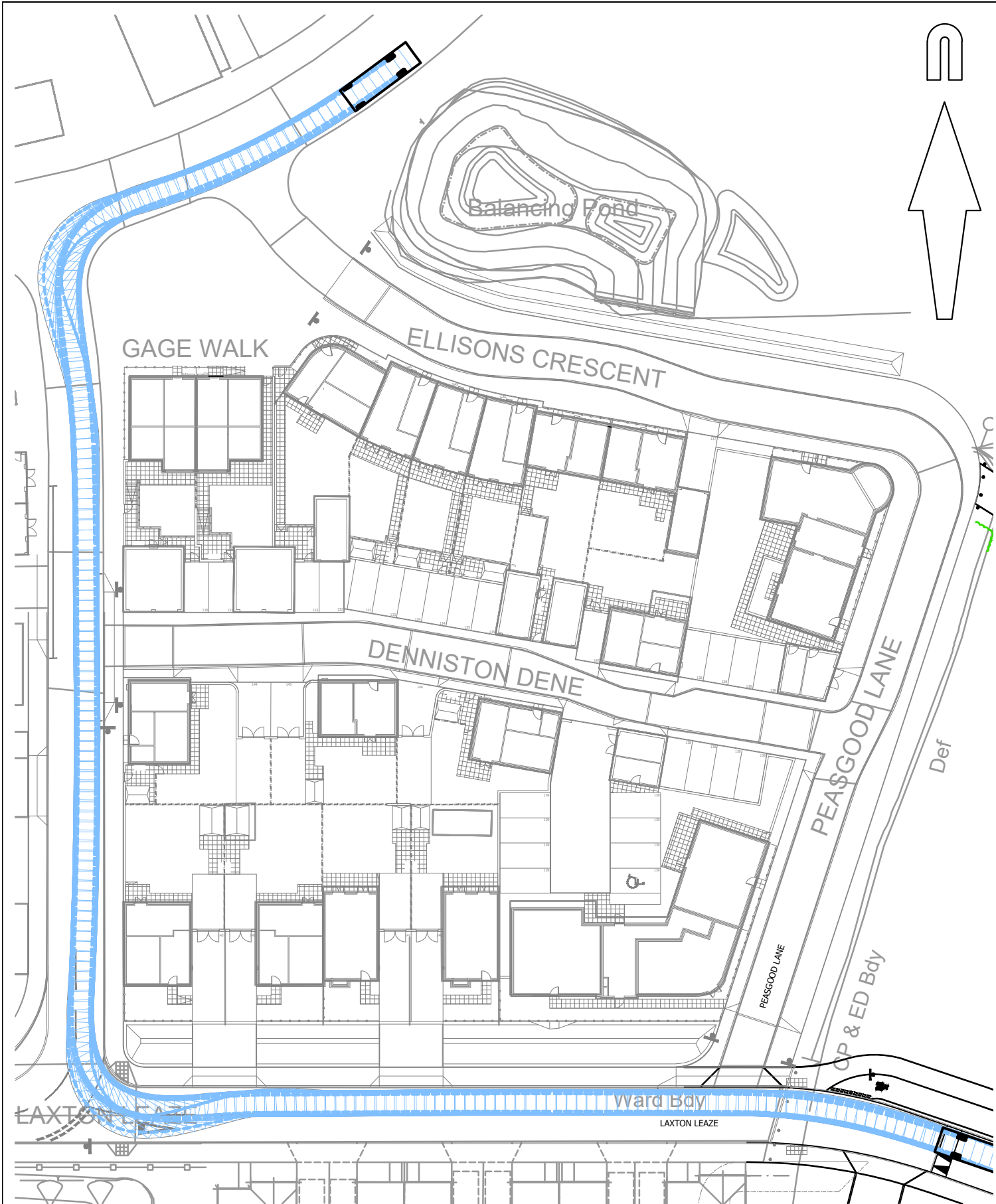
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client
GRAINGER PLC

project
BLUE STAR LAND
WATERLOOVILLE

title
SWEPT PATH ANALYSIS
HCC LARGE REFUSE VEHICLE ENTERING/EXITING
DEVELOPMENT LAND

scale	1:500 @ A3	drawn by	JME	checked by	NE
date created	FEB 2025	date revised	-	cad file	MASTER 2025-02-21
drawing number	GTWVILLE(BSL).1/TK01				



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client

GRAINGER PLC

project

BLUE STAR LAND
WATERLOOVILLE

title

SWEPT PATH ANALYSIS
HCC FIRE TENDER ENTERING/EXITING
DEVELOPMENT LAND

scale

1:500 @ A3

drawn by

JME

checked by

NE

date created

FEB 2025

date revised

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cad file

MASTER 2025-02-21

suitability

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drawing number

GTWVILLE(BSL).1/TK02

APPENDIX E: ARCADY Outputs
Houghton Avenue Roundabout

Junctions 10		
ARCADY 10 - Roundabout Module		
Version: 10.1.1.1905		
© Copyright TRL Software Limited, 2023		
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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Filename: 2025-02-20 Houghton Avenue RB - Revised Trips.j10

Path: H:_Planning 2\Current Jobs\GTWVile(BSL)\Analysis\Arcady\2025 Assessments for TA Addendum

Report generation date: 20/02/2025 16:36:31

-
- »2023 Observed, AM
 - »2023 Observed, PM
 - »2025 Base + Committed, AM
 - »2025 Base + Committed, PM
 - »2025 Base + Committed + Development, AM
 - »2025 Base + Committed + Development, PM
 - »2029 Base + Committed, AM
 - »2029 Base + Committed, PM
 - »2029 Base + Committed + Development, AM
 - »2029 Base + Committed + Development, PM
 - »2029 Base + Committed + Dev + Mitigation (Reduced Car Trips), AM
 - »2029 Base + Committed + Dev + Mitigation (Reduced Car Trips), PM

Summary of junction performance

	AM									PM								
	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
	2023 Observed																	
Arm 1	D1	0.4	1.2	3.86	0.27	A	3.99	A	191 % [Arm 3]	D2	0.5	2.1	4.07	0.32	A	3.86	A	191 % [Arm 1]
Arm 2		0.0	~1	0.00	0.00	A					0.0	~1	0.00	0.00	A			
Arm 3		0.4	1.7	4.17	0.30	A					0.2	0.5	3.67	0.19	A			
Arm 4		0.2	0.5	3.85	0.14	A					0.1	0.5	3.53	0.12	A			
	2025 Base + Committed																	
Arm 1	D3	0.8	2.3	4.91	0.43	A	4.77	A	116 % [Arm 1]	D4	0.7	2.4	4.80	0.43	A	4.37	A	119 % [Arm 1]
Arm 2		0.0	~1	0.00	0.00	A					0.0	~1	0.00	0.00	A			
Arm 3		0.6	2.7	4.85	0.38	A					0.3	1.2	3.89	0.22	A			
Arm 4		0.2	0.5	4.17	0.19	A					0.2	0.5	3.67	0.14	A			
	2025 Base + Committed + Development																	
Arm 1	D5	0.8	2.1	5.00	0.44	A	4.96	A	105 % [Arm 3]	D6	0.8	2.0	5.05	0.45	A	4.54	A	106 % [Arm 1]
Arm 2		0.0	~1	0.00	0.00	A					0.0	~1	0.00	0.00	A			
Arm 3		0.7	2.5	5.18	0.42	A					0.3	1.3	3.96	0.24	A			
Arm 4		0.2	0.7	4.26	0.19	A					0.2	0.5	3.69	0.14	A			
	2029 Base + Committed																	
Arm 1	D7	0.8	2.3	4.91	0.43	A	4.77	A	116 % [Arm 1]	D8	0.7	2.4	4.80	0.43	A	4.37	A	119 % [Arm 1]
Arm 2		0.0	~1	0.00	0.00	A					0.0	~1	0.00	0.00	A			
Arm 3		0.6	2.7	4.85	0.38	A					0.3	1.2	3.89	0.22	A			
Arm 4		0.2	0.5	4.17	0.19	A					0.2	0.5	3.67	0.14	A			
	2029 Base + Committed + Development																	
Arm 1	D9	0.8	2.1	4.99	0.44	A	4.95	A	106 % [Arm 3]	D10	0.8	2.0	5.04	0.45	A	4.54	A	106 % [Arm 1]
Arm 2		0.0	~1	0.00	0.00	A					0.0	~1	0.00	0.00	A			
Arm 3		0.7	2.5	5.17	0.42	A					0.3	1.3	3.96	0.24	A			
Arm 4		0.2	0.7	4.26	0.19	A					0.2	0.5	3.69	0.14	A			
	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)																	
Arm 1	D11	0.8	2.1	4.99	0.44	A	4.93	A	107 % [Arm 3]	D12	0.8	2.0	5.01	0.45	A	4.52	A	107 % [Arm 1]
Arm 2		0.0	~1	0.00	0.00	A					0.0	~1	0.00	0.00	A			
Arm 3		0.7	2.6	5.14	0.42	A					0.3	1.3	3.95	0.23	A			
Arm 4		0.2	0.7	4.25	0.19	A					0.2	0.5	3.69	0.14	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	Houghton Avenue RB
Location	Berewood
Site number	
Date	20/02/2025
Version	
Status	Feasibility
Identifier	
Client	Grainger
Jobnumber	GTWVile(BSL).1
Enumerator	MAYERBROWN2KIneyles
Description	Modelling of the Houghton Avenue Roundabout with the proposed BSL development. TA Addendum with revised Trips and Distribution

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 simulation for HCM roundabouts	Use iterations for HCM roundabouts
5.75	✓				✓	Delay	0.85	36.00	20.00		

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)	Run automatically
D1	2023 Observed	AM		ONE HOUR	07:45	09:15	15	✓
D2	2023 Observed	PM		ONE HOUR	16:45	18:15	15	✓
D3	2025 Base + Committed	AM		ONE HOUR	07:45	09:15	15	✓
D4	2025 Base + Committed	PM		ONE HOUR	16:45	18:15	15	✓
D5	2025 Base + Committed + Development	AM		ONE HOUR	07:45	09:15	15	✓
D6	2025 Base + Committed + Development	PM		ONE HOUR	16:45	18:15	15	✓
D7	2029 Base + Committed	AM		ONE HOUR	07:45	09:15	15	✓
D8	2029 Base + Committed	PM		ONE HOUR	16:45	18:15	15	✓
D9	2029 Base + Committed + Development	AM		ONE HOUR	07:45	09:15	15	✓
D10	2029 Base + Committed + Development	PM		ONE HOUR	16:45	18:15	15	✓
D11	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)	AM	With Mitigation (Reduced Car Trips)	ONE HOUR	07:45	09:15	15	✓
D12	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)	PM	With Mitigation (Reduced Car Trips)	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2023 Observed, 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	Houghton Avenue Roundabout	Standard Roundabout		1, 2, 3, 4	3.99	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	191	Arm 3	3.99	A

Arms

Arms

Arm	Name	Description	No give-way line
1	Houghton Avenue East		
2	Access Road		
3	Grainger Street		
4	Houghton Avenue North		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - 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	5.00	4.2	60.0	120.0	30.0		
2	3.00	4.40	2.4	100.0	130.0	44.0		
3	3.50	5.60	4.2	93.0	130.0	46.0		
4	3.50	5.60	3.4	70.0	130.0	48.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.399	1314
2	0.353	1047
3	0.384	1283
4	0.376	1239

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	2023 Observed	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		ONE HOUR	✓	316	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	331	100.000
4		ONE HOUR	✓	141	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	1	2	3	4	
From	1	0	0	220	96
	2	0	0	0	0
	3	331	0	0	0
	4	140	0	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To				
	1	2	3	4	
From	1	0	0	1	6
	2	0	0	0	0
	3	1	0	0	0
	4	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)
1	0.27	3.86	0.4	1.2	A	290	435
2	0.00	0.00	0.0	~1	A	0	0
3	0.30	4.17	0.4	1.7	A	304	456
4	0.14	3.85	0.2	0.5	A	129	194

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
1	238	59	0.75	1282	0.186	237	353	0.0	0.2	3.443	A
2	0	0	238	961	0.000	0	0	0.0	0.0	0.000	A
3	249	62	72	1241	0.201	248	166	0.0	0.2	3.622	A
4	106	27	248	1134	0.094	106	72	0.0	0.1	3.500	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
1	284	71	0.90	1281	0.222	284	423	0.2	0.3	3.608	A
2	0	0	285	944	0.000	0	0	0.0	0.0	0.000	A
3	298	74	86	1235	0.241	297	199	0.2	0.3	3.837	A
4	127	32	297	1115	0.114	127	86	0.1	0.1	3.641	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
1	348	87	1	1281	0.272	348	518	0.3	0.4	3.854	A
2	0	0	349	921	0.000	0	0	0.0	0.0	0.000	A
3	364	91	106	1228	0.297	364	243	0.3	0.4	4.167	A
4	155	39	364	1090	0.142	155	106	0.1	0.2	3.850	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
1	348	87	1	1281	0.272	348	519	0.4	0.4	3.856	A
2	0	0	349	921	0.000	0	0	0.0	0.0	0.000	A
3	364	91	106	1228	0.297	364	243	0.4	0.4	4.170	A
4	155	39	364	1090	0.142	155	106	0.2	0.2	3.851	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
1	284	71	0.90	1281	0.222	284	424	0.4	0.3	3.611	A
2	0	0	285	944	0.000	0	0	0.0	0.0	0.000	A
3	298	74	86	1235	0.241	298	199	0.4	0.3	3.843	A
4	127	32	298	1115	0.114	127	86	0.2	0.1	3.643	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
1	238	59	0.75	1282	0.186	238	355	0.3	0.2	3.450	A
2	0	0	239	960	0.000	0	0	0.0	0.0	0.000	A
3	249	62	72	1241	0.201	249	167	0.3	0.3	3.630	A
4	106	27	249	1133	0.094	106	72	0.1	0.1	3.507	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
1	0.23	0.00	0.00	0.23	0.23			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.25	0.00	0.00	0.25	0.25			N/A	N/A
4	0.10	0.00	0.00	0.10	0.10			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
1	0.28	0.00	0.00	0.28	0.28			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.32	0.00	0.00	0.32	0.32			N/A	N/A
4	0.13	0.00	0.00	0.13	0.13			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
1	0.37	0.03	0.25	0.45	0.48			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.42	0.03	0.25	0.45	0.48			N/A	N/A
4	0.17	0.03	0.26	0.46	0.49			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
1	0.37	0.03	0.32	1.22	1.22			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.42	0.03	0.31	1.34	1.71			N/A	N/A
4	0.17	0.03	0.25	0.45	0.48			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
1	0.29	0.00	0.00	0.29	0.29			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.32	0.00	0.00	0.32	0.32			N/A	N/A
4	0.13	0.00	0.00	0.13	0.13			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
1	0.23	0.00	0.00	0.23	0.23			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.25	0.00	0.00	0.25	0.25			N/A	N/A
4	0.10	0.00	0.00	0.10	0.10			N/A	N/A

2023 Observed, 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	Houghton Avenue Roundabout	Standard Roundabout		1, 2, 3, 4	3.86	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	191	Arm 1	3.86	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
D2	2023 Observed	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		ONE HOUR	✓	381	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	206	100.000
4		ONE HOUR	✓	121	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	1	2	3	4	
From	1	4	0	232	145
	2	0	0	0	0
	3	205	0	0	1
	4	121	0	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

From	To				
		1	2	3	4
	1	0	0	1	1
	2	0	0	0	0
	3	1	0	0	0
	4	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)
1	0.32	4.07	0.5	2.1	A	350	524
2	0.00	0.00	0.0	~1	A	0	0
3	0.19	3.67	0.2	0.5	A	189	284
4	0.12	3.53	0.1	0.5	A	111	167

Main Results for each time segment

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
1	287	72	0	1305	0.220	286	248	0.0	0.3	3.530	A
2	0	0	286	945	0.000	0	0	0.0	0.0	0.000	A
3	155	39	112	1229	0.126	155	174	0.0	0.1	3.349	A
4	91	23	157	1180	0.077	91	109	0.0	0.1	3.306	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
1	343	86	0	1305	0.263	342	296	0.3	0.4	3.740	A
2	0	0	342	925	0.000	0	0	0.0	0.0	0.000	A
3	185	46	134	1220	0.152	185	208	0.1	0.2	3.477	A
4	109	27	188	1168	0.093	109	131	0.1	0.1	3.398	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
1	419	105	0	1305	0.322	419	363	0.4	0.5	4.063	A
2	0	0	419	898	0.000	0	0	0.0	0.0	0.000	A
3	227	57	164	1209	0.188	227	255	0.2	0.2	3.665	A
4	133	33	230	1152	0.116	133	161	0.1	0.1	3.532	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
1	419	105	0	1305	0.322	419	363	0.5	0.5	4.066	A
2	0	0	419	898	0.000	0	0	0.0	0.0	0.000	A
3	227	57	164	1209	0.188	227	255	0.2	0.2	3.665	A
4	133	33	230	1152	0.116	133	161	0.1	0.1	3.533	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
1	343	86	0	1305	0.263	343	297	0.5	0.4	3.743	A
2	0	0	343	925	0.000	0	0	0.0	0.0	0.000	A
3	185	46	134	1220	0.152	185	209	0.2	0.2	3.481	A
4	109	27	188	1168	0.093	109	131	0.1	0.1	3.399	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
1	287	72	0	1305	0.220	287	249	0.4	0.3	3.540	A
2	0	0	287	945	0.000	0	0	0.0	0.0	0.000	A
3	155	39	112	1228	0.126	155	175	0.2	0.1	3.356	A
4	91	23	157	1179	0.077	91	110	0.1	0.1	3.307	A

Queue Variation Results for each time segment

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
1	0.28	0.00	0.00	0.28	0.28			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.14	0.00	0.00	0.14	0.14			N/A	N/A
4	0.08	0.00	0.00	0.08	0.08			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
1	0.35	0.00	0.00	0.35	0.35			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.18	0.00	0.00	0.18	0.18			N/A	N/A
4	0.10	0.03	0.25	0.45	0.48			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
1	0.47	0.03	0.25	0.47	0.48			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.23	0.03	0.25	0.46	0.48			N/A	N/A
4	0.13	0.03	0.26	0.46	0.49			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
1	0.47	0.03	0.30	1.36	2.07			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.23	0.03	0.26	0.47	0.52			N/A	N/A
4	0.13	0.00	0.00	0.13	0.13			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
1	0.36	0.00	0.00	0.36	0.36			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.18	0.00	0.00	0.18	0.18			N/A	N/A
4	0.10	0.00	0.00	0.10	0.10			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
1	0.28	0.00	0.00	0.28	0.28			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.15	0.00	0.00	0.15	0.15			N/A	N/A
4	0.08	0.00	0.00	0.08	0.08			N/A	N/A

2025 Base + Committed, 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	Houghton Avenue Roundabout	Standard Roundabout		1, 2, 3, 4	4.77	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	116	Arm 1	4.77	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
D3	2025 Base + Committed	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		ONE HOUR	✓	509	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	419	100.000
4		ONE HOUR	✓	178	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	1	2	3	4	
From	1	0	0	354	155
	2	0	0	0	0
	3	419	0	0	0
	4	177	0	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To				
From		1	2	3	4
	1	0	0	1	4
	2	0	0	0	0
	3	1	0	0	0
	4	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)
1	0.43	4.91	0.8	2.3	A	467	701
2	0.00	0.00	0.0	~1	A	0	0
3	0.38	4.85	0.6	2.7	A	384	577
4	0.19	4.17	0.2	0.5	A	163	245

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
1	383	96	0.75	1294	0.296	382	447	0.0	0.4	3.937	A
2	0	0	382	910	0.000	0	0	0.0	0.0	0.000	A
3	315	79	116	1225	0.257	314	266	0.0	0.3	3.944	A
4	134	34	314	1114	0.120	133	116	0.0	0.1	3.668	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
1	458	114	0.90	1294	0.354	457	535	0.4	0.5	4.297	A
2	0	0	458	883	0.000	0	0	0.0	0.0	0.000	A
3	377	94	139	1216	0.310	376	319	0.3	0.4	4.283	A
4	160	40	376	1091	0.147	160	139	0.1	0.2	3.866	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
1	560	140	1	1294	0.433	560	655	0.5	0.8	4.894	A
2	0	0	561	846	0.000	0	0	0.0	0.0	0.000	A
3	461	115	170	1204	0.383	461	390	0.4	0.6	4.839	A
4	196	49	461	1059	0.185	196	170	0.2	0.2	4.169	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
1	560	140	1	1294	0.433	560	656	0.8	0.8	4.905	A
2	0	0	562	846	0.000	0	0	0.0	0.0	0.000	A
3	461	115	171	1204	0.383	461	391	0.6	0.6	4.847	A
4	196	49	461	1059	0.185	196	171	0.2	0.2	4.171	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
1	458	114	0.90	1294	0.354	458	537	0.8	0.6	4.311	A
2	0	0	459	882	0.000	0	0	0.0	0.0	0.000	A
3	377	94	140	1216	0.310	377	320	0.6	0.5	4.294	A
4	160	40	377	1091	0.147	160	140	0.2	0.2	3.871	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
1	383	96	0.75	1294	0.296	384	449	0.6	0.4	3.955	A
2	0	0	384	909	0.000	0	0	0.0	0.0	0.000	A
3	315	79	117	1225	0.257	316	268	0.5	0.3	3.961	A
4	134	34	316	1114	0.120	134	117	0.2	0.1	3.677	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
1	0.42	0.00	0.00	0.42	0.42			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.34	0.00	0.00	0.34	0.34			N/A	N/A
4	0.14	0.00	0.00	0.14	0.14			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
1	0.54	0.54	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.45	0.00	0.00	0.45	0.45			N/A	N/A
4	0.17	0.00	0.00	0.17	0.17			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
1	0.76	0.03	0.25	0.76	0.76			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.62	0.03	0.25	0.62	0.62			N/A	N/A
4	0.23	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
1	0.76	0.03	0.28	0.76	2.28			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.62	0.03	0.29	1.06	2.65			N/A	N/A
4	0.23	0.03	0.26	0.47	0.50			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
1	0.55	0.55	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.45	0.00	0.00	0.45	0.45			N/A	N/A
4	0.17	0.00	0.00	0.17	0.17			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
1	0.42	0.00	0.00	0.42	0.42			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.35	0.00	0.00	0.35	0.35			N/A	N/A
4	0.14	0.00	0.00	0.14	0.14			N/A	N/A

2025 Base + Committed, 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	Houghton Avenue Roundabout	Standard Roundabout		1, 2, 3, 4	4.37	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	119	Arm 1	4.37	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)	Run automatically
D4	2025 Base + Committed	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		ONE HOUR	✓	506	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	241	100.000
4		ONE HOUR	✓	142	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	4	0	309	193
	2	0	0	0	0
	3	240	0	0	1
	4	142	0	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To				
From		1	2	3	4
	1	0	0	1	1
	2	0	0	0	0
	3	1	0	0	0
	4	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)
1	0.43	4.80	0.7	2.4	A	464	696
2	0.00	0.00	0.0	~1	A	0	0
3	0.22	3.89	0.3	1.2	A	221	332
4	0.14	3.67	0.2	0.5	A	130	195

Main Results for each time segment

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
1	381	95	0	1307	0.292	379	289	0.0	0.4	3.875	A
2	0	0	379	912	0.000	0	0	0.0	0.0	0.000	A
3	181	45	148	1216	0.149	181	232	0.0	0.2	3.475	A
4	107	27	183	1170	0.091	107	145	0.0	0.1	3.386	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
1	455	114	0	1307	0.348	454	347	0.4	0.5	4.222	A
2	0	0	454	886	0.000	0	0	0.0	0.0	0.000	A
3	217	54	177	1205	0.180	216	277	0.2	0.2	3.641	A
4	128	32	219	1156	0.110	128	174	0.1	0.1	3.499	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
1	557	139	0	1307	0.426	556	425	0.5	0.7	4.792	A
2	0	0	556	849	0.000	0	0	0.0	0.0	0.000	A
3	265	66	217	1190	0.223	265	340	0.2	0.3	3.892	A
4	156	39	268	1137	0.137	156	213	0.1	0.2	3.668	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
1	557	139	0	1307	0.426	557	425	0.7	0.7	4.801	A
2	0	0	557	849	0.000	0	0	0.0	0.0	0.000	A
3	265	66	217	1190	0.223	265	340	0.3	0.3	3.894	A
4	156	39	269	1137	0.137	156	214	0.2	0.2	3.668	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
1	455	114	0	1307	0.348	456	347	0.7	0.5	4.233	A
2	0	0	456	885	0.000	0	0	0.0	0.0	0.000	A
3	217	54	177	1205	0.180	217	278	0.3	0.2	3.647	A
4	128	32	220	1156	0.110	128	175	0.2	0.1	3.501	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
1	381	95	0	1307	0.292	381	291	0.5	0.4	3.893	A
2	0	0	381	911	0.000	0	0	0.0	0.0	0.000	A
3	181	45	149	1216	0.149	182	233	0.2	0.2	3.483	A
4	107	27	184	1169	0.091	107	146	0.1	0.1	3.387	A

Queue Variation Results for each time segment
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
1	0.41	0.00	0.00	0.41	0.41			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.17	0.00	0.00	0.17	0.17			N/A	N/A
4	0.10	0.00	0.00	0.10	0.10			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
1	0.53	0.53	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.22	0.00	0.00	0.22	0.22			N/A	N/A
4	0.12	0.00	0.00	0.12	0.12			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
1	0.74	0.03	0.25	0.74	0.74			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.29	0.03	0.25	0.46	0.48			N/A	N/A
4	0.16	0.03	0.26	0.46	0.49			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
1	0.74	0.03	0.28	0.74	2.36			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.29	0.03	0.30	0.95	1.24			N/A	N/A
4	0.16	0.03	0.25	0.45	0.48			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
1	0.54	0.54	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.22	0.00	0.00	0.22	0.22			N/A	N/A
4	0.12	0.00	0.00	0.12	0.12			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
1	0.41	0.00	0.00	0.41	0.41			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.18	0.00	0.00	0.18	0.18			N/A	N/A
4	0.10	0.00	0.00	0.10	0.10			N/A	N/A

2025 Base + Committed + Development, 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	Houghton Avenue Roundabout	Standard Roundabout		1, 2, 3, 4	4.96	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	105	Arm 3	4.96	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
D5	2025 Base + Committed + Development	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		ONE HOUR	✓	521	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	462	100.000
4		ONE HOUR	✓	178	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	1	2	3	4	
From	1	0	0	366	155
	2	0	0	0	0
	3	462	0	0	0
	4	177	0	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To				
From		1	2	3	4
	1	0	0	1	4
	2	0	0	0	0
	3	1	0	0	0
	4	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)
1	0.44	5.00	0.8	2.1	A	478	717
2	0.00	0.00	0.0	~1	A	0	0
3	0.42	5.18	0.7	2.5	A	424	636
4	0.19	4.26	0.2	0.7	A	163	245

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
1	392	98	0.75	1294	0.303	391	479	0.0	0.4	3.976	A
2	0	0	391	907	0.000	0	0	0.0	0.0	0.000	A
3	348	87	116	1225	0.284	346	275	0.0	0.4	4.087	A
4	134	34	346	1101	0.122	133	116	0.0	0.1	3.718	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
1	468	117	0.90	1294	0.362	468	574	0.4	0.6	4.353	A
2	0	0	469	879	0.000	0	0	0.0	0.0	0.000	A
3	415	104	139	1216	0.341	415	330	0.4	0.5	4.488	A
4	160	40	415	1075	0.149	160	139	0.1	0.2	3.932	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
1	574	143	1	1294	0.443	573	702	0.6	0.8	4.984	A
2	0	0	574	841	0.000	0	0	0.0	0.0	0.000	A
3	509	127	170	1204	0.422	508	403	0.5	0.7	5.164	A
4	196	49	508	1040	0.188	196	170	0.2	0.2	4.262	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
1	574	143	1	1294	0.443	574	704	0.8	0.8	4.996	A
2	0	0	575	841	0.000	0	0	0.0	0.0	0.000	A
3	509	127	171	1204	0.423	509	404	0.7	0.7	5.177	A
4	196	49	509	1040	0.188	196	171	0.2	0.2	4.265	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
1	468	117	0.90	1294	0.362	469	575	0.8	0.6	4.370	A
2	0	0	470	878	0.000	0	0	0.0	0.0	0.000	A
3	415	104	140	1216	0.342	416	331	0.7	0.5	4.504	A
4	160	40	416	1075	0.149	160	140	0.2	0.2	3.938	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
1	392	98	0.75	1294	0.303	393	482	0.6	0.4	3.995	A
2	0	0	394	906	0.000	0	0	0.0	0.0	0.000	A
3	348	87	117	1225	0.284	348	277	0.5	0.4	4.109	A
4	134	34	348	1100	0.122	134	117	0.2	0.1	3.728	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
1	0.43	0.00	0.00	0.43	0.43			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.39	0.00	0.00	0.39	0.39			N/A	N/A
4	0.14	0.00	0.00	0.14	0.14			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
1	0.56	0.55	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.51	0.51	1.00	1.40	1.45			N/A	N/A
4	0.17	0.00	0.00	0.17	0.17			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
1	0.79	0.03	0.25	0.79	0.79			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.72	0.03	0.25	0.72	0.72			N/A	N/A
4	0.23	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
1	0.79	0.03	0.27	0.79	2.13			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.73	0.03	0.28	0.73	2.52			N/A	N/A
4	0.23	0.03	0.27	0.48	0.69			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
1	0.57	0.55	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.52	0.52	1.00	1.40	1.45			N/A	N/A
4	0.18	0.00	0.00	0.18	0.18			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
1	0.44	0.00	0.00	0.44	0.44			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.40	0.00	0.00	0.40	0.40			N/A	N/A
4	0.14	0.00	0.00	0.14	0.14			N/A	N/A

2025 Base + Committed + Development, 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	Houghton Avenue Roundabout	Standard Roundabout		1, 2, 3, 4	4.54	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	106	Arm 1	4.54	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
D6	2025 Base + Committed + Development	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		ONE HOUR	✓	539	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	255	100.000
4		ONE HOUR	✓	142	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
		1	2	3	4
From	1	4	0	342	193
	2	0	0	0	0
	3	254	0	0	1
	4	142	0	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To				
From		1	2	3	4
	1	0	0	1	1
	2	0	0	0	0
	3	1	0	0	0
	4	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)
1	0.45	5.05	0.8	2.0	A	495	742
2	0.00	0.00	0.0	~1	A	0	0
3	0.24	3.96	0.3	1.3	A	234	351
4	0.14	3.69	0.2	0.5	A	130	195

Main Results for each time segment

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
1	406	101	0	1307	0.311	404	300	0.0	0.4	3.979	A
2	0	0	404	903	0.000	0	0	0.0	0.0	0.000	A
3	192	48	148	1216	0.158	191	256	0.0	0.2	3.511	A
4	107	27	193	1166	0.092	107	145	0.0	0.1	3.398	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
1	485	121	0	1307	0.371	484	359	0.4	0.6	4.372	A
2	0	0	484	875	0.000	0	0	0.0	0.0	0.000	A
3	229	57	177	1205	0.190	229	307	0.2	0.2	3.688	A
4	128	32	232	1151	0.111	128	174	0.1	0.1	3.515	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
1	593	148	0	1307	0.454	592	440	0.6	0.8	5.034	A
2	0	0	592	836	0.000	0	0	0.0	0.0	0.000	A
3	281	70	217	1190	0.236	280	376	0.2	0.3	3.958	A
4	156	39	284	1132	0.138	156	213	0.1	0.2	3.690	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
1	593	148	0	1307	0.454	593	440	0.8	0.8	5.046	A
2	0	0	593	836	0.000	0	0	0.0	0.0	0.000	A
3	281	70	217	1190	0.236	281	377	0.3	0.3	3.960	A
4	156	39	284	1132	0.138	156	214	0.2	0.2	3.690	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
1	485	121	0	1307	0.371	485	360	0.8	0.6	4.388	A
2	0	0	485	874	0.000	0	0	0.0	0.0	0.000	A
3	229	57	177	1205	0.190	230	308	0.3	0.2	3.691	A
4	128	32	232	1151	0.111	128	175	0.2	0.1	3.520	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
1	406	101	0	1307	0.311	406	301	0.6	0.5	4.001	A
2	0	0	406	903	0.000	0	0	0.0	0.0	0.000	A
3	192	48	149	1216	0.158	192	258	0.2	0.2	3.519	A
4	107	27	194	1165	0.092	107	146	0.1	0.1	3.403	A

Queue Variation Results for each time segment
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
1	0.45	0.00	0.00	0.45	0.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.19	0.00	0.00	0.19	0.19			N/A	N/A
4	0.10	0.00	0.00	0.10	0.10			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
1	0.58	0.11	0.85	1.37	1.43			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.23	0.00	0.00	0.23	0.23			N/A	N/A
4	0.12	0.00	0.00	0.12	0.12			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
1	0.82	0.03	0.25	0.82	0.82			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.31	0.03	0.25	0.46	0.48			N/A	N/A
4	0.16	0.03	0.26	0.46	0.49			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
1	0.83	0.03	0.27	0.83	1.96			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.31	0.03	0.31	1.05	1.32			N/A	N/A
4	0.16	0.03	0.25	0.45	0.48			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
1	0.59	0.55	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.24	0.00	0.00	0.24	0.24			N/A	N/A
4	0.13	0.00	0.00	0.13	0.13			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
1	0.45	0.00	0.00	0.45	0.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.19	0.00	0.00	0.19	0.19			N/A	N/A
4	0.10	0.00	0.00	0.10	0.10			N/A	N/A

2029 Base + Committed, 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	Houghton Avenue Roundabout	Standard Roundabout		1, 2, 3, 4	4.77	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	116	Arm 1	4.77	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
D7	2029 Base + Committed	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		ONE HOUR	✓	509	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	419	100.000
4		ONE HOUR	✓	178	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	1	2	3	4	
From	1	0	0	354	155
	2	0	0	0	0
	3	419	0	0	0
	4	177	0	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To				
From		1	2	3	4
	1	0	0	1	4
	2	0	0	0	0
	3	1	0	0	0
	4	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)
1	0.43	4.91	0.8	2.3	A	467	701
2	0.00	0.00	0.0	~1	A	0	0
3	0.38	4.85	0.6	2.7	A	384	577
4	0.19	4.17	0.2	0.5	A	163	245

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
1	383	96	0.75	1294	0.296	382	447	0.0	0.4	3.937	A
2	0	0	382	910	0.000	0	0	0.0	0.0	0.000	A
3	315	79	116	1225	0.257	314	266	0.0	0.3	3.944	A
4	134	34	314	1114	0.120	133	116	0.0	0.1	3.668	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
1	458	114	0.90	1294	0.354	457	535	0.4	0.5	4.297	A
2	0	0	458	883	0.000	0	0	0.0	0.0	0.000	A
3	377	94	139	1216	0.310	376	319	0.3	0.4	4.283	A
4	160	40	376	1091	0.147	160	139	0.1	0.2	3.866	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
1	560	140	1	1294	0.433	560	655	0.5	0.8	4.894	A
2	0	0	561	846	0.000	0	0	0.0	0.0	0.000	A
3	461	115	170	1204	0.383	461	390	0.4	0.6	4.839	A
4	196	49	461	1059	0.185	196	170	0.2	0.2	4.169	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
1	560	140	1	1294	0.433	560	656	0.8	0.8	4.905	A
2	0	0	562	846	0.000	0	0	0.0	0.0	0.000	A
3	461	115	171	1204	0.383	461	391	0.6	0.6	4.847	A
4	196	49	461	1059	0.185	196	171	0.2	0.2	4.171	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
1	458	114	0.90	1294	0.354	458	537	0.8	0.6	4.311	A
2	0	0	459	882	0.000	0	0	0.0	0.0	0.000	A
3	377	94	140	1216	0.310	377	320	0.6	0.5	4.294	A
4	160	40	377	1091	0.147	160	140	0.2	0.2	3.871	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
1	383	96	0.75	1294	0.296	384	449	0.6	0.4	3.955	A
2	0	0	384	909	0.000	0	0	0.0	0.0	0.000	A
3	315	79	117	1225	0.257	316	268	0.5	0.3	3.961	A
4	134	34	316	1114	0.120	134	117	0.2	0.1	3.677	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
1	0.42	0.00	0.00	0.42	0.42			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.34	0.00	0.00	0.34	0.34			N/A	N/A
4	0.14	0.00	0.00	0.14	0.14			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
1	0.54	0.54	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.45	0.00	0.00	0.45	0.45			N/A	N/A
4	0.17	0.00	0.00	0.17	0.17			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
1	0.76	0.03	0.25	0.76	0.76			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.62	0.03	0.25	0.62	0.62			N/A	N/A
4	0.23	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
1	0.76	0.03	0.28	0.76	2.28			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.62	0.03	0.29	1.06	2.65			N/A	N/A
4	0.23	0.03	0.26	0.47	0.50			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
1	0.55	0.55	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.45	0.00	0.00	0.45	0.45			N/A	N/A
4	0.17	0.00	0.00	0.17	0.17			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
1	0.42	0.00	0.00	0.42	0.42			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.35	0.00	0.00	0.35	0.35			N/A	N/A
4	0.14	0.00	0.00	0.14	0.14			N/A	N/A

2029 Base + Committed, 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	Houghton Avenue Roundabout	Standard Roundabout		1, 2, 3, 4	4.37	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	119	Arm 1	4.37	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)	Run automatically
D8	2029 Base + Committed	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		ONE HOUR	✓	506	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	241	100.000
4		ONE HOUR	✓	142	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	1	2	3	4	
From	1	4	0	309	193
	2	0	0	0	0
	3	240	0	0	1
	4	142	0	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

From	To				
		1	2	3	4
	1	0	0	1	1
	2	0	0	0	0
	3	1	0	0	0
	4	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)
1	0.43	4.80	0.7	2.4	A	464	696
2	0.00	0.00	0.0	~1	A	0	0
3	0.22	3.89	0.3	1.2	A	221	332
4	0.14	3.67	0.2	0.5	A	130	195

Main Results for each time segment

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
1	381	95	0	1307	0.292	379	289	0.0	0.4	3.875	A
2	0	0	379	912	0.000	0	0	0.0	0.0	0.000	A
3	181	45	148	1216	0.149	181	232	0.0	0.2	3.475	A
4	107	27	183	1170	0.091	107	145	0.0	0.1	3.386	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
1	455	114	0	1307	0.348	454	347	0.4	0.5	4.222	A
2	0	0	454	886	0.000	0	0	0.0	0.0	0.000	A
3	217	54	177	1205	0.180	216	277	0.2	0.2	3.641	A
4	128	32	219	1156	0.110	128	174	0.1	0.1	3.499	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
1	557	139	0	1307	0.426	556	425	0.5	0.7	4.792	A
2	0	0	556	849	0.000	0	0	0.0	0.0	0.000	A
3	265	66	217	1190	0.223	265	340	0.2	0.3	3.892	A
4	156	39	268	1137	0.137	156	213	0.1	0.2	3.668	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
1	557	139	0	1307	0.426	557	425	0.7	0.7	4.801	A
2	0	0	557	849	0.000	0	0	0.0	0.0	0.000	A
3	265	66	217	1190	0.223	265	340	0.3	0.3	3.894	A
4	156	39	269	1137	0.137	156	214	0.2	0.2	3.668	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
1	455	114	0	1307	0.348	456	347	0.7	0.5	4.233	A
2	0	0	456	885	0.000	0	0	0.0	0.0	0.000	A
3	217	54	177	1205	0.180	217	278	0.3	0.2	3.647	A
4	128	32	220	1156	0.110	128	175	0.2	0.1	3.501	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
1	381	95	0	1307	0.292	381	291	0.5	0.4	3.893	A
2	0	0	381	911	0.000	0	0	0.0	0.0	0.000	A
3	181	45	149	1216	0.149	182	233	0.2	0.2	3.483	A
4	107	27	184	1169	0.091	107	146	0.1	0.1	3.387	A

Queue Variation Results for each time segment

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
1	0.41	0.00	0.00	0.41	0.41			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.17	0.00	0.00	0.17	0.17			N/A	N/A
4	0.10	0.00	0.00	0.10	0.10			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
1	0.53	0.53	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.22	0.00	0.00	0.22	0.22			N/A	N/A
4	0.12	0.00	0.00	0.12	0.12			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
1	0.74	0.03	0.25	0.74	0.74			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.29	0.03	0.25	0.46	0.48			N/A	N/A
4	0.16	0.03	0.26	0.46	0.49			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
1	0.74	0.03	0.28	0.74	2.36			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.29	0.03	0.30	0.95	1.24			N/A	N/A
4	0.16	0.03	0.25	0.45	0.48			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
1	0.54	0.54	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.22	0.00	0.00	0.22	0.22			N/A	N/A
4	0.12	0.00	0.00	0.12	0.12			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
1	0.41	0.00	0.00	0.41	0.41			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.18	0.00	0.00	0.18	0.18			N/A	N/A
4	0.10	0.00	0.00	0.10	0.10			N/A	N/A

2029 Base + Committed + Development, 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	Houghton Avenue Roundabout	Standard Roundabout		1, 2, 3, 4	4.95	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	106	Arm 3	4.95	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
D9	2029 Base + Committed + Development	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		ONE HOUR	✓	521	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	462	100.000
4		ONE HOUR	✓	178	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	1	2	3	4	
From	1	0	0	366	155
	2	0	0	0	0
	3	462	0	0	0
	4	177	0	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To				
From		1	2	3	4
	1	0	0	1	4
	2	0	0	0	0
	3	1	0	0	0
	4	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)
1	0.44	4.99	0.8	2.1	A	478	717
2	0.00	0.00	0.0	~1	A	0	0
3	0.42	5.17	0.7	2.5	A	424	636
4	0.19	4.26	0.2	0.7	A	163	245

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
1	392	98	0.75	1295	0.303	391	479	0.0	0.4	3.975	A
2	0	0	391	907	0.000	0	0	0.0	0.0	0.000	A
3	348	87	116	1227	0.284	346	275	0.0	0.4	4.081	A
4	134	34	346	1102	0.122	133	116	0.0	0.1	3.713	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
1	468	117	0.90	1295	0.362	468	574	0.4	0.6	4.351	A
2	0	0	469	879	0.000	0	0	0.0	0.0	0.000	A
3	415	104	139	1218	0.341	415	330	0.4	0.5	4.481	A
4	160	40	415	1077	0.149	160	139	0.1	0.2	3.927	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
1	574	143	1	1294	0.443	573	702	0.6	0.8	4.982	A
2	0	0	574	841	0.000	0	0	0.0	0.0	0.000	A
3	509	127	170	1205	0.422	508	403	0.5	0.7	5.155	A
4	196	49	508	1041	0.188	196	170	0.2	0.2	4.255	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
1	574	143	1	1294	0.443	574	704	0.8	0.8	4.993	A
2	0	0	575	841	0.000	0	0	0.0	0.0	0.000	A
3	509	127	171	1205	0.422	509	404	0.7	0.7	5.168	A
4	196	49	509	1041	0.188	196	171	0.2	0.2	4.259	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
1	468	117	0.90	1295	0.362	469	575	0.8	0.6	4.366	A
2	0	0	470	878	0.000	0	0	0.0	0.0	0.000	A
3	415	104	140	1217	0.341	416	331	0.7	0.5	4.498	A
4	160	40	416	1076	0.149	160	140	0.2	0.2	3.931	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
1	392	98	0.75	1295	0.303	393	482	0.6	0.4	3.994	A
2	0	0	394	906	0.000	0	0	0.0	0.0	0.000	A
3	348	87	117	1226	0.284	348	277	0.5	0.4	4.103	A
4	134	34	348	1102	0.122	134	117	0.2	0.1	3.720	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
1	0.43	0.00	0.00	0.43	0.43			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.39	0.00	0.00	0.39	0.39			N/A	N/A
4	0.14	0.00	0.00	0.14	0.14			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
1	0.56	0.55	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.51	0.51	1.00	1.40	1.45			N/A	N/A
4	0.17	0.00	0.00	0.17	0.17			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
1	0.79	0.03	0.25	0.79	0.79			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.72	0.03	0.25	0.72	0.72			N/A	N/A
4	0.23	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
1	0.79	0.03	0.27	0.79	2.14			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.73	0.03	0.28	0.73	2.52			N/A	N/A
4	0.23	0.03	0.27	0.48	0.68			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
1	0.57	0.55	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.52	0.52	1.00	1.40	1.45			N/A	N/A
4	0.18	0.00	0.00	0.18	0.18			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
1	0.44	0.00	0.00	0.44	0.44			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.40	0.00	0.00	0.40	0.40			N/A	N/A
4	0.14	0.00	0.00	0.14	0.14			N/A	N/A

2029 Base + Committed + Development, 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	Houghton Avenue Roundabout	Standard Roundabout		1, 2, 3, 4	4.54	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	106	Arm 1	4.54	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
D10	2029 Base + Committed + Development	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		ONE HOUR	✓	539	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	255	100.000
4		ONE HOUR	✓	142	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	1	2	3	4	
From	1	4	0	342	193
	2	0	0	0	0
	3	254	0	0	1
	4	142	0	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

From	To				
		1	2	3	4
	1	0	0	1	1
	2	0	0	0	0
	3	1	0	0	0
	4	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)
1	0.45	5.04	0.8	2.0	A	495	742
2	0.00	0.00	0.0	~1	A	0	0
3	0.24	3.96	0.3	1.3	A	234	351
4	0.14	3.69	0.2	0.5	A	130	195

Main Results for each time segment

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
1	406	101	0	1308	0.310	404	300	0.0	0.4	3.976	A
2	0	0	404	904	0.000	0	0	0.0	0.0	0.000	A
3	192	48	148	1217	0.158	191	256	0.0	0.2	3.507	A
4	107	27	193	1166	0.092	107	145	0.0	0.1	3.398	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
1	485	121	0	1308	0.371	484	359	0.4	0.6	4.368	A
2	0	0	484	875	0.000	0	0	0.0	0.0	0.000	A
3	229	57	177	1206	0.190	229	307	0.2	0.2	3.684	A
4	128	32	232	1151	0.111	128	174	0.1	0.1	3.515	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
1	593	148	0	1308	0.454	592	440	0.6	0.8	5.028	A
2	0	0	592	837	0.000	0	0	0.0	0.0	0.000	A
3	281	70	217	1191	0.236	280	376	0.2	0.3	3.953	A
4	156	39	284	1132	0.138	156	213	0.1	0.2	3.689	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
1	593	148	0	1308	0.454	593	440	0.8	0.8	5.040	A
2	0	0	593	836	0.000	0	0	0.0	0.0	0.000	A
3	281	70	217	1191	0.236	281	377	0.3	0.3	3.955	A
4	156	39	284	1132	0.138	156	214	0.2	0.2	3.690	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
1	485	121	0	1308	0.371	485	360	0.8	0.6	4.383	A
2	0	0	485	875	0.000	0	0	0.0	0.0	0.000	A
3	229	57	177	1206	0.190	230	308	0.3	0.2	3.690	A
4	128	32	232	1151	0.111	128	175	0.2	0.1	3.519	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
1	406	101	0	1308	0.310	406	301	0.6	0.5	3.998	A
2	0	0	406	903	0.000	0	0	0.0	0.0	0.000	A
3	192	48	149	1217	0.158	192	258	0.2	0.2	3.515	A
4	107	27	194	1166	0.092	107	146	0.1	0.1	3.400	A

Queue Variation Results for each time segment

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
1	0.45	0.00	0.00	0.45	0.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.19	0.00	0.00	0.19	0.19			N/A	N/A
4	0.10	0.00	0.00	0.10	0.10			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
1	0.58	0.11	0.85	1.37	1.43			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.23	0.00	0.00	0.23	0.23			N/A	N/A
4	0.12	0.00	0.00	0.12	0.12			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
1	0.82	0.03	0.25	0.82	0.82			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.31	0.03	0.25	0.46	0.48			N/A	N/A
4	0.16	0.03	0.26	0.46	0.49			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
1	0.83	0.03	0.27	0.83	1.96			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.31	0.03	0.31	1.05	1.32			N/A	N/A
4	0.16	0.03	0.25	0.45	0.48			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
1	0.59	0.55	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.24	0.00	0.00	0.24	0.24			N/A	N/A
4	0.13	0.00	0.00	0.13	0.13			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
1	0.45	0.00	0.00	0.45	0.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.19	0.00	0.00	0.19	0.19			N/A	N/A
4	0.10	0.00	0.00	0.10	0.10			N/A	N/A

2029 Base + Committed + Dev + Mitigation (Reduced Car Trips), 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	Houghton Avenue Roundabout	Standard Roundabout		1, 2, 3, 4	4.93	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	107	Arm 3	4.93	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)	Run automatically
D11	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)	AM	With Mitigation (Reduced Car Trips)	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		ONE HOUR	✓	520	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	457	100.000
4		ONE HOUR	✓	178	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	1	2	3	4	
From	1	0	0	365	155
	2	0	0	0	0
	3	457	0	0	0
	4	177	0	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To				
		1	2	3	4
	1	0	0	1	4
	2	0	0	0	0
	3	1	0	0	0
From	4	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)
1	0.44	4.99	0.8	2.1	A	477	716
2	0.00	0.00	0.0	~1	A	0	0
3	0.42	5.14	0.7	2.6	A	419	629
4	0.19	4.25	0.2	0.7	A	163	245

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
1	391	98	0.75	1294	0.302	390	475	0.0	0.4	3.973	A
2	0	0	391	907	0.000	0	0	0.0	0.0	0.000	A
3	344	86	116	1225	0.281	343	274	0.0	0.4	4.071	A
4	134	34	343	1103	0.122	133	116	0.0	0.1	3.712	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
1	467	117	0.90	1294	0.361	467	569	0.4	0.6	4.349	A
2	0	0	468	879	0.000	0	0	0.0	0.0	0.000	A
3	411	103	139	1216	0.338	410	329	0.4	0.5	4.463	A
4	160	40	410	1077	0.149	160	139	0.1	0.2	3.925	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
1	573	143	1	1294	0.442	572	697	0.6	0.8	4.977	A
2	0	0	573	842	0.000	0	0	0.0	0.0	0.000	A
3	503	126	170	1204	0.418	502	402	0.5	0.7	5.124	A
4	196	49	502	1042	0.188	196	170	0.2	0.2	4.251	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
1	573	143	1	1294	0.442	573	698	0.8	0.8	4.988	A
2	0	0	574	841	0.000	0	0	0.0	0.0	0.000	A
3	503	126	171	1204	0.418	503	403	0.7	0.7	5.137	A
4	196	49	503	1042	0.188	196	171	0.2	0.2	4.254	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
1	467	117	0.90	1294	0.361	468	571	0.8	0.6	4.363	A
2	0	0	469	879	0.000	0	0	0.0	0.0	0.000	A
3	411	103	140	1216	0.338	412	330	0.7	0.5	4.480	A
4	160	40	412	1077	0.149	160	140	0.2	0.2	3.931	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
1	391	98	0.75	1294	0.302	392	478	0.6	0.4	3.992	A
2	0	0	393	906	0.000	0	0	0.0	0.0	0.000	A
3	344	86	117	1225	0.281	345	276	0.5	0.4	4.089	A
4	134	34	345	1102	0.122	134	117	0.2	0.1	3.722	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
1	0.43	0.00	0.00	0.43	0.43			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.39	0.00	0.00	0.39	0.39			N/A	N/A
4	0.14	0.00	0.00	0.14	0.14			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
1	0.56	0.55	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.51	0.51	1.00	1.40	1.45			N/A	N/A
4	0.17	0.00	0.00	0.17	0.17			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
1	0.79	0.03	0.25	0.79	0.79			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.71	0.03	0.25	0.71	0.71			N/A	N/A
4	0.23	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
1	0.79	0.03	0.27	0.79	2.15			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.71	0.03	0.28	0.71	2.56			N/A	N/A
4	0.23	0.03	0.27	0.48	0.67			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
1	0.57	0.55	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.51	0.51	1.00	1.40	1.45			N/A	N/A
4	0.18	0.00	0.00	0.18	0.18			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
1	0.44	0.00	0.00	0.44	0.44			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.39	0.00	0.00	0.39	0.39			N/A	N/A
4	0.14	0.00	0.00	0.14	0.14			N/A	N/A

2029 Base + Committed + Dev + Mitigation (Reduced Car Trips), 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	Houghton Avenue Roundabout	Standard Roundabout		1, 2, 3, 4	4.52	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	107	Arm 1	4.52	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)	Run automatically
D12	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)	PM	With Mitigation (Reduced Car Trips)	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		ONE HOUR	✓	535	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	253	100.000
4		ONE HOUR	✓	142	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	1	2	3	4	
From	1	4	0	338	193
	2	0	0	0	0
	3	252	0	0	1
	4	142	0	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To				
		1	2	3	4
	1	0	0	1	1
	2	0	0	0	0
	3	1	0	0	0
From	4	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)
1	0.45	5.01	0.8	2.0	A	491	736
2	0.00	0.00	0.0	~1	A	0	0
3	0.23	3.95	0.3	1.3	A	232	348
4	0.14	3.69	0.2	0.5	A	130	195

Main Results for each time segment

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
1	403	101	0	1307	0.308	401	298	0.0	0.4	3.968	A
2	0	0	401	905	0.000	0	0	0.0	0.0	0.000	A
3	190	48	148	1216	0.157	190	253	0.0	0.2	3.506	A
4	107	27	192	1166	0.092	107	145	0.0	0.1	3.396	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
1	481	120	0	1307	0.368	480	358	0.4	0.6	4.353	A
2	0	0	480	876	0.000	0	0	0.0	0.0	0.000	A
3	227	57	177	1205	0.189	227	304	0.2	0.2	3.681	A
4	128	32	230	1152	0.111	128	174	0.1	0.1	3.513	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
1	589	147	0	1307	0.451	588	438	0.6	0.8	5.003	A
2	0	0	588	838	0.000	0	0	0.0	0.0	0.000	A
3	279	70	217	1190	0.234	278	372	0.2	0.3	3.949	A
4	156	39	282	1132	0.138	156	213	0.1	0.2	3.687	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
1	589	147	0	1307	0.451	589	438	0.8	0.8	5.015	A
2	0	0	589	838	0.000	0	0	0.0	0.0	0.000	A
3	279	70	217	1190	0.234	279	372	0.3	0.3	3.951	A
4	156	39	282	1132	0.138	156	214	0.2	0.2	3.687	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
1	481	120	0	1307	0.368	482	358	0.8	0.6	4.370	A
2	0	0	482	876	0.000	0	0	0.0	0.0	0.000	A
3	227	57	177	1205	0.189	228	304	0.3	0.2	3.684	A
4	128	32	230	1152	0.111	128	175	0.2	0.1	3.515	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
1	403	101	0	1307	0.308	403	300	0.6	0.4	3.986	A
2	0	0	403	904	0.000	0	0	0.0	0.0	0.000	A
3	190	48	149	1216	0.157	191	255	0.2	0.2	3.514	A
4	107	27	193	1166	0.092	107	146	0.1	0.1	3.401	A

Queue Variation Results for each time segment

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
1	0.44	0.00	0.00	0.44	0.44			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.18	0.00	0.00	0.18	0.18			N/A	N/A
4	0.10	0.00	0.00	0.10	0.10			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
1	0.58	0.10	0.84	1.37	1.43			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.23	0.00	0.00	0.23	0.23			N/A	N/A
4	0.12	0.00	0.00	0.12	0.12			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
1	0.81	0.03	0.25	0.81	0.81			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.30	0.03	0.25	0.46	0.48			N/A	N/A
4	0.16	0.03	0.26	0.46	0.49			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
1	0.82	0.03	0.27	0.82	2.00			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.30	0.03	0.31	1.04	1.31			N/A	N/A
4	0.16	0.03	0.25	0.45	0.48			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
1	0.59	0.55	1.00	1.40	1.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.23	0.00	0.00	0.23	0.23			N/A	N/A
4	0.13	0.00	0.00	0.13	0.13			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
1	0.45	0.00	0.00	0.45	0.45			N/A	N/A
2	0.00	0.00	0.00	0.00	0.00			N/A	N/A
3	0.19	0.00	0.00	0.19	0.19			N/A	N/A
4	0.10	0.00	0.00	0.10	0.10			N/A	N/A

APPENDIX F: PICADY Output
Grainger Street/Laxton Leaze Junction

Junctions 10		
PICADY 10 - Priority Intersection Module		
Version: 10.1.1.1905		
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For sales and distribution information, program advice and maintenance, contact TRL Software:		
+44 (0)1344 379777 software@trl.co.uk trlsoftware.com		
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution		

Filename: 2025-02-20 Laxton Leaze - Grainger Street Priority - Revised Trips.j10

Path: H:_Planning 2\Current Jobs\GTWVile(BSL)\Analysis\Picady\2025 Assessments for TA Addendum

Report generation date: 20/02/2025 16:55:49

-
- »2023 Observed, AM
 - »2023 Observed, PM
 - »2025 Base + Committed, AM
 - »2025 Base + Committed, PM
 - »2025 Base + Committed + Development, AM
 - »2025 Base + Committed + Development, PM
 - »2029 Base + Committed, AM
 - »2029 Base + Committed, PM
 - »2029 Base + Committed + Development, AM
 - »2029 Base + Committed + Development, PM
 - »2029 Base + Committed + Dev + Mitigation (Reduced Car Trips), AM
 - »2029 Base + Committed + Dev + Mitigation (Reduced Car Trips), PM

Summary of junction performance

	AM									PM								
	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Netw Resid Capa
	2023 Observed																	
Stream B-AC	D1	0.0	0.5	8.64	0.03	A	0.19	A	263 %	D2	0.0	0.5	8.40	0.01	A	0.15	A	343
Stream C-AB		0.0	~1	0.00	0.00	A			[Stream B-AC]		0.0	0.5	8.83	0.00	A			[Stre B-A
	2025 Base + Committed																	
Stream B-AC	D3	0.0	0.5	9.88	0.04	A	0.19	A	154 %	D4	0.0	0.5	8.91	0.02	A	0.14	A	252
Stream C-AB		0.0	~1	0.00	0.00	A			[Stream B-AC]		0.0	0.5	8.51	0.00	A			[Stre B-A
	2025 Base + Committed + Development																	
Stream B-AC	D5	0.2	0.8	11.65	0.17	B	0.81	A	96 %	D6	0.1	0.5	9.34	0.05	A	0.36	A	205
Stream C-AB		0.0	~1	0.00	0.00	A			[Stream B-AC]		0.0	0.5	8.56	0.00	A			[Stre B-A
	2029 Base + Committed																	
Stream B-AC	D7	0.0	0.5	9.88	0.04	A	0.19	A	154 %	D8	0.0	0.5	8.91	0.02	A	0.14	A	252
Stream C-AB		0.0	~1	0.00	0.00	A			[Stream B-AC]		0.0	0.5	8.51	0.00	A			[Stre B-A
	2029 Base + Committed + Development																	
Stream B-AC	D9	0.2	0.8	11.65	0.17	B	0.81	A	96 %	D10	0.1	0.5	9.34	0.05	A	0.36	A	205
Stream C-AB		0.0	~1	0.00	0.00	A			[Stream B-AC]		0.0	0.5	8.56	0.00	A			[Stre B-A
	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)																	
Stream B-AC	D11	0.2	0.5	11.43	0.16	B	0.73	A	101 %	D12	0.1	0.5	9.28	0.05	A	0.33	A	211
Stream C-AB		0.0	~1	0.00	0.00	A			[Stream B-AC]		0.0	0.5	8.56	0.00	A			[Stre B-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	Laxton Leaze / Grainger Street Priority Junction
Location	Berewood
Site number	
Date	20/02/2025
Version	
Status	Feasibility
Identifier	
Client	Grainger
Jobnumber	GTWVile(BSL).1
Enumerator	MAYERBROWN2K\neyles
Description	Modelling of the Laxton Leaze / Grainger Street priority junction with BSL residential development. For TA Addendum with revised Trip rates and distribtuion

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 simulation for HCM roundabouts	Use iterations for HCM roundabouts
5.75	✓				✓	Delay	0.85	36.00	20.00		

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)	Run automatically
D1	2023 Observed	AM		ONE HOUR	07:45	09:15	15	✓
D2	2023 Observed	PM		ONE HOUR	16:45	18:15	15	✓
D3	2025 Base + Committed	AM		ONE HOUR	07:45	09:15	15	✓
D4	2025 Base + Committed	PM		ONE HOUR	16:45	18:15	15	✓
D5	2025 Base + Committed + Development	AM		ONE HOUR	07:45	09:15	15	✓
D6	2025 Base + Committed + Development	PM		ONE HOUR	16:45	18:15	15	✓
D7	2029 Base + Committed	AM		ONE HOUR	07:45	09:15	15	✓
D8	2029 Base + Committed	PM		ONE HOUR	16:45	18:15	15	✓
D9	2029 Base + Committed + Development	AM		ONE HOUR	07:45	09:15	15	✓
D10	2029 Base + Committed + Development	PM		ONE HOUR	16:45	18:15	15	✓
D11	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)	AM	With Mitigation (Reduced Car Trips)	ONE HOUR	07:45	09:15	15	✓
D12	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)	PM	With Mitigation (Reduced Car Trips)	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2023 Observed, 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	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Lacton Leaze / Grainger Street Priority	T-Junction	Two-way	Two-way	Two-way		0.19	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	263	Stream B-AC	0.19	A

Arms

Arms

Arm	Name	Description	Arm type
A	Grainger Street WB		Major
B	Lacton Leaze		Minor
C	Grainger Street EB		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	7.00			58.0	✓	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	3.16	18	66

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	524	0.091	0.231	0.145	0.330
B-C	676	0.099	0.251	-	-
C-B	608	0.225	0.225	-	-

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
D1	2023 Observed	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	218	100.000
B		ONE HOUR	✓	12	100.000
C		ONE HOUR	✓	320	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
		A	B	C
	A	0	11	207
	B	11	0	1
	C	320	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	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-AC	0.03	8.64	0.0	0.5	A	11	17
C-AB	0.00	0.00	0.0	~1	A	0	0
C-A						294	440
A-B						10	15
A-C						190	285

Main Results for each time segment

07:45 - 08:00

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	9	2	463	0.020	9	0.0	0.0	7.930	A
C-AB	0	0	567	0.000	0	0.0	0.0	0.000	A
C-A	241	60			241				
A-B	8	2			8				
A-C	156	39			156				

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	11	3	449	0.024	11	0.0	0.0	8.214	A
C-AB	0	0	560	0.000	0	0.0	0.0	0.000	A
C-A	288	72			288				
A-B	10	2			10				
A-C	186	47			186				

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	13	3	430	0.031	13	0.0	0.0	8.641	A
C-AB	0	0	550	0.000	0	0.0	0.0	0.000	A
C-A	352	88			352				
A-B	12	3			12				
A-C	228	57			228				

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	13	3	430	0.031	13	0.0	0.0	8.641	A
C-AB	0	0	550	0.000	0	0.0	0.0	0.000	A
C-A	352	88			352				
A-B	12	3			12				
A-C	228	57			228				

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	11	3	449	0.024	11	0.0	0.0	8.215	A
C-AB	0	0	560	0.000	0	0.0	0.0	0.000	A
C-A	288	72			288				
A-B	10	2			10				
A-C	186	47			186				

09:00 - 09:15

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	9	2	463	0.020	9	0.0	0.0	7.932	A
C-AB	0	0	567	0.000	0	0.0	0.0	0.000	A
C-A	241	60			241				
A-B	8	2			8				
A-C	156	39			156				

Queue Variation Results for each time segment

07:45 - 08:00

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	0.02	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

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	0.02	0.02	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

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	0.03	0.00	0.00	0.03	0.03			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-AC	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			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	0.02	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

09:00 - 09:15

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	0.02	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

2023 Observed, 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	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Lacton Leaze / Grainger Street Priority	T-Junction	Two-way	Two-way	Two-way		0.15	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	343	Stream B-AC	0.15	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)	Run automatically
D2	2023 Observed	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	231	100.000
B		ONE HOUR	✓	5	100.000
C		ONE HOUR	✓	198	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
		A	B	C
	A	0	11	220
	B	5	0	0
	C	197	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	A	0	0	1
	B	0	0	0
	C	1	100	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	0.01	8.40	0.0	0.5	A	5	7
C-AB	0.00	8.83	0.0	0.5	A	2	2
C-A						180	270
A-B						10	15
A-C						202	303

Main Results for each time segment

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	4	0.94	462	0.008	4	0.0	0.0	7.847	A
C-AB	1	0.30	409	0.003	1	0.0	0.0	8.835	A
C-A	148	37			148				
A-B	8	2			8				
A-C	166	41			166				

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	4	1	451	0.010	4	0.0	0.0	8.071	A
C-AB	2	0.38	430	0.004	2	0.0	0.0	8.520	A
C-A	176	44			176				
A-B	10	2			10				
A-C	198	49			198				

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	6	1	434	0.013	5	0.0	0.0	8.401	A
C-AB	2	0.52	459	0.005	2	0.0	0.0	8.013	A
C-A	216	54			216				
A-B	12	3			12				
A-C	242	61			242				

17:30 - 17:45

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	6	1	434	0.013	6	0.0	0.0	8.401	A
C-AB	2	0.52	459	0.005	2	0.0	0.0	7.882	A
C-A	216	54			216				
A-B	12	3			12				
A-C	242	61			242				

17:45 - 18:00

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	4	1	451	0.010	5	0.0	0.0	8.073	A
C-AB	2	0.38	430	0.004	2	0.0	0.0	8.217	A
C-A	176	44			176				
A-B	10	2			10				
A-C	198	49			198				

18:00 - 18:15

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	4	0.94	462	0.008	4	0.0	0.0	7.848	A
C-AB	1	0.30	409	0.003	1	0.0	0.0	8.672	A
C-A	148	37			148				
A-B	8	2			8				
A-C	166	41			166				

Queue Variation Results for each time segment

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	0.01	0.00	0.00	0.01	0.01			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-AC	0.01	0.01	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

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	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:30 - 17:45

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	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:45 - 18:00

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	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

18:00 - 18:15

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	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2025 Base + Committed, 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	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Lacton Leaze / Grainger Street Priority	T-Junction	Two-way	Two-way	Two-way		0.19	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	154	Stream B-AC	0.19	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
D3	2025 Base + Committed	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	352	100.000
B		ONE HOUR	✓	15	100.000
C		ONE HOUR	✓	405	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
		A	B	C
	A	0	18	334
	B	14	0	1
	C	405	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	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-AC	0.04	9.88	0.0	0.5	A	14	21
C-AB	0.00	0.00	0.0	~1	A	0	0
C-A						372	557
A-B						17	25
A-C						306	460

Main Results for each time segment

07:45 - 08:00

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	11	3	429	0.026	11	0.0	0.0	8.618	A
C-AB	0	0	545	0.000	0	0.0	0.0	0.000	A
C-A	305	76			305				
A-B	14	3			14				
A-C	251	63			251				

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	13	3	409	0.033	13	0.0	0.0	9.109	A
C-AB	0	0	533	0.000	0	0.0	0.0	0.000	A
C-A	364	91			364				
A-B	16	4			16				
A-C	300	75			300				

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	17	4	381	0.043	16	0.0	0.0	9.880	A
C-AB	0	0	517	0.000	0	0.0	0.0	0.000	A
C-A	446	111			446				
A-B	20	5			20				
A-C	368	92			368				

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	17	4	381	0.043	17	0.0	0.0	9.882	A
C-AB	0	0	517	0.000	0	0.0	0.0	0.000	A
C-A	446	111			446				
A-B	20	5			20				
A-C	368	92			368				

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	13	3	409	0.033	14	0.0	0.0	9.111	A
C-AB	0	0	533	0.000	0	0.0	0.0	0.000	A
C-A	364	91			364				
A-B	16	4			16				
A-C	300	75			300				

09:00 - 09:15

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	11	3	429	0.026	11	0.0	0.0	8.625	A
C-AB	0	0	545	0.000	0	0.0	0.0	0.000	A
C-A	305	76			305				
A-B	14	3			14				
A-C	251	63			251				

Queue Variation Results for each time segment

07:45 - 08:00

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	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

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	0.03	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

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	0.04	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

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	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			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	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

09:00 - 09:15

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	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2025 Base + Committed, 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	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Lacton Leaze / Grainger Street Priority	T-Junction	Two-way	Two-way	Two-way		0.14	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	252	Stream B-AC	0.14	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	2025 Base + Committed	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	306	100.000
B		ONE HOUR	✓	6	100.000
C		ONE HOUR	✓	231	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
		A	B	C
	A	0	15	291
	B	6	0	0
	C	230	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	A	0	0	1
	B	0	0	0
	C	0	100	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	0.02	8.91	0.0	0.5	A	6	8
C-AB	0.00	8.51	0.0	0.5	A	2	3
C-A						210	315
A-B						14	21
A-C						267	401

Main Results for each time segment

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	5	1	446	0.010	4	0.0	0.0	8.145	A
C-AB	1	0.32	424	0.003	1	0.0	0.0	8.515	A
C-A	173	43			173				
A-B	11	3			11				
A-C	219	55			219				

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	5	1	431	0.013	5	0.0	0.0	8.450	A
C-AB	2	0.42	448	0.004	2	0.0	0.0	8.180	A
C-A	206	51			206				
A-B	13	3			13				
A-C	262	65			262				

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	7	2	411	0.016	7	0.0	0.0	8.911	A
C-AB	2	0.58	482	0.005	2	0.0	0.0	7.642	A
C-A	252	63			252				
A-B	17	4			17				
A-C	320	80			320				

17:30 - 17:45

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	7	2	411	0.016	7	0.0	0.0	8.911	A
C-AB	2	0.58	482	0.005	2	0.0	0.0	7.507	A
C-A	252	63			252				
A-B	17	4			17				
A-C	320	80			320				

17:45 - 18:00

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	5	1	431	0.013	5	0.0	0.0	8.450	A
C-AB	2	0.42	449	0.004	2	0.0	0.0	7.859	A
C-A	206	51			206				
A-B	13	3			13				
A-C	262	65			262				

18:00 - 18:15

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	5	1	446	0.010	5	0.0	0.0	8.145	A
C-AB	1	0.32	425	0.003	1	0.0	0.0	8.340	A
C-A	173	43			173				
A-B	11	3			11				
A-C	219	55			219				

Queue Variation Results for each time segment

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	0.01	0.00	0.00	0.01	0.01			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-AC	0.01	0.01	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

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	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:30 - 17:45

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	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:45 - 18:00

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	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

18:00 - 18:15

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	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2025 Base + Committed + Development, 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	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Lacton Leaze / Grainger Street Priority	T-Junction	Two-way	Two-way	Two-way		0.81	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	96	Stream B-AC	0.81	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
D5	2025 Base + Committed + Development	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	363	100.000
B		ONE HOUR	✓	58	100.000
C		ONE HOUR	✓	405	100.000

Origin-Destination Data

Demand (Veh/hr)

	To		
	A	B	C
From	A	0	29
	B	57	0
	C	405	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To		
	A	B	C
From	A	0	0
	B	0	0
	C	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-AC	0.17	11.65	0.2	0.8	B	53	80
C-AB	0.00	0.00	0.0	~1	A	0	0
C-A						372	557
A-B						27	40
A-C						306	460

Main Results for each time segment

07:45 - 08:00

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	44	11	421	0.104	43	0.0	0.1	9.508	A
C-AB	0	0	543	0.000	0	0.0	0.0	0.000	A
C-A	305	76			305				
A-B	22	5			22				
A-C	251	63			251				

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	52	13	401	0.130	52	0.1	0.1	10.307	B
C-AB	0	0	531	0.000	0	0.0	0.0	0.000	A
C-A	364	91			364				
A-B	26	7			26				
A-C	300	75			300				

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	64	16	373	0.171	64	0.1	0.2	11.634	B
C-AB	0	0	515	0.000	0	0.0	0.0	0.000	A
C-A	446	111			446				
A-B	32	8			32				
A-C	368	92			368				

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	64	16	373	0.171	64	0.2	0.2	11.650	B
C-AB	0	0	515	0.000	0	0.0	0.0	0.000	A
C-A	446	111			446				
A-B	32	8			32				
A-C	368	92			368				

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	52	13	401	0.130	52	0.2	0.2	10.331	B
C-AB	0	0	531	0.000	0	0.0	0.0	0.000	A
C-A	364	91			364				
A-B	26	7			26				
A-C	300	75			300				

09:00 - 09:15

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	44	11	421	0.104	44	0.2	0.1	9.539	A
C-AB	0	0	543	0.000	0	0.0	0.0	0.000	A
C-A	305	76			305				
A-B	22	5			22				
A-C	251	63			251				

Queue Variation Results for each time segment

07:45 - 08:00

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	0.00	0.00	0.00	0.00	0.00			N/A	N/A

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	0.15	0.00	0.00	0.15	0.15			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-AC	0.20	0.03	0.26	0.46	0.49			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-AC	0.21	0.03	0.27	0.49	0.85			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			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	0.15	0.00	0.00	0.15	0.15			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

09:00 - 09:15

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	0.12	0.00	0.00	0.12	0.12			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2025 Base + Committed + Development, 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	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Lacton Leaze / Grainger Street Priority	T-Junction	Two-way	Two-way	Two-way		0.36	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	205	Stream B-AC	0.36	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
D6	2025 Base + Committed + Development	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	338	100.000
B		ONE HOUR	✓	20	100.000
C		ONE HOUR	✓	231	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
From		A	B	C
	A	0	47	291
	B	20	0	0
	C	230	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
From		A	B	C
	A	0	0	1
	B	0	0	0
	C	0	100	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	0.05	9.34	0.1	0.5	A	18	28
C-AB	0.00	8.56	0.0	0.5	A	2	3
C-A						210	315
A-B						43	65
A-C						267	401

Main Results for each time segment

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	15	4	444	0.034	15	0.0	0.0	8.382	A
C-AB	1	0.32	422	0.003	1	0.0	0.0	8.565	A
C-A	173	43			173				
A-B	35	9			35				
A-C	219	55			219				

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	18	4	429	0.042	18	0.0	0.0	8.764	A
C-AB	2	0.42	446	0.004	2	0.0	0.0	8.235	A
C-A	206	51			206				
A-B	42	11			42				
A-C	262	65			262				

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	22	6	407	0.054	22	0.0	0.1	9.342	A
C-AB	2	0.59	478	0.005	2	0.0	0.0	7.700	A
C-A	252	63			252				
A-B	52	13			52				
A-C	320	80			320				

17:30 - 17:45

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	22	6	407	0.054	22	0.1	0.1	9.343	A
C-AB	2	0.59	479	0.005	2	0.0	0.0	7.558	A
C-A	252	63			252				
A-B	52	13			52				
A-C	320	80			320				

17:45 - 18:00

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	18	4	429	0.042	18	0.1	0.0	8.766	A
C-AB	2	0.42	446	0.004	2	0.0	0.0	7.906	A
C-A	206	51			206				
A-B	42	11			42				
A-C	262	65			262				

18:00 - 18:15

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	15	4	444	0.034	15	0.0	0.0	8.390	A
C-AB	1	0.32	422	0.003	1	0.0	0.0	8.387	A
C-A	173	43			173				
A-B	35	9			35				
A-C	219	55			219				

Queue Variation Results for each time segment

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	0.03	0.00	0.00	0.03	0.03			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-AC	0.04	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

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	0.06	0.03	0.26	0.46	0.49			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:30 - 17:45

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	0.06	0.00	0.00	0.06	0.06			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:45 - 18:00

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	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

18:00 - 18:15

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	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2029 Base + Committed, 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	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Lacton Leaze / Grainger Street Priority	T-Junction	Two-way	Two-way	Two-way		0.19	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	154	Stream B-AC	0.19	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
D7	2029 Base + Committed	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	352	100.000
B		ONE HOUR	✓	15	100.000
C		ONE HOUR	✓	405	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
		A	B	C
	A	0	18	334
	B	14	0	1
	C	405	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	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-AC	0.04	9.88	0.0	0.5	A	14	21
C-AB	0.00	0.00	0.0	~1	A	0	0
C-A						372	557
A-B						17	25
A-C						306	460

Main Results for each time segment

07:45 - 08:00

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	11	3	429	0.026	11	0.0	0.0	8.619	A
C-AB	0	0	545	0.000	0	0.0	0.0	0.000	A
C-A	305	76			305				
A-B	14	3			14				
A-C	251	63			251				

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	13	3	409	0.033	13	0.0	0.0	9.109	A
C-AB	0	0	533	0.000	0	0.0	0.0	0.000	A
C-A	364	91			364				
A-B	16	4			16				
A-C	300	75			300				

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	17	4	381	0.043	16	0.0	0.0	9.880	A
C-AB	0	0	517	0.000	0	0.0	0.0	0.000	A
C-A	446	111			446				
A-B	20	5			20				
A-C	368	92			368				

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	17	4	381	0.043	17	0.0	0.0	9.882	A
C-AB	0	0	517	0.000	0	0.0	0.0	0.000	A
C-A	446	111			446				
A-B	20	5			20				
A-C	368	92			368				

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	13	3	409	0.033	14	0.0	0.0	9.113	A
C-AB	0	0	533	0.000	0	0.0	0.0	0.000	A
C-A	364	91			364				
A-B	16	4			16				
A-C	300	75			300				

09:00 - 09:15

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	11	3	429	0.026	11	0.0	0.0	8.623	A
C-AB	0	0	545	0.000	0	0.0	0.0	0.000	A
C-A	305	76			305				
A-B	14	3			14				
A-C	251	63			251				

Queue Variation Results for each time segment

07:45 - 08:00

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	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

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	0.03	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

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	0.04	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

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	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			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	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

09:00 - 09:15

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	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2029 Base + Committed, 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	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Lacton Leaze / Grainger Street Priority	T-Junction	Two-way	Two-way	Two-way		0.14	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	252	Stream B-AC	0.14	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	2029 Base + Committed	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	306	100.000
B		ONE HOUR	✓	6	100.000
C		ONE HOUR	✓	231	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
		A	B	C
	A	0	15	291
	B	6	0	0
	C	230	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	A	0	0	1
	B	0	0	0
	C	0	100	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	0.02	8.91	0.0	0.5	A	6	8
C-AB	0.00	8.51	0.0	0.5	A	2	3
C-A						210	315
A-B						14	21
A-C						267	401

Main Results for each time segment

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	5	1	446	0.010	4	0.0	0.0	8.145	A
C-AB	1	0.32	424	0.003	1	0.0	0.0	8.515	A
C-A	173	43			173				
A-B	11	3			11				
A-C	219	55			219				

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	5	1	431	0.013	5	0.0	0.0	8.450	A
C-AB	2	0.42	448	0.004	2	0.0	0.0	8.180	A
C-A	206	51			206				
A-B	13	3			13				
A-C	262	65			262				

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	7	2	411	0.016	7	0.0	0.0	8.911	A
C-AB	2	0.58	482	0.005	2	0.0	0.0	7.642	A
C-A	252	63			252				
A-B	17	4			17				
A-C	320	80			320				

17:30 - 17:45

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	7	2	411	0.016	7	0.0	0.0	8.911	A
C-AB	2	0.58	482	0.005	2	0.0	0.0	7.507	A
C-A	252	63			252				
A-B	17	4			17				
A-C	320	80			320				

17:45 - 18:00

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	5	1	431	0.013	5	0.0	0.0	8.450	A
C-AB	2	0.42	449	0.004	2	0.0	0.0	7.859	A
C-A	206	51			206				
A-B	13	3			13				
A-C	262	65			262				

18:00 - 18:15

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	5	1	446	0.010	5	0.0	0.0	8.145	A
C-AB	1	0.32	425	0.003	1	0.0	0.0	8.340	A
C-A	173	43			173				
A-B	11	3			11				
A-C	219	55			219				

Queue Variation Results for each time segment

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	0.01	0.00	0.00	0.01	0.01			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-AC	0.01	0.01	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

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	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:30 - 17:45

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	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:45 - 18:00

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	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

18:00 - 18:15

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	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2029 Base + Committed + Development, 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	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Lacton Leaze / Grainger Street Priority	T-Junction	Two-way	Two-way	Two-way		0.81	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	96	Stream B-AC	0.81	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
D9	2029 Base + Committed + Development	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	363	100.000
B		ONE HOUR	✓	58	100.000
C		ONE HOUR	✓	405	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
	A	B	C	
From	A	0	29	334
	B	57	0	1
	C	405	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	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-AC	0.17	11.65	0.2	0.8	B	53	80
C-AB	0.00	0.00	0.0	~1	A	0	0
C-A						372	557
A-B						27	40
A-C						306	460

Main Results for each time segment

07:45 - 08:00

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	44	11	421	0.104	43	0.0	0.1	9.507	A
C-AB	0	0	543	0.000	0	0.0	0.0	0.000	A
C-A	305	76			305				
A-B	22	5			22				
A-C	251	63			251				

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	52	13	401	0.130	52	0.1	0.1	10.306	B
C-AB	0	0	531	0.000	0	0.0	0.0	0.000	A
C-A	364	91			364				
A-B	26	7			26				
A-C	300	75			300				

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	64	16	373	0.171	64	0.1	0.2	11.632	B
C-AB	0	0	515	0.000	0	0.0	0.0	0.000	A
C-A	446	111			446				
A-B	32	8			32				
A-C	368	92			368				

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	64	16	373	0.171	64	0.2	0.2	11.648	B
C-AB	0	0	515	0.000	0	0.0	0.0	0.000	A
C-A	446	111			446				
A-B	32	8			32				
A-C	368	92			368				

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	52	13	401	0.130	52	0.2	0.2	10.331	B
C-AB	0	0	531	0.000	0	0.0	0.0	0.000	A
C-A	364	91			364				
A-B	26	7			26				
A-C	300	75			300				

09:00 - 09:15

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	44	11	421	0.104	44	0.2	0.1	9.536	A
C-AB	0	0	543	0.000	0	0.0	0.0	0.000	A
C-A	305	76			305				
A-B	22	5			22				
A-C	251	63			251				

Queue Variation Results for each time segment

07:45 - 08:00

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	0.00	0.00	0.00	0.00	0.00			N/A	N/A

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	0.15	0.00	0.00	0.15	0.15			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-AC	0.20	0.03	0.26	0.46	0.49			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-AC	0.21	0.03	0.27	0.49	0.85			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			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	0.15	0.00	0.00	0.15	0.15			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

09:00 - 09:15

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	0.12	0.00	0.00	0.12	0.12			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2029 Base + Committed + Development, 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	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Lacton Leaze / Grainger Street Priority	T-Junction	Two-way	Two-way	Two-way		0.36	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	205	Stream B-AC	0.36	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
D10	2029 Base + Committed + Development	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	338	100.000
B		ONE HOUR	✓	20	100.000
C		ONE HOUR	✓	231	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
From		A	B	C
	A	0	47	291
	B	20	0	0
	C	230	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
From		A	B	C
	A	0	0	1
	B	0	0	0
	C	0	100	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	0.05	9.34	0.1	0.5	A	18	28
C-AB	0.00	8.56	0.0	0.5	A	2	3
C-A						210	315
A-B						43	65
A-C						267	401

Main Results for each time segment

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	15	4	444	0.034	15	0.0	0.0	8.381	A
C-AB	1	0.32	422	0.003	1	0.0	0.0	8.564	A
C-A	173	43			173				
A-B	35	9			35				
A-C	219	55			219				

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	18	4	429	0.042	18	0.0	0.0	8.762	A
C-AB	2	0.42	446	0.004	2	0.0	0.0	8.235	A
C-A	206	51			206				
A-B	42	11			42				
A-C	262	65			262				

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	22	6	407	0.054	22	0.0	0.1	9.340	A
C-AB	2	0.59	478	0.005	2	0.0	0.0	7.699	A
C-A	252	63			252				
A-B	52	13			52				
A-C	320	80			320				

17:30 - 17:45

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	22	6	407	0.054	22	0.1	0.1	9.342	A
C-AB	2	0.59	479	0.005	2	0.0	0.0	7.561	A
C-A	252	63			252				
A-B	52	13			52				
A-C	320	80			320				

17:45 - 18:00

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	18	4	429	0.042	18	0.1	0.0	8.765	A
C-AB	2	0.42	446	0.004	2	0.0	0.0	7.905	A
C-A	206	51			206				
A-B	42	11			42				
A-C	262	65			262				

18:00 - 18:15

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	15	4	444	0.034	15	0.0	0.0	8.388	A
C-AB	1	0.32	422	0.003	1	0.0	0.0	8.388	A
C-A	173	43			173				
A-B	35	9			35				
A-C	219	55			219				

Queue Variation Results for each time segment

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	0.03	0.00	0.00	0.03	0.03			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-AC	0.04	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

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	0.06	0.03	0.26	0.46	0.49			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:30 - 17:45

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	0.06	0.00	0.00	0.06	0.06			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:45 - 18:00

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	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

18:00 - 18:15

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	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2029 Base + Committed + Dev + Mitigation (Reduced Car Trips), 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	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Lacton Leaze / Grainger Street Priority	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	101	Stream B-AC	0.73	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)	Run automatically
D11	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)	AM	With Mitigation (Reduced Car Trips)	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	362	100.000
B		ONE HOUR	✓	53	100.000
C		ONE HOUR	✓	405	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
		A	B	C
	A	0	28	334
	B	52	0	1
	C	405	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

From	To			
	A	B	C	
	0	0	1	
	0	0	0	
	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	0.16	11.43	0.2	0.5	B	49	73
C-AB	0.00	0.00	0.0	~1	A	0	0
C-A						372	557
A-B						26	39
A-C						306	460

Main Results for each time segment

07:45 - 08:00

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	40	10	422	0.095	39	0.0	0.1	9.410	A
C-AB	0	0	543	0.000	0	0.0	0.0	0.000	A
C-A	305	76			305				
A-B	21	5			21				
A-C	251	63			251				

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	48	12	401	0.119	48	0.1	0.1	10.171	B
C-AB	0	0	532	0.000	0	0.0	0.0	0.000	A
C-A	364	91			364				
A-B	25	6			25				
A-C	300	75			300				

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	58	15	373	0.156	58	0.1	0.2	11.419	B
C-AB	0	0	515	0.000	0	0.0	0.0	0.000	A
C-A	446	111			446				
A-B	31	8			31				
A-C	368	92			368				

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	58	15	373	0.156	58	0.2	0.2	11.432	B
C-AB	0	0	515	0.000	0	0.0	0.0	0.000	A
C-A	446	111			446				
A-B	31	8			31				
A-C	368	92			368				

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	48	12	401	0.119	48	0.2	0.1	10.188	B
C-AB	0	0	532	0.000	0	0.0	0.0	0.000	A
C-A	364	91			364				
A-B	25	6			25				
A-C	300	75			300				

09:00 - 09:15

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	40	10	422	0.095	40	0.1	0.1	9.436	A
C-AB	0	0	543	0.000	0	0.0	0.0	0.000	A
C-A	305	76			305				
A-B	21	5			21				
A-C	251	63			251				

Queue Variation Results for each time segment

07:45 - 08:00

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	0.00	0.00	0.10	0.10			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

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	0.13	0.00	0.00	0.13	0.13			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-AC	0.18	0.03	0.26	0.46	0.49			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-AC	0.18	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

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	0.14	0.00	0.00	0.14	0.14			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

09:00 - 09:15

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	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2029 Base + Committed + Dev + Mitigation (Reduced Car Trips), 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	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Lacton Leaze / Grainger Street Priority	T-Junction	Two-way	Two-way	Two-way		0.33	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	211	Stream B-AC	0.33	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)	Run automatically
D12	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)	PM	With Mitigation (Reduced Car Trips)	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	334	100.000
B		ONE HOUR	✓	18	100.000
C		ONE HOUR	✓	231	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
	A	B	C	
From	A	0	43	291
	B	18	0	0
	C	230	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

From	To			
	A	B	C	
	A	0	0	1
	B	0	0	0
	C	0	100	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	0.05	9.28	0.1	0.5	A	17	25
C-AB	0.00	8.56	0.0	0.5	A	2	3
C-A						210	315
A-B						39	59
A-C						267	401

Main Results for each time segment

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	14	3	445	0.030	13	0.0	0.0	8.348	A
C-AB	1	0.32	422	0.003	1	0.0	0.0	8.558	A
C-A	173	43			173				
A-B	32	8			32				
A-C	219	55			219				

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	16	4	429	0.038	16	0.0	0.0	8.717	A
C-AB	2	0.42	446	0.004	2	0.0	0.0	8.228	A
C-A	206	51			206				
A-B	39	10			39				
A-C	262	65			262				

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	20	5	408	0.049	20	0.0	0.1	9.277	A
C-AB	2	0.59	479	0.005	2	0.0	0.0	7.692	A
C-A	252	63			252				
A-B	47	12			47				
A-C	320	80			320				

17:30 - 17:45

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	20	5	408	0.049	20	0.1	0.1	9.279	A
C-AB	2	0.59	479	0.005	2	0.0	0.0	7.551	A
C-A	252	63			252				
A-B	47	12			47				
A-C	320	80			320				

17:45 - 18:00

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	16	4	429	0.038	16	0.1	0.0	8.719	A
C-AB	2	0.42	446	0.004	2	0.0	0.0	7.899	A
C-A	206	51			206				
A-B	39	10			39				
A-C	262	65			262				

18:00 - 18:15

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	14	3	445	0.030	14	0.0	0.0	8.353	A
C-AB	1	0.32	423	0.003	1	0.0	0.0	8.380	A
C-A	173	43			173				
A-B	32	8			32				
A-C	219	55			219				

Queue Variation Results for each time segment

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	0.03	0.00	0.00	0.03	0.03			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-AC	0.04	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

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	0.05	0.03	0.26	0.46	0.49			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:30 - 17:45

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	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:45 - 18:00

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	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

18:00 - 18:15

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	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A



APPENDIX G: ARCADY Output
Maurepas Way Roundabout

Junctions 10		
ARCADY 10 - Roundabout Module		
Version: 10.1.1.1905		
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The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution		

Filename: 2025-02-20 Main Access Roundabout Model - Revised Trips.j10

Path: H:_Planning 2\Current Jobs\GTWVile(BSL)\Analysis\Arcady\2025 Assessments for TA Addendum

Report generation date: 20/02/2025 16:42:36

-
- »2023 Observed, AM
 - »2023 Observed, PM
 - »2025 Base + Committed, AM
 - »2025 Base + Committed, PM
 - »2025 Base + Committed + Development, AM
 - »2025 Base + Committed + Development, PM
 - »2029 Base + Committed, AM
 - »2029 Base + Committed, PM
 - »2029 Base + Committed + Development, AM
 - »2029 Base + Committed + Development, PM
 - »2029 Base + Committed + Dev + Mitigation (Reduced Car Trips), AM
 - »2029 Base + Committed + Dev + Mitigation (Reduced Car Trips), PM

Summary of junction performance

	AM								PM							
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
	2023 Observed															
Arm A	D1	1.0	2.73	0.51	A	4.35	A	26 % [Arm D]	D2	1.7	3.45	0.63	A	5.31	A	16 % [Arm D]
Arm C		1.7	3.89	0.64	A					2.3	4.92	0.70	A			
Arm D		1.8	6.37	0.65	A					2.8	8.77	0.74	A			
Arm E		0.9	6.11	0.46	A					0.4	5.12	0.31	A			
	2025 Base + Committed															
Arm A	D3	1.2	3.02	0.54	A	5.64	A	16 % [Arm D]	D4	1.8	3.68	0.65	A	6.48	A	10 % [Arm D]
Arm C		2.3	4.76	0.70	A					2.8	5.72	0.74	A			
Arm D		2.8	8.93	0.74	A					4.0	11.96	0.81	B			
Arm E		1.4	7.96	0.59	A					0.6	5.56	0.36	A			
	2025 Base + Committed + Development															
Arm A	D5	1.2	3.11	0.55	A	5.86	A	15 % [Arm D]	D6	1.9	3.75	0.65	A	6.77	A	9 % [Arm D]
Arm C		2.3	4.83	0.70	A					2.9	5.94	0.75	A			
Arm D		2.8	9.09	0.74	A					4.3	12.76	0.82	B			
Arm E		1.7	8.82	0.63	A					0.6	5.69	0.38	A			
	2029 Base + Committed															
Arm A	D7	1.3	3.17	0.56	A	6.26	A	13 % [Arm D]	D8	2.1	4.02	0.68	A	7.58	A	7 % [Arm D]
Arm C		2.5	5.20	0.72	A					3.3	6.63	0.77	A			
Arm D		3.3	10.37	0.77	B					5.0	14.73	0.84	B			
Arm E		1.5	8.75	0.61	A					0.6	5.91	0.38	A			
	2029 Base + Committed + Development															
Arm A	D9	1.3	3.27	0.57	A	6.53	A	12 % [Arm D]	D10	2.1	4.05	0.68	A	7.82	A	6 % [Arm D]
Arm C		2.6	5.28	0.72	A					3.4	6.70	0.78	A			
Arm D		3.4	10.58	0.78	B					5.3	15.58	0.85	C			
Arm E		1.9	9.80	0.65	A					0.6	6.05	0.39	A			
	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)															
Arm A	D11	1.3	3.26	0.57	A	6.48	A	12 % [Arm D]	D12	2.1	4.05	0.68	A	7.39	A	7 % [Arm D]
Arm C		2.6	5.26	0.72	A					3.2	6.28	0.76	A			
Arm D		3.4	10.53	0.78	B					4.9	14.43	0.84	B			
Arm E		1.8	9.65	0.65	A					0.6	5.88	0.39	A			

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	Maurepus Way Roundabout (Main Access)
Location	Waterlooville, Hampshire
Site number	
Date	20/02/2025
Version	
Status	Feasibility
Identifier	
Client	Grainger PLC
Jobnumber	GTWVile(BSL).1
Enumerator	MAYERBROWN2K\neyles
Description	Maurepus Way Roundabout AM Peak Revised Trips & Distribution

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 simulation for HCM roundabouts	Use iterations for HCM roundabouts
5.75					✓	Delay	0.85	36.00	20.00		

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)	Run automatically
D1	2023 Observed	AM		ONE HOUR	07:45	09:15	15	✓
D2	2023 Observed	PM		ONE HOUR	16:45	18:15	15	✓
D3	2025 Base + Committed	AM		ONE HOUR	07:45	09:15	15	✓
D4	2025 Base + Committed	PM		ONE HOUR	16:45	18:15	15	✓
D5	2025 Base + Committed + Development	AM		ONE HOUR	07:45	09:15	15	✓
D6	2025 Base + Committed + Development	PM		ONE HOUR	16:45	18:15	15	✓
D7	2029 Base + Committed	AM		ONE HOUR	07:45	09:15	15	✓
D8	2029 Base + Committed	PM		ONE HOUR	16:45	18:15	15	✓
D9	2029 Base + Committed + Development	AM		ONE HOUR	07:45	09:15	15	✓
D10	2029 Base + Committed + Development	PM		ONE HOUR	16:45	18:15	15	✓
D11	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)	AM	With Mitigation (Reduced Car Trips)	ONE HOUR	07:45	09:15	15	✓
D12	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)	PM	With Mitigation (Reduced Car Trips)	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2023 Observed, 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		A, B, C, D, E	4.35	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	26	Arm D	4.35	A

Arms

Arms

Arm	Name	Description	No give-way line
A	Hambledon Road		
B	Retail Park Access Entry Only		
C	A3 Maurepas Way E		
D	A3 Maurepas Way S		
E	Houghton Avenue		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	11.98	11.98	0.0	39.0	71.0	35.0		
B								✓
C	10.90	10.90	0.0	54.0	71.0	36.0		
D	7.30	8.96	15.0	22.0	71.0	43.0		
E	6.75	8.95	7.7	30.0	71.0	43.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.807	3653
B		
C	0.759	3336
D	0.613	2478
E	0.592	2325

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	2023 Observed	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1235	100.000
B					
C		ONE HOUR	✓	1468	100.000
D		ONE HOUR	✓	958	100.000
E		ONE HOUR	✓	459	100.000

Origin-Destination Data

Demand (Veh/hr)

	To					
	A	B	C	D	E	
From	A	0	6	641	526	62
	B	0	0	0	0	0
	C	782	108	40	392	146
	D	481	56	271	28	122
	E	52	11	227	169	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To					
	A	B	C	D	E	
From	A	0	0	7	3	4
	B	0	0	0	0	0
	C	5	1	3	4	8
	D	3	0	5	4	2
	E	4	0	4	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.51	2.73	1.0	A	1133	1700
B						
C	0.64	3.89	1.7	A	1347	2021
D	0.65	6.37	1.8	A	879	1319
E	0.46	6.11	0.9	A	421	632

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	930	232	683	2931	0.317	928	987	0.0	0.5	1.794	A
B			1475				136				
C	1105	276	590	2747	0.402	1103	885	0.0	0.7	2.185	A
D	721	180	855	1868	0.386	719	837	0.0	0.6	3.127	A
E	346	86	1326	1464	0.236	344	248	0.0	0.3	3.214	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	1110	278	817	2825	0.393	1110	1181	0.5	0.6	2.097	A
B			1764				163				
C	1320	330	705	2661	0.496	1318	1059	0.7	1.0	2.679	A
D	861	215	1022	1763	0.488	860	1001	0.6	0.9	3.979	A
E	413	103	1586	1308	0.315	412	296	0.3	0.5	4.014	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	1360	340	999	2681	0.507	1358	1444	0.6	1.0	2.719	A
B			2158				199				
C	1616	404	863	2543	0.636	1613	1295	1.0	1.7	3.861	A
D	1055	264	1251	1621	0.651	1051	1226	0.9	1.8	6.278	A
E	505	126	1939	1097	0.461	504	363	0.5	0.8	6.050	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	1360	340	1002	2679	0.508	1360	1448	1.0	1.0	2.728	A
B			2162				199				
C	1616	404	864	2542	0.636	1616	1298	1.7	1.7	3.889	A
D	1055	264	1253	1620	0.651	1055	1228	1.8	1.8	6.368	A
E	505	126	1944	1094	0.462	505	363	0.8	0.9	6.111	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	1110	278	821	2822	0.393	1112	1186	1.0	0.7	2.108	A
B			1770				163				
C	1320	330	707	2659	0.496	1323	1063	1.7	1.0	2.701	A
D	861	215	1025	1761	0.489	865	1004	1.8	1.0	4.030	A
E	413	103	1593	1304	0.316	414	297	0.9	0.5	4.051	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	930	232	686	2929	0.317	931	991	0.7	0.5	1.804	A
B			1480				136				
C	1105	276	592	2746	0.403	1106	889	1.0	0.7	2.199	A
D	721	180	858	1866	0.387	723	840	1.0	0.6	3.152	A
E	346	86	1331	1460	0.237	346	249	0.5	0.3	3.235	A

2023 Observed, 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		A, B, C, D, E	5.31	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	16	Arm D	5.31	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
D2	2023 Observed	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1632	100.000
B					
C		ONE HOUR	✓	1550	100.000
D		ONE HOUR	✓	1072	100.000
E		ONE HOUR	✓	281	100.000

Origin-Destination Data

Demand (Veh/hr)

	To					
	A	B	C	D	E	
From	A	0	10	794	747	81
	B	0	0	0	0	0
	C	774	135	73	376	192
	D	545	69	290	53	115
	E	48	11	118	104	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To					
		A	B	C	D	E
From	A	0	0	2	1	1
	B	0	0	0	0	0
	C	3	1	2	3	2
	D	1	0	2	2	1
	E	2	0	2	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.63	3.45	1.7	A	1498	2246
B						
C	0.70	4.92	2.3	A	1422	2133
D	0.74	8.77	2.8	A	984	1476
E	0.31	5.12	0.4	A	258	387

Main Results for each time segment

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	1229	307	640	3082	0.399	1226	1026	0.0	0.7	1.937	A
B			1697				169				
C	1167	292	740	2695	0.433	1164	957	0.0	0.8	2.345	A
D	807	202	942	1862	0.433	804	961	0.0	0.8	3.392	A
E	212	53	1455	1414	0.150	211	291	0.0	0.2	2.991	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	1467	367	766	2980	0.492	1466	1227	0.7	1.0	2.375	A
B			2030				202				
C	1393	348	885	2587	0.539	1392	1145	0.8	1.2	3.008	A
D	964	241	1127	1748	0.551	962	1150	0.8	1.2	4.571	A
E	253	63	1740	1245	0.203	252	348	0.2	0.3	3.625	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	1797	449	936	2842	0.632	1794	1500	1.0	1.7	3.423	A
B			2483				247				
C	1707	427	1082	2439	0.700	1702	1400	1.2	2.3	4.854	A
D	1180	295	1378	1592	0.741	1174	1406	1.2	2.8	8.491	A
E	309	77	2126	1018	0.304	309	426	0.3	0.4	5.072	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	1797	449	939	2840	0.633	1797	1505	1.7	1.7	3.451	A
B			2488				248				
C	1707	427	1084	2438	0.700	1706	1404	2.3	2.3	4.922	A
D	1180	295	1382	1590	0.742	1180	1409	2.8	2.8	8.773	A
E	309	77	2135	1013	0.305	309	427	0.4	0.4	5.117	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	1467	367	770	2976	0.493	1470	1235	1.7	1.0	2.394	A
B			2037				203				
C	1393	348	888	2585	0.539	1398	1150	2.3	1.2	3.043	A
D	964	241	1132	1745	0.552	970	1154	2.8	1.2	4.683	A
E	253	63	1752	1239	0.204	253	350	0.4	0.3	3.654	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	1229	307	643	3079	0.399	1230	1031	1.0	0.7	1.947	A
B			1704				170				
C	1167	292	742	2693	0.433	1169	961	1.2	0.8	2.364	A
D	807	202	946	1860	0.434	809	965	1.2	0.8	3.430	A
E	212	53	1463	1409	0.150	212	293	0.3	0.2	3.006	A

2025 Base + Committed, 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		A, B, C, D, E	5.64	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	16	Arm D	5.64	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
D3	2025 Base + Committed	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1264	100.000
B					
C		ONE HOUR	✓	1567	100.000
D		ONE HOUR	✓	1039	100.000
E		ONE HOUR	✓	585	100.000

Origin-Destination Data

Demand (Veh/hr)

	To					
	A	B	C	D	E	
From	A	0	6	645	530	83
	B	0	0	0	0	0
	C	787	108	40	395	237
	D	481	56	271	28	203
	E	66	11	280	228	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To					
From		A	B	C	D	E
	A	0	3	7	3	4
	B	0	0	0	0	0
	C	5	1	2	4	5
	D	3	0	5	4	1
	E	3	3	4	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.54	3.02	1.2	A	1159	1739
B						
C	0.70	4.76	2.3	A	1437	2156
D	0.74	8.93	2.8	A	953	1430
E	0.59	7.96	1.4	A	537	805

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	951	238	766	2867	0.332	949	1001	0.0	0.5	1.875	A
B			1580				135				
C	1179	295	653	2708	0.435	1176	928	0.0	0.8	2.344	A
D	782	196	942	1819	0.430	779	887	0.0	0.7	3.452	A
E	440	110	1329	1467	0.300	439	393	0.0	0.4	3.493	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	1136	284	917	2748	0.413	1135	1198	0.5	0.7	2.231	A
B			1890				162				
C	1408	352	780	2613	0.539	1407	1110	0.8	1.2	2.980	A
D	934	234	1127	1704	0.548	932	1061	0.7	1.2	4.654	A
E	526	131	1589	1311	0.401	525	470	0.4	0.7	4.572	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	1391	348	1120	2588	0.538	1389	1463	0.7	1.2	3.001	A
B			2311				197				
C	1725	431	955	2483	0.695	1720	1357	1.2	2.2	4.696	A
D	1144	286	1378	1548	0.739	1138	1297	1.2	2.7	8.643	A
E	644	161	1942	1100	0.585	641	574	0.7	1.4	7.796	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	1391	348	1125	2584	0.538	1391	1469	1.2	1.2	3.018	A
B			2317				198				
C	1725	431	957	2481	0.695	1725	1361	2.2	2.3	4.756	A
D	1144	286	1381	1546	0.740	1144	1300	2.7	2.8	8.930	A
E	644	161	1949	1096	0.588	644	576	1.4	1.4	7.964	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	1136	284	923	2743	0.414	1138	1205	1.2	0.7	2.245	A
B			1899				163				
C	1408	352	783	2611	0.539	1413	1115	2.3	1.2	3.014	A
D	934	234	1131	1702	0.549	940	1065	2.8	1.2	4.767	A
E	526	131	1599	1305	0.403	529	472	1.4	0.7	4.652	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	951	238	771	2863	0.332	952	1006	0.7	0.5	1.886	A
B			1587				136				
C	1179	295	655	2707	0.436	1181	932	1.2	0.8	2.361	A
D	782	196	946	1817	0.431	784	890	1.2	0.8	3.491	A
E	440	110	1335	1463	0.301	441	394	0.7	0.4	3.524	A

2025 Base + Committed, 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		A, B, C, D, E	6.48	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	10	Arm D	6.48	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	2025 Base + Committed	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1653	100.000
B					
C		ONE HOUR	✓	1614	100.000
D		ONE HOUR	✓	1127	100.000
E		ONE HOUR	✓	336	100.000

Origin-Destination Data

Demand (Veh/hr)

	To					
	A	B	C	D	E	
From	A	0	10	798	751	94
	B	0	0	0	0	0
	C	778	135	73	378	250
	D	547	69	291	53	167
	E	54	11	141	130	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To					
		A	B	C	D	E
From	A	0	0	2	1	1
	B	0	0	0	0	0
	C	3	1	0	3	2
	D	1	0	2	2	1
	E	2	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.65	3.68	1.8	A	1517	2275
B						
C	0.74	5.72	2.8	A	1481	2222
D	0.81	11.96	4.0	B	1034	1551
E	0.36	5.56	0.6	A	308	462

Main Results for each time segment

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	1244	311	677	3054	0.408	1242	1035	0.0	0.7	1.984	A
B			1750				169				
C	1215	304	772	2675	0.454	1212	978	0.0	0.8	2.456	A
D	848	212	999	1828	0.464	845	985	0.0	0.9	3.650	A
E	253	63	1460	1422	0.178	252	384	0.0	0.2	3.075	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	1486	372	810	2947	0.504	1485	1238	0.7	1.0	2.460	A
B			2093				202				
C	1451	363	923	2562	0.566	1449	1170	0.8	1.3	3.230	A
D	1013	253	1194	1707	0.594	1011	1178	0.9	1.4	5.153	A
E	302	76	1746	1252	0.241	302	459	0.2	0.3	3.784	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	1820	455	989	2803	0.649	1817	1511	1.0	1.8	3.640	A
B			2559				247				
C	1777	444	1129	2407	0.738	1771	1430	1.3	2.8	5.608	A
D	1241	310	1460	1543	0.804	1231	1441	1.4	3.9	11.224	B
E	370	92	2131	1024	0.361	369	560	0.3	0.6	5.490	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	1820	455	994	2799	0.650	1820	1518	1.8	1.8	3.677	A
B			2566				248				
C	1777	444	1132	2406	0.739	1777	1434	2.8	2.8	5.723	A
D	1241	310	1464	1540	0.806	1240	1444	3.9	4.0	11.963	B
E	370	92	2142	1017	0.364	370	563	0.6	0.6	5.562	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	1486	372	817	2941	0.505	1489	1248	1.8	1.0	2.484	A
B			2103				203				
C	1451	363	927	2559	0.567	1457	1176	2.8	1.3	3.285	A
D	1013	253	1200	1703	0.595	1023	1183	4.0	1.5	5.369	A
E	302	76	1762	1243	0.243	303	462	0.6	0.3	3.835	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	1244	311	681	3051	0.408	1246	1040	1.0	0.7	1.997	A
B			1757				170				
C	1215	304	775	2673	0.455	1217	983	1.3	0.8	2.476	A
D	848	212	1003	1825	0.465	851	989	1.5	0.9	3.702	A
E	253	63	1468	1417	0.178	253	385	0.3	0.2	3.095	A

2025 Base + Committed + Development, 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		A, B, C, D, E	5.86	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	15	Arm D	5.86	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
D5	2025 Base + Committed + Development	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1266	100.000
B					
C		ONE HOUR	✓	1575	100.000
D		ONE HOUR	✓	1041	100.000
E		ONE HOUR	✓	628	100.000

Origin-Destination Data

Demand (Veh/hr)

	To					
		A	B	C	D	E
	A	0	6	645	530	85
	B	0	0	0	0	0
	C	787	108	40	395	245
	D	481	56	271	28	205
	E	70	11	311	236	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To					
From		A	B	C	D	E
	A	0	4	7	3	3
	B	0	0	0	0	0
	C	5	1	2	4	5
	D	3	0	5	2	1
	E	3	0	3	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.55	3.11	1.2	A	1162	1743
B						
C	0.70	4.83	2.3	A	1445	2168
D	0.74	9.09	2.8	A	955	1433
E	0.63	8.82	1.7	A	576	864

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	953	238	796	2845	0.335	951	1004	0.0	0.5	1.898	A
B			1611				136				
C	1186	296	660	2709	0.438	1183	951	0.0	0.8	2.354	A
D	784	196	950	1816	0.432	781	893	0.0	0.8	3.467	A
E	473	118	1329	1473	0.321	471	402	0.0	0.5	3.588	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	1138	285	952	2722	0.418	1137	1201	0.5	0.7	2.270	A
B			1927				162				
C	1416	354	789	2612	0.542	1414	1138	0.8	1.2	3.002	A
D	936	234	1136	1701	0.550	934	1068	0.8	1.2	4.684	A
E	565	141	1590	1316	0.429	563	480	0.5	0.7	4.778	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	1394	348	1162	2556	0.545	1392	1468	0.7	1.2	3.087	A
B			2356				199				
C	1734	434	965	2480	0.699	1730	1391	1.2	2.3	4.768	A
D	1146	287	1389	1543	0.743	1140	1306	1.2	2.8	8.785	A
E	691	173	1942	1104	0.626	688	587	0.7	1.6	8.582	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	1394	348	1168	2552	0.546	1394	1473	1.2	1.2	3.108	A
B			2363				199				
C	1734	434	968	2478	0.700	1734	1395	2.3	2.3	4.834	A
D	1146	287	1393	1541	0.744	1146	1309	2.8	2.8	9.088	A
E	691	173	1950	1099	0.629	691	589	1.6	1.7	8.815	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	1138	285	960	2716	0.419	1140	1208	1.2	0.7	2.286	A
B			1936				163				
C	1416	354	793	2609	0.543	1420	1144	2.3	1.2	3.040	A
D	936	234	1141	1698	0.551	942	1072	2.8	1.2	4.804	A
E	565	141	1600	1310	0.431	568	483	1.7	0.8	4.879	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	953	238	801	2841	0.335	954	1009	0.7	0.5	1.907	A
B			1618				137				
C	1186	296	663	2707	0.438	1187	955	1.2	0.8	2.373	A
D	784	196	954	1814	0.432	786	896	1.2	0.8	3.509	A
E	473	118	1336	1468	0.322	474	403	0.8	0.5	3.623	A

2025 Base + Committed + Development, 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		A, B, C, D, E	6.77	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	9	Arm D	6.77	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
D6	2025 Base + Committed + Development	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1656	100.000
B					
C		ONE HOUR	✓	1638	100.000
D		ONE HOUR	✓	1133	100.000
E		ONE HOUR	✓	350	100.000

Origin-Destination Data

Demand (Veh/hr)

	To					
		A	B	C	D	E
From	A	0	10	798	751	97
	B	0	0	0	0	0
	C	778	135	73	378	274
	D	547	69	291	53	173
	E	56	11	151	132	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To					
		A	B	C	D	E
From	A	0	1	2	1	1
	B	0	0	0	0	0
	C	3	0	0	3	1
	D	1	0	2	2	0
	E	2	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.65	3.75	1.9	A	1520	2279
B						
C	0.75	5.94	2.9	A	1503	2255
D	0.82	12.76	4.3	B	1040	1559
E	0.38	5.69	0.6	A	321	482

Main Results for each time segment

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	1247	312	686	3042	0.410	1244	1036	0.0	0.7	2.000	A
B			1761				169				
C	1233	308	776	2680	0.460	1230	986	0.0	0.8	2.478	A
D	853	213	1019	1821	0.468	849	987	0.0	0.9	3.690	A
E	263	66	1460	1423	0.185	263	408	0.0	0.2	3.103	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	1489	372	821	2934	0.507	1487	1239	0.7	1.0	2.487	A
B			2107				202				
C	1473	368	928	2566	0.574	1471	1179	0.8	1.3	3.282	A
D	1019	255	1218	1698	0.600	1016	1180	0.9	1.5	5.261	A
E	315	79	1746	1253	0.251	314	488	0.2	0.3	3.832	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	1823	456	1002	2788	0.654	1820	1512	1.0	1.9	3.707	A
B			2575				247				
C	1803	451	1135	2410	0.748	1797	1441	1.3	2.9	5.812	A
D	1247	312	1489	1530	0.815	1237	1443	1.5	4.1	11.872	B
E	385	96	2130	1025	0.376	384	596	0.3	0.6	5.606	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	1823	456	1007	2784	0.655	1823	1520	1.9	1.9	3.746	A
B			2583				248				
C	1803	451	1137	2408	0.749	1803	1445	2.9	2.9	5.945	A
D	1247	312	1494	1527	0.817	1247	1447	4.1	4.3	12.764	B
E	385	96	2142	1018	0.378	385	599	0.6	0.6	5.687	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	1489	372	828	2928	0.508	1492	1250	1.9	1.0	2.512	A
B			2117				204				
C	1473	368	931	2563	0.575	1479	1186	2.9	1.4	3.341	A
D	1019	255	1225	1694	0.601	1030	1185	4.3	1.5	5.507	A
E	315	79	1763	1243	0.253	316	492	0.6	0.3	3.885	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	1247	312	690	3039	0.410	1248	1042	1.0	0.7	2.013	A
B			1769				170				
C	1233	308	779	2677	0.461	1235	990	1.4	0.9	2.500	A
D	853	213	1023	1819	0.469	856	991	1.5	0.9	3.749	A
E	263	66	1468	1418	0.186	264	410	0.3	0.2	3.122	A

2029 Base + Committed, 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		A, B, C, D, E	6.26	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	13	Arm D	6.26	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
D7	2029 Base + Committed	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1305	100.000
B					
C		ONE HOUR	✓	1611	100.000
D		ONE HOUR	✓	1071	100.000
E		ONE HOUR	✓	585	100.000

Origin-Destination Data

Demand (Veh/hr)

	To					
	A	B	C	D	E	
From	A	0	6	668	548	83
	B	0	0	0	0	0
	C	815	108	42	409	237
	D	501	56	283	28	203
	E	66	11	280	228	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To					
From		A	B	C	D	E
	A	0	0	7	3	4
	B	0	0	0	0	0
	C	5	1	2	4	5
	D	3	0	5	4	1
	E	3	0	4	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.56	3.17	1.3	A	1197	1796
B						
C	0.72	5.20	2.5	A	1478	2217
D	0.77	10.37	3.3	B	983	1474
E	0.61	8.75	1.5	A	537	805

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	982	246	777	2858	0.344	980	1037	0.0	0.5	1.914	A
B			1622				136				
C	1213	303	666	2698	0.449	1210	956	0.0	0.8	2.413	A
D	806	202	965	1805	0.447	803	911	0.0	0.8	3.582	A
E	440	110	1375	1440	0.306	439	393	0.0	0.4	3.588	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	1173	293	930	2738	0.428	1172	1240	0.5	0.7	2.298	A
B			1939				162				
C	1448	362	797	2601	0.557	1447	1143	0.8	1.2	3.115	A
D	963	241	1154	1687	0.571	961	1089	0.8	1.3	4.942	A
E	526	131	1645	1279	0.411	525	469	0.4	0.7	4.771	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	1437	359	1135	2576	0.558	1435	1515	0.7	1.3	3.149	A
B			2371				198				
C	1774	443	974	2468	0.719	1769	1397	1.2	2.5	5.112	A
D	1179	295	1411	1527	0.772	1172	1332	1.3	3.2	9.906	A
E	644	161	2009	1060	0.607	641	574	0.7	1.5	8.514	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	1437	359	1140	2571	0.559	1437	1521	1.3	1.3	3.172	A
B			2378				199				
C	1774	443	977	2466	0.719	1774	1401	2.5	2.5	5.196	A
D	1179	295	1415	1525	0.773	1179	1335	3.2	3.3	10.368	B
E	644	161	2018	1055	0.610	644	576	1.5	1.5	8.749	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	1173	293	937	2732	0.429	1175	1249	1.3	0.8	2.317	A
B			1949				164				
C	1448	362	800	2598	0.557	1453	1149	2.5	1.3	3.159	A
D	963	241	1159	1684	0.572	971	1094	3.3	1.4	5.101	A
E	526	131	1657	1271	0.414	529	473	1.5	0.7	4.872	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	982	246	782	2855	0.344	983	1042	0.8	0.5	1.926	A
B			1629				137				
C	1213	303	669	2696	0.450	1215	960	1.3	0.8	2.434	A
D	806	202	969	1802	0.447	808	915	1.4	0.8	3.629	A
E	440	110	1383	1436	0.307	441	394	0.7	0.4	3.623	A

2029 Base + Committed, 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		A, B, C, D, E	7.58	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	7	Arm D	7.58	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	2029 Base + Committed	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1707	100.000
B					
C		ONE HOUR	✓	1657	100.000
D		ONE HOUR	✓	1156	100.000
E		ONE HOUR	✓	336	100.000

Origin-Destination Data

Demand (Veh/hr)

	To					
	A	B	C	D	E	
From	A	0	10	826	777	94
	B	0	0	0	0	0
	C	805	135	76	391	250
	D	566	69	301	53	167
	E	54	11	141	130	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To					
From		A	B	C	D	E
	A	0	0	2	2	1
	B	0	0	0	0	0
	C	3	1	0	3	5
	D	1	0	2	2	1
	E	2	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.68	4.02	2.1	A	1566	2350
B						
C	0.77	6.63	3.3	A	1520	2281
D	0.84	14.73	5.0	B	1061	1591
E	0.38	5.91	0.6	A	308	462

Main Results for each time segment

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	1285	321	687	3032	0.424	1282	1069	0.0	0.7	2.053	A
B			1800				169				
C	1247	312	792	2643	0.472	1244	1009	0.0	0.9	2.567	A
D	870	218	1021	1810	0.481	867	1014	0.0	0.9	3.801	A
E	253	63	1504	1396	0.181	252	383	0.0	0.2	3.146	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	1535	384	822	2924	0.525	1533	1279	0.7	1.1	2.586	A
B			2153				202				
C	1490	372	946	2527	0.590	1487	1207	0.9	1.4	3.457	A
D	1039	260	1221	1686	0.616	1037	1213	0.9	1.6	5.522	A
E	302	76	1799	1221	0.247	302	459	0.2	0.3	3.914	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	1879	470	1002	2780	0.676	1876	1559	1.1	2.1	3.966	A
B			2631				246				
C	1824	456	1158	2368	0.770	1817	1474	1.4	3.3	6.447	A
D	1273	318	1492	1517	0.839	1260	1483	1.6	4.8	13.383	B
E	370	92	2192	987	0.375	369	559	0.3	0.6	5.812	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	1879	470	1008	2775	0.677	1879	1568	2.1	2.1	4.021	A
B			2640				248				
C	1824	456	1160	2366	0.771	1824	1479	3.3	3.3	6.633	A
D	1273	318	1497	1514	0.841	1272	1487	4.8	5.0	14.727	B
E	370	92	2207	979	0.378	370	562	0.6	0.6	5.912	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	1535	384	830	2917	0.526	1538	1291	2.1	1.1	2.617	A
B			2165				204				
C	1490	372	951	2524	0.590	1497	1214	3.3	1.5	3.533	A
D	1039	260	1228	1681	0.618	1053	1219	5.0	1.6	5.846	A
E	302	76	1819	1209	0.250	303	463	0.6	0.3	3.978	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	1285	321	691	3029	0.424	1287	1075	1.1	0.7	2.067	A
B			1808				170				
C	1247	312	795	2641	0.472	1250	1014	1.5	0.9	2.591	A
D	870	218	1026	1808	0.481	873	1019	1.6	0.9	3.865	A
E	253	63	1513	1391	0.182	253	386	0.3	0.2	3.165	A

2029 Base + Committed + Development, 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		A, B, C, D, E	6.53	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	12	Arm D	6.53	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
D9	2029 Base + Committed + Development	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1307	100.000
B					
C		ONE HOUR	✓	1619	100.000
D		ONE HOUR	✓	1073	100.000
E		ONE HOUR	✓	628	100.000

Origin-Destination Data

Demand (Veh/hr)

	To					
		A	B	C	D	E
From	A	0	6	668	548	85
	B	0	0	0	0	0
	C	815	108	42	409	245
	D	501	56	283	28	205
	E	70	11	311	236	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To					
From		A	B	C	D	E
	A	0	4	7	3	3
	B	0	0	0	0	0
	C	5	1	2	4	5
	D	3	0	5	2	1
	E	3	0	3	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.57	3.27	1.3	A	1199	1799
B						
C	0.72	5.28	2.6	A	1486	2228
D	0.78	10.58	3.4	B	985	1477
E	0.65	9.80	1.9	A	576	864

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	984	246	806	2836	0.347	982	1040	0.0	0.5	1.940	A
B			1652				136				
C	1219	305	673	2698	0.452	1216	979	0.0	0.8	2.423	A
D	808	202	972	1802	0.448	805	917	0.0	0.8	3.598	A
E	473	118	1375	1445	0.327	471	402	0.0	0.5	3.689	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	1175	294	964	2712	0.433	1174	1244	0.5	0.8	2.340	A
B			1976				162				
C	1455	364	805	2600	0.560	1454	1171	0.8	1.3	3.138	A
D	965	241	1163	1684	0.573	963	1096	0.8	1.3	4.979	A
E	565	141	1645	1282	0.440	563	480	0.5	0.8	4.998	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	1439	360	1177	2544	0.566	1437	1519	0.8	1.3	3.246	A
B			2415				198				
C	1783	446	985	2465	0.723	1777	1430	1.3	2.6	5.193	A
D	1181	295	1422	1523	0.776	1174	1340	1.3	3.3	10.084	B
E	691	173	2009	1064	0.650	687	587	0.8	1.8	9.462	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	1439	360	1183	2539	0.567	1439	1526	1.3	1.3	3.271	A
B			2423				199				
C	1783	446	988	2463	0.724	1782	1436	2.6	2.6	5.285	A
D	1181	295	1426	1520	0.777	1181	1344	3.3	3.4	10.575	B
E	691	173	2018	1058	0.653	691	589	1.8	1.9	9.797	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	1175	294	973	2705	0.434	1177	1253	1.3	0.8	2.361	A
B			1987				164				
C	1455	364	809	2597	0.560	1461	1178	2.6	1.3	3.182	A
D	965	241	1168	1680	0.574	973	1102	3.4	1.4	5.146	A
E	565	141	1657	1275	0.443	569	483	1.9	0.8	5.126	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	984	246	811	2832	0.347	985	1046	0.8	0.5	1.949	A
B			1660				137				
C	1219	305	676	2696	0.452	1221	983	1.3	0.8	2.442	A
D	808	202	976	1799	0.449	810	921	1.4	0.8	3.649	A
E	473	118	1383	1440	0.328	474	404	0.8	0.5	3.730	A

2029 Base + Committed + Development, 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		A, B, C, D, E	7.82	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	6	Arm D	7.82	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
D10	2029 Base + Committed + Development	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1710	100.000
B					
C		ONE HOUR	✓	1681	100.000
D		ONE HOUR	✓	1162	100.000
E		ONE HOUR	✓	350	100.000

Origin-Destination Data

Demand (Veh/hr)

	To					
		A	B	C	D	E
From	A	0	10	826	777	97
	B	0	0	0	0	0
	C	805	135	76	391	274
	D	566	69	301	53	173
	E	56	11	151	132	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To					
		A	B	C	D	E
From	A	0	1	2	1	1
	B	0	0	0	0	0
	C	3	0	0	3	1
	D	1	0	2	2	0
	E	2	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.68	4.05	2.1	A	1569	2354
B						
C	0.78	6.70	3.4	A	1543	2314
D	0.85	15.58	5.3	C	1066	1599
E	0.39	6.05	0.6	A	321	482

Main Results for each time segment

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	1287	322	696	3034	0.424	1284	1071	0.0	0.7	2.054	A
B			1812				169				
C	1266	316	795	2665	0.475	1262	1016	0.0	0.9	2.560	A
D	875	219	1041	1807	0.484	871	1016	0.0	0.9	3.830	A
E	263	66	1504	1397	0.189	263	408	0.0	0.2	3.171	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	1537	384	833	2924	0.526	1536	1280	0.7	1.1	2.590	A
B			2166				202				
C	1511	378	951	2548	0.593	1509	1216	0.9	1.4	3.457	A
D	1045	261	1245	1681	0.621	1042	1215	0.9	1.6	5.609	A
E	315	79	1799	1222	0.258	314	488	0.2	0.3	3.965	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	1883	471	1015	2778	0.678	1879	1561	1.1	2.1	3.988	A
B			2647				246				
C	1851	463	1163	2389	0.775	1843	1485	1.4	3.3	6.507	A
D	1279	320	1521	1510	0.847	1266	1485	1.6	5.0	14.014	B
E	385	96	2191	989	0.390	384	595	0.3	0.6	5.944	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	1883	471	1021	2772	0.679	1883	1570	2.1	2.1	4.045	A
B			2656				248				
C	1851	463	1166	2387	0.775	1851	1490	3.3	3.4	6.704	A
D	1279	320	1527	1507	0.849	1278	1490	5.0	5.3	15.576	C
E	385	96	2206	980	0.393	385	599	0.6	0.6	6.054	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	1537	384	841	2917	0.527	1541	1294	2.1	1.1	2.625	A
B			2179				204				
C	1511	378	955	2545	0.594	1519	1224	3.4	1.5	3.536	A
D	1045	261	1253	1676	0.623	1059	1221	5.3	1.7	5.969	A
E	315	79	1819	1209	0.260	316	493	0.6	0.4	4.034	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	1287	322	700	3031	0.425	1289	1077	1.1	0.7	2.068	A
B			1820				170				
C	1266	316	798	2662	0.475	1268	1021	1.5	0.9	2.586	A
D	875	219	1046	1804	0.485	878	1020	1.7	0.9	3.897	A
E	263	66	1513	1391	0.189	264	410	0.4	0.2	3.197	A

2029 Base + Committed + Dev + Mitigation (Reduced Car Trips), 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		A, B, C, D, E	6.48	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	12	Arm D	6.48	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)	Run automatically
D11	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)	AM	With Mitigation (Reduced Car Trips)	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1306	100.000
B					
C		ONE HOUR	✓	1618	100.000
D		ONE HOUR	✓	1073	100.000
E		ONE HOUR	✓	623	100.000

Origin-Destination Data

Demand (Veh/hr)

	To					
	A	B	C	D	E	
From	A	0	6	668	548	84
	B	0	0	0	0	0
	C	815	108	42	409	244
	D	501	56	283	28	205
	E	70	11	307	235	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To					
		A	B	C	D	E
From	A	0	4	7	3	3
	B	0	0	0	0	0
	C	5	1	2	4	5
	D	3	0	5	2	1
	E	3	0	3	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.57	3.26	1.3	A	1198	1798
B						
C	0.72	5.26	2.6	A	1485	2227
D	0.78	10.53	3.4	B	985	1477
E	0.65	9.65	1.8	A	572	858

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	983	246	802	2839	0.346	981	1040	0.0	0.5	1.936	A
B			1648				136				
C	1218	305	672	2699	0.451	1215	976	0.0	0.8	2.420	A
D	808	202	971	1803	0.448	805	916	0.0	0.8	3.595	A
E	469	117	1375	1444	0.325	467	400	0.0	0.5	3.678	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	1174	294	960	2715	0.432	1173	1244	0.5	0.8	2.333	A
B			1971				162				
C	1455	364	804	2601	0.559	1453	1167	0.8	1.3	3.132	A
D	965	241	1161	1685	0.573	963	1095	0.8	1.3	4.971	A
E	560	140	1645	1282	0.437	559	478	0.5	0.8	4.968	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	1438	359	1171	2549	0.564	1436	1519	0.8	1.3	3.230	A
B			2409				198				
C	1781	445	983	2467	0.722	1776	1426	1.3	2.5	5.175	A
D	1181	295	1420	1524	0.775	1174	1339	1.3	3.3	10.049	B
E	686	171	2009	1064	0.645	682	584	0.8	1.8	9.335	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	1438	359	1178	2543	0.565	1438	1526	1.3	1.3	3.255	A
B			2416				199				
C	1781	445	985	2465	0.723	1781	1431	2.5	2.6	5.263	A
D	1181	295	1424	1522	0.776	1181	1343	3.3	3.4	10.533	B
E	686	171	2018	1058	0.648	686	587	1.8	1.8	9.648	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	1174	294	969	2708	0.434	1176	1253	1.3	0.8	2.352	A
B			1981				164				
C	1455	364	807	2598	0.560	1460	1174	2.6	1.3	3.178	A
D	965	241	1166	1681	0.574	973	1101	3.4	1.4	5.136	A
E	560	140	1657	1275	0.439	564	482	1.8	0.8	5.095	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	983	246	808	2835	0.347	984	1046	0.8	0.5	1.946	A
B			1655				137				
C	1218	305	675	2697	0.452	1220	980	1.3	0.8	2.441	A
D	808	202	975	1800	0.449	810	920	1.4	0.8	3.645	A
E	469	117	1383	1440	0.326	470	402	0.8	0.5	3.718	A

2029 Base + Committed + Dev + Mitigation (Reduced Car Trips), 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		A, B, C, D, E	7.39	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	7	Arm D	7.39	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)	Run automatically
D12	2029 Base + Committed + Dev + Mitigation (Reduced Car Trips)	PM	With Mitigation (Reduced Car Trips)	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1710	100.000
B					
C		ONE HOUR	✓	1678	100.000
D		ONE HOUR	✓	1161	100.000
E		ONE HOUR	✓	349	100.000

Origin-Destination Data

Demand (Veh/hr)

	To					
	A	B	C	D	E	
From	A	0	10	826	777	97
	B	0	0	0	0	0
	C	805	135	76	391	271
	D	566	69	301	53	172
	E	56	11	150	132	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To					
		A	B	C	D	E
From	A	0	1	2	1	1
	B	0	0	0	0	0
	C	0	0	3	1	1
	D	0	0	2	2	0
	E	0	0	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.68	4.05	2.1	A	1569	2354
B						
C	0.76	6.28	3.2	A	1540	2310
D	0.84	14.43	4.9	B	1065	1598
E	0.39	5.88	0.6	A	320	480

Main Results for each time segment

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	1287	322	695	3034	0.424	1284	1071	0.0	0.7	2.054	A
B			1811				169				
C	1263	316	795	2702	0.467	1260	1016	0.0	0.9	2.489	A
D	874	219	1039	1821	0.480	870	1016	0.0	0.9	3.772	A
E	263	66	1504	1410	0.186	262	405	0.0	0.2	3.132	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	1537	384	832	2924	0.526	1536	1281	0.7	1.1	2.592	A
B			2166				202				
C	1508	377	951	2584	0.584	1506	1215	0.9	1.4	3.336	A
D	1044	261	1243	1697	0.615	1041	1215	0.9	1.6	5.469	A
E	314	78	1799	1236	0.254	313	485	0.2	0.3	3.899	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	1883	471	1014	2777	0.678	1879	1562	1.1	2.1	3.992	A
B			2647				246				
C	1848	462	1163	2423	0.763	1841	1484	1.4	3.1	6.114	A
D	1278	320	1518	1528	0.837	1266	1485	1.6	4.7	13.158	B
E	384	96	2193	1004	0.383	383	591	0.3	0.6	5.783	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	1883	471	1020	2772	0.679	1883	1571	2.1	2.1	4.049	A
B			2655				248				
C	1848	462	1166	2420	0.763	1847	1489	3.1	3.2	6.275	A
D	1278	320	1524	1525	0.838	1277	1490	4.7	4.9	14.428	B
E	384	96	2207	996	0.386	384	594	0.6	0.6	5.882	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	1537	384	840	2917	0.527	1541	1293	2.1	1.1	2.623	A
B			2177				204				
C	1508	377	955	2581	0.585	1516	1222	3.2	1.4	3.400	A
D	1044	261	1250	1692	0.617	1057	1221	4.9	1.6	5.779	A
E	314	78	1818	1225	0.256	315	489	0.6	0.3	3.961	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	1287	322	700	3030	0.425	1289	1077	1.1	0.7	2.068	A
B			1819				170				
C	1263	316	798	2700	0.468	1265	1020	1.4	0.9	2.512	A
D	874	219	1044	1819	0.481	877	1020	1.6	0.9	3.833	A
E	263	66	1513	1405	0.187	263	407	0.3	0.2	3.157	A