



Beadlow Manor  
Preliminary Transport Assessment  
For  
Terra Strategic

## Document Control Sheet

Preliminary Transport Assessment

Beadlow Manor

Terra Strategic

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## 1.0 Introduction

- 1.1 Motion has been appointed to prepare this Preliminary Transport Assessment in relation to development proposals at Beadlow Manor, Ampthill Road within the administrative boundary of Central Bedfordshire.
- 1.2 The site is located south of Ampthill Road (A507) and is located approximately 3.5 kilometres west of Shefford. The site is located within close proximity to Campton Road to the south and Clophill Road to the west. Once constructed, the development will benefit from a wide range of services and amenities and bus stops will provide services into neighbouring town centres.
- 1.3 The current proposals seek the allocation of the Beadlow Manor site to provide in the region of 1,600 residential dwellings to be served by a new neighbourhood centre and a three-form entry primary/middle school. Beadlow Manor Hotel will be retained whilst the golf course will be reconfigured and will continue to provide 18 holes and a new clubhouse.
- 1.4 This Preliminary Transport Assessment has been prepared to assess the potential of improvements to the local public transport network to serve the site, the likely trip attraction of the development proposals and the effect of the development on the highway network local to the site.
- 1.5 Following this introduction, the report is split into six sections as follows:
  - ▶ Section 2 - outlines relevant transport policy and guidance at a national, regional and local level;
  - ▶ Section 3 – summarises the existing transport network in the vicinity of the site;
  - ▶ Section 4 – outlines the possible improvements to the local public transport network that could be implemented to serve the site;
  - ▶ Section 5 – considers the effect development of the site would result in, having regard to traffic attraction and distribution;
  - ▶ Section 6 – outlines the results of junction capacity testing; and,
  - ▶ Section 7 – summarises and concludes the report.

## 2.0 Policy Context

2.1 This section summarises relevant transport policy documents against which the development proposals would be considered. The most relevant policy document relating to the study are as follows:

- ▶ National Planning Policy Framework (June 2019); and,
- ▶ Central Bedfordshire Pre-submission Local Plan (January 2018).

### National Planning Policy Framework (NPPF)

2.2 The current version of the National Planning Policy Framework (NPPF) was published in June 2019 and sets out the Government's planning policies for England and how these are expected to be applied.

2.3 In promoting sustainable transport, the NPPF identifies at paragraph 103 that:

*"Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making."*

2.4 Paragraph 108 of the NPPF states that:

*"In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:*

- ▶ *appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
- ▶ *safe and suitable access to the site can be achieved for all users; and*
- ▶ *any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."*

2.5 Furthermore, paragraph 109 states that:

*"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."*

### Central Bedfordshire Pre-submission Local Plan

2.6 The Local Plan will be the key strategic planning document for Central Bedfordshire and is currently in pre-submission form. Whilst yet to be adopted, it is considered that the policies within this Plan will be considered when decisions are being made with regard to planning applications.

2.7 Policy T1 considers the mitigation of transport impacts on the network, stating:

*"Travel Plans, Travel Plan Statements and Transport Assessments will be required for any development which meets or exceeds the Gross Floor Area thresholds set out in the Council's Guidance on Travel Plans and Transport Assessment.*

*It should be demonstrated how the proposal will seek to reduce the need to travel and secure a modal shift towards sustainable forms of transport. This should be through an approach which first considers the ability to cater for walking and cycling, provide suitable public transport services, and make better use of existing highway capacity before considering the provision of additional roads.*

*Evidence must be provided in Transport Assessments to demonstrate:*

- ▶ *The principles established to give priority to pedestrians and other vulnerable road users in new developments, together with links to local service provision.*
- ▶ *Comprehensive and convenient pedestrian and cycle links to schools, local employment and service provision.*
- ▶ *Connectivity with existing walking and cycling networks*

*Suitable bus or rail service provision within 400 metres (bus) or 800 metres (rail) safe walking distance offering at least a half-hourly peak hour service to a variety of service centres and interchanges."*

2.8 Policy T2 considers highway safety and design outlining a requirement for new development to not have a detrimental effect on highway safety and be served by suitable access. It further notes that proposals must not impact on the free flow of traffic on the local network and should promote and enhance pedestrian and cycle routes.

2.9 Parking provision is considered at Policy T3 which outlines that new residential developments must have regard to the standards outlined in the Central Bedfordshire Design Guide and Parking Strategy. It is noted that Policy T5 outlines a requirement to provide charging points for electric and ultra low emission vehicles. Standards for charging points will be considered on a case by case basis.

2.10 Policy T4 considers public transport and states that:

*"All major developments should promote connectivity to the transport interchange through Transport Assessments and Travel Plans. Typical measures may include current timetables, maps, equipment providing real time passenger information.*

*Contributions to improve interchange infrastructure and to promote links to the end user will be sought.*

*Development will not be permitted should it compromise the ability of the authority to fully utilise and expand interchanges as required."*

### 3.0 Baseline Conditions

- 3.1 The site is located to the south of Ampthill Road and is approximately 3.4 kilometres to the east of Clophill and 3.5 kilometres to the west of Shefford. The site location in relation to the surrounding area is shown in **Figure 3.1**.

#### Local Highway Network

- 3.2 The A507, Ampthill Road is a single carriageway road subject to a 60 mile per hour speed limit in the vicinity of the site. The A507 connects west to the A6 providing links north towards Bedford and south towards Luton. The A507 east provides links to the A1, which runs in a north south direction connecting to Stevenage and Hatfield in the south, and St Neots, Huntingdon and Peterborough in the north. As such, the site is well located with regard to the local and strategic highway networks.

#### Accessibility by Foot and Cycle

- 3.3 There is an existing cycle/footway located on the northern side of the A507, Ampthill Road, which links the site with Chicksands and Shefford to the east. In addition, there are some local footpaths and bridleways providing predominantly traffic free routes to Chicksands, Shefford and Clophill.
- 3.4 The internal layout of the development will be designed with consideration of pedestrian and cycle movements and appropriate foot and cycle links will be provided throughout the development. The internal pedestrian and cycle infrastructure will connect with the existing cycle/footway on the northern side of the A507, Ampthill Road, and an additional foot/cycleway will be provided on the southern side of Ampthill Road making use of the extensive site frontage along the A507. The foot/cycleway will connect to existing infrastructure in Shefford providing access to nearby amenities. In addition, the footpath/bridleway to the south east of the site will be enhanced to provide an improved pedestrian linkage to Campton reducing walking distance to 2 kilometres.
- 3.5 There are a range of recommended cycle routes in the vicinity of the site including an off-road circular route connecting Clophill to local areas such as Chicksands, Campton and Gravenhurst. There are on-road cycle routes in the local area with the Greensands Cycle Ride, a new 59km route on quieter roads, operating through Ampthill and Clophill. Additional routes connect to Bedford via Kempston and Cardington.

#### Access to Local Amenities

- 3.6 At present, the nearest primary school to the site is Campton Lower School located approximately 2 kilometres to the east, whilst the middle school is Robert Bloomfield Academy is 2.7 kilometres to the east and the nearest upper school is Samuel Whitbread Academy located approximately 4 kilometres to the east.
- 3.7 It is noted that the development proposals include provision of a new three-form entry primary/middle school and as such provision for those age groups will be provided on site. In addition, the development will provide a range of on-site amenities as part of the community centre including local shops, post office and GP surgery.

#### Accessibility by Public Transport

- 3.8 The nearest bus stops to the site are currently located approximately 1.4 kilometres to the east in Chicksands. These are served by routes 200 bus service operating between Flitwick and Biggleswade two-hourly basis. It is noted that the 200 bus service runs along the A507 directly passed the Beadlow Manor site, although there are currently no bus stops on the A507 adjacent to the site.
- 3.9 Additional bus stops are located approximately 2 kilometres to the west of the site in Clophill and are served by hourly services between Flitwick and Bedford (route 44) as well as hourly services between Bedford and Luton (route 81). There are further stops located approximately 2.6 kilometres to the west in Shefford which are served by hourly buses between Hitchin and Bedford (routes 9A and 9B).

- 3.10 Arlesey station is located approximately 8.7 kilometres to the east of the site and is located on the Horsham – Peterborough line with services operating every 30 minutes via London St Pancras, East Croydon and Gatwick Airport. In addition to Arlesey station, there are several other stations in the area which can be accessed by local bus services. Flitwick station is located approximately 9.8 kilometres to the west of the site and is served by half-hourly trains to Bedford, Gatwick Airport and Brighton. Bedford station is located approximately 17.5 kilometres to the north and offers frequent services to Brighton, London St Pancras, Three Bridges, Bletchley, Nottingham and Corby. Furthermore, Biggleswade station is approximately 14.5 kilometres to the north east of the site with services operating towards Horsham, Peterborough and London Kings Cross.

### **Car Clubs**

- 3.11 Car clubs can help to reduce car ownership and reduce travel by private car by offering the convenience of access to a shared car without the costs of repairs, servicing, insurance and parking. As part of the development proposals a car club will be provided on site and future residents will be provided incentivised membership of the car club.



## 4.0 Public Transport Accessibility Improvements

4.1 As noted in Section 3 of this report, the nearest bus stops to the site are currently located approximately 1.4 kilometres to the east in Chicksands. Further bus services operate from stops approximately 2 kilometres to the north west of the site in Clophill. The nearest station to the site is Arlesey station, located approximately 8.7 kilometres to the east whilst additional rail services are provided from Flitwick station and Bedford station located 9.8 kilometres to the west and 17.5 kilometres to the north respectively.

4.2 It is evident that the site has the capacity to be well served by public transport through enhancing existing local bus services to connect to the site. A development of 1,600 homes with associated amenities will generate a substantial demand for public transport usage such that enhancing an existing bus route to serve the development or providing a new dedicated bus route will be financially viable and beneficial to the operation of existing services. To this extent consideration has been given to the options and likely contribution required to either enhance an existing bus route to serve the development or providing a new bus route.

### *Enhancement of Existing Bus Route*

4.3 There are a number of existing bus routes operating in the vicinity of the site and these include:

- ▶ 9 A/B operating between Hitchin and Bedford,
- ▶ 44 operating between Flitwick and Bedford,
- ▶ 81 operating between Luton and Bedford; and,
- ▶ 200 operating between Flitwick and Biggleswade

4.4 The No. 200 bus service currently routes along the A507 directly past the development site and therefore the enhancement of this bus service to serve the site would not require any diversion of the service. The No. 200 bus service could serve the development site through the provision of new bus stops on the A507 directly outside the development site. Alternatively, consideration could be given to diversion of the No. 200 service into the development site and would only require a minor change in the routing of the service and would not materially affect the journey time of the route. **Figure 4.1** summarises these options.

4.5 The No. 200 bus route operates between Flitwick and Biggleswade and also serves Clophill, Shefford and Clifton. The No. 200 bus service therefore provides a connection from the site to local shops and services in Shefford including stops on Ampthill Road, a short walk from the Robert Bloomfield Academy, the closest middle school to the development and on Shefford Road, adjacent to the Samuel Whitbread Academy, the closest upper school to the development site.

4.6 The No. 200 bus service connects west to Flitwick and north-east to Biggleswade and therefore provides a connection to both Flitwick and Biggleswade train stations. As noted in Section 3, onward rail connections from Flitwick include routes to Bedford, Gatwick Airport and Brighton whilst Biggleswade station is served by routes to Horsham, Peterborough and London Kings Cross.

4.7 To this extent it is evident that the No. 200 bus service provides a connection to local shops, schools and services as well as train station for interchange opportunities and connections to the wider public transport network.

4.8 The No. 200 bus service currently operates at a 2-hourly frequency past the development site. It is considered that the additional demand of a bus service as a result of the development would facilitate increasing the frequency of the service to provide a more regular connection from the site and to the benefit of existing residents served by the route.

4.9 Motion has liaised with Grant Palmer, the operator of the No. 200 bus service, to understand options for enhancement of the bus service and the extent to which initial funding could be provided to facilitate the enhancement of the route.

- 4.10 Grant Palmer have advised that enhancing the existing No. 200 bus route to an hourly frequency along its entire route and extending the current operational day would require the provision of an additional bus to serve the route. In addition, they have advised that to facilitate this enhancement of this route would be £170,000 per annum.

#### Provision of a New Bus Route

- 4.11 As alternative to the enhancement of an existing bus route consideration has been given to the provision of a new bus route to serve the development site. It is considered that any new bus route associated with the development site would need to provide a connection to a local train station and link to existing local centre shops and facilities in the vicinity of the site.
- 4.12 The nearest station to the site is Arlesey station. located approximately 8.7 kilometres to the east of the site and is served by half-hourly trains to Horsham via East Croydon, London Bridge and London St Pancras as well as trains operating every 30 minutes to Peterborough.
- 4.13 Between the development site and Arlesey station are Shefford, Clifton and Henlow which provide existing local centres with a range of shops, services and facilities. **Figure 4.2**, attached, shows a potential route of a new bus service connecting from the Beadlow Manor site to Arlesey via Shefford, Clifton and Henlow. It is noted that the potential bus route also passes both Robert Bloomfield Academy and Samuel Whitbread Academy, providing access from the site to both a middle and upper school.
- 4.14 The journey time for a route between Beadlow and Arlesey station is approximately 16 minutes without stopping. On that basis it is evident that a single bus operating a route between Beadlow and Arlesey station could provide an hourly frequency service with appropriate turnaround time at the start and end of the route.
- 4.15 Based on the costs provided by Grant Palmer for the No.200 service and experience of the provision of similar bus services it is considered that funding of approximately £170,000 per annum would initially be required to provide an additional bus and associated operating costs to operate the a new bus route between the Beadlow site and Arlesey station.

#### Summary

- 4.16 It is evident that the site has the capacity to be well served by public transport through enhancing existing local bus services to connect to the site. A development of 1,600 homes with associated amenities will generate a substantial demand for public transport usage.
- 4.17 To this extent consideration has been given to the options and likely contribution required to either enhance an existing bus route to serve the development or providing a new dedicated bus route.
- 4.18 The analysis has demonstrated that there is the opportunity to enhance the existing No 200 bus route which currently runs past the development site on the A507. As the No. 200 service currently operates directly past the site, will not necessarily require any diversion of the service provides a connection from the site to Shefford, Clifton and Flitwick and Biggleswade station. Motion has liaised with the operator of the service who have advised that the service could be enhanced to provide an hourly service and initial funding in the order of £170,000 per annum may be required to facilitate this.
- 4.19 Alternatively, considering has been given to the provision of a new bus route associated with the development and a new route between the development site and Arlesey station serving Shefford, Clifton and Henlow could be provided with an hourly service. Initial funding in the order of £170,000 per annum may be required to facilitate this.
- 4.20 It is evident that there are options for enhancing the connectivity of the site to local bus services either through the enhancement of an existing service or the provision of a new route. It is considered that either option would require some initial funding to facilitate provision and initial funding in the order of £170,000 per annum may be required to facilitate this.

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- 4.21 Once the development is occupied and operational it is envisaged that demand associated with the development and stops along the route will be sufficient to maintain either of the route services. To this extent funding would be required for the initial start up of the route and it is considered that funding for a five-year period from occupation of the development would be appropriate. It is considered that initial funding of £850,000 over a five-year period would be required to facilities to implementation either of the bus service enhancements considered.

## 5.0 Effect of Development

5.1 This chapter outlines the levels of trips that are likely to be generated by this type of development during the peak travel periods, and also provides an overview of how it is anticipated this would be distributed onto the local highway network.

### Trip Generation

5.2 The potential vehicular trip generation of the site has been estimated by reference to trip rates extracted from the TRICS database. Trip rates have been extracted for privately owned and affordable housing based on the following criteria:

- ▶ Regions: England (excluding Greater London);
- ▶ Location: Suburban, Edge of Town;
- ▶ Days of Survey: Weekday; and,
- ▶ Use Class: C3.

5.3 Full details of the TRICS analysis are included as **Appendix A** to this report. It has been assumed that 35% of the housing would be affordable in line with Central Bedfordshire's targets. The trip rates and resultant trips associated with the residential units is summarised in Tables 5.1 to 5.3 below.

Time Period	Trip Rates (per unit)			Trip Attraction (1,040units)		
	Arrivals	Departures	Total	Arrivals	Departures	Total
Weekday Morning (08:00 - 09:00)	0.114	0.351	0.465	119	365	484
Weekday Evening (17:00 - 18:00)	0.328	0.149	0.447	341	155	496

Table 5.1: Private Residential Vehicle Trip Rates and Resultant Trips

Time Period	Trip Rates (per unit)			Trip Attraction (560 units)		
	Arrivals	Departures	Total	Arrivals	Departures	Total
Weekday Morning (08:00 - 09:00)	0.115	0.259	0.374	64	145	209
Weekday Evening (17:00 - 18:00)	0.224	0.142	0.366	125	80	205

Table 5.2: Affordable Residential Vehicle Trip Rates and Resultant Trips

Time Period	Residential Trip Attraction (1.600 units)		
	Arrivals	Departures	Total
Weekday Morning (08:00 - 09:00)	183	510	693
Weekday Evening (17:00 - 18:00)	466	235	701

Table 5.3: Total Residential Vehicle Trip Attraction

5.4 Table 5.3 demonstrates that the development proposals would be expected to result in 693 two-way vehicle movements during the morning peak hour and 701 two-way vehicle movements during the evening peak hour.

5.5 The development will be served by a new neighbourhood centre including local shops, post office and GP surgery. Given the scale of the retail and services provided it is considered that all trips associated with the neighbourhood centre would be internal trips associated with residents of the development. To this extent the proposed neighbourhood centre is not expected to attract external trips from outside the development or result in any diversion of trips from the A507 into the site. To this extent no consideration of additional external vehicle trips associated with the proposed neighbourhood has been included within the assessment

- 5.6 In addition, the development proposals will be served by a new lower school. The provision of the new lower school is primarily to pupils associated with the development. As such, it is considered that the majority of trips to the school would be internal to the site and would not result in additional external trips on the local road network. On that basis no additional vehicular trips have been included in the analysis.

#### ***Vehicle Trip Distribution***

- 5.7 Vehicle movements associated with the development have been distributed on the local network based on baseline turning movements at the respective junctions. The expected traffic distribution of trips associated with the development is presented at **Figure 5.1 and 5.2** for the weekday morning and evening peak hours respectively.
- 5.8 The expected vehicle trips associated with the development, as presented at Table 3.3 have been applied to the expected vehicle distribution. **Figures 5.3 and 5.4** show the distribution vehicle trips associated with the development proposals for the weekday morning and evening peak hours respectively.

## 6.0 Junction Capacity Assessment

### Scope of Assessment

- 6.1 Having regard to existing conditions on the local highway network, the following junctions are considered to be those which may be affected by the development:
- ▶ A6/A507 Clophill roundabout;
  - ▶ A600/A507/Ampthill Road Chicksands roundabout;
  - ▶ A507/Shefford Road roundabout; and,
  - ▶ A507/ A6001 Henlow junction.
- 6.2 Traffic data for the A507/ A6001 junction has been extracted from the "Transport Modelling Stage 2B and 2C" report submitted alongside the Central Bedfordshire Local Plan (2015-2035) Examination.
- 6.3 Traffic data for the A6/ Clophill roundabout, A600/A507/ Ampthill Road junction and A507/ Shefford Road junction has been extracted from a previous preliminary Transport Assessment undertaken in relation to the Beadlow Manor site and factored to a baseline assessment year of 2025 using factors derived from TEMPRO.
- 6.4 The baseline traffic flows for the weekday morning and evening peak periods are presented at **Figures 6.1** and **6.2**.
- 6.5 The vehicle trips associated with the Beadlow Manor development, as presented at Figures 5.3 and 5.4, have been added to the baseline traffic flows for the weekday morning and evening peak periods. **Figures 6.3** and **6.4**. show the traffic flows for the scenario with the Beadlow Manor development in place.

### Junction Modelling

- 6.6 In order to assess the effect of the development on the highway network, junction capacity modelling has been undertaken using the industry standard junction capacity modelling software for each junction type; Junctions 9 for priority and roundabout junctions and LinSig for signal-controlled junction. Full modelling outputs are included as **Appendix B**.

#### A6/A507 Clophill roundabout

- 6.7 The existing roundabout between the A6/ A507 junction has been modelled using ARCADY. Table 6.1 shows the operation of the junction in baseline scenario.

Approach	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A507 (west)	0.94	12.2	0.87	6.2
A6 (north)	1.23	145.2	1.02	33.2
A507 (east)	1.11	65.4	1.01	23.0
A6 (south)	0.90	8.3	0.74	2.8

Table 6.1: A507/A6 Baseline

- 6.8 The analysis shows that the junction is expected to operate over capacity in the baseline scenario with the RFC of the busiest arm reaching 1.23.

- 6.9 Table 6.2 shows the operation of the A6/ A507 junction with the proposed Beadlow Manor development in place.

Approach	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A507 (west)	1.07	53.6	1.06	48.4
A6 (north)	1.24	157.4	1.17	104.4
A507 (east)	1.54	413.0	1.10	64.0
A6 (south)	0.94	12.0	0.82	4.5

Table 6.2: A507/A6 with Development

- 6.10 The analysis shows that the junction is expected to continue to operate over capacity with the proposed development in place.
- 6.11 Central Bedfordshire have identified a mitigation scheme at the A6/ A507 junction and this is detailed within the "Transport Modelling Stage 2B and 2C" report. The proposed mitigation scheme comprises the signalisation of the junction and this has been modelled using LinSig. Table 6.3 below shows the operation of the A6/ A507 junction with the proposed Beadlow Manor development and the mitigation scheme in place.

Approach	AM Peak		PM Peak	
	DoS	MMQ	DoS	MMQ
A6 (north) (left)	9.9%	1.3	18.6%	2.5
A6 (north) (ahead)	77.9%	14.4	71.2%	12.2
A507 (east) (ahead/right)	75.9%	21.8	58.2%	14.1
A507 (east) (ahead/left)	43.3%	9.5	33.7%	6.9
A6 (south) (ahead/left)	84.1%	21.8	77.7%	17.6
A6 (south) (right)	46.3%	4.6	58.4%	5.8
A507 (west) (ahead/left)	78.6%	15.4	70.8%	14.4
A507 (west) (ahead/right)	82.4%	17.3	77.4%	16.6
<b>Overall PRC</b>	<b>3.4%</b>		<b>15.8%</b>	

Table 6.3: A507/A6 with Mitigation

- 6.12 The analysis shows that with the proposed mitigation scheme in place the junction is expected to operate within capacity during both the weekday morning and evening peak periods with a PRC across the junction of 3.4% during the morning peak hour and 15.8% during the evening peak hour.
- 6.13 On that basis it is concluded that the proposed development would provide a contribution towards the mitigation scheme identified by Central Bedfordshire at this junction and an appropriate mechanism for contribution towards the mitigation scheme would be the comparative change in trips at the junction in comparison with other identified development sites.

### A600/A507/Amphill Road Chicksands roundabout

- 6.14 The roundabout between the A507/ A600/ Amphill Road has been modelled using ARCADY. Table 6.4 shows the operation of the junction in baseline scenario.

Approach	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A507 (west)	0.92	9.5	1.02	30.4
A600	1.01	22.5	0.80	3.8
Amphill Road	1.17	26.9	0.78	3.2
A507 (south)	0.78	3.5	0.69	2.2

Table 6.4: A600/A507/Amphill Road Baseline

- 6.15 The analysis shows that the junction is expected to exceed capacity in the baseline scenario. Table 6.5 shows the operation of the A600/A507/Amphill Road junction with the proposed Beadlow Manor development in place.

Approach	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A507 (west)	1.02	34.7	1.07	54.8
A600	1.07	41.3	0.84	4.9
Amphill Road	1.26	39.8	0.89	5.8
A507 (south)	0.79	3.7	0.74	2.8

Table 6.5: A600/A507/Amphill Road with Development

- 6.16 Table 6.5 demonstrates that the junction will continue to operate over capacity with the proposed development in place and with a worsening of expected queuing on some arms. As such, a mitigation scheme has been considered at this junction and the proposed mitigation scheme is shown at [Appendix C](#) and Table 6.6 below shows the results of the assessment with the proposed mitigation works in place.

Approach	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A507 (west)	0.99	23.2	1.02	35.3
A600	0.96	12.9	0.76	3.1
Amphill Road	0.36	0.6	0.28	0.4
A507 (south)	0.83	4.6	0.75	2.9

Table 6.6: A600/A507/Amphill Road with Development and Mitigation

- 6.17 Table 6.6 demonstrates that, whilst the junction would potentially operate in excess of its theoretical capacity, the mitigation would result in an improvement in comparison to the existing layout and baseline scenario.
- 6.18 The proposed mitigation works at the A600/ Amphill Road junction can be accommodated within the adopted public highways and would be delivered under a S278 agreement. A preliminary cost estimate of the mitigation works has been calculated and it is estimated that these works would cost in the order of £75,000.



### A507/Shefford Road roundabout

- 6.19 The roundabout between the A507/ Shefford Road has been modelled using ARCADY. Table 6.6 shows the operation of the junction in baseline scenario.

Approach	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A507 (west)	0.60	1.5	0.97	18.9
Ivel Road	0.58	1.4	0.56	1.3
A507 (east)	0.55	1.2	0.78	3.4
Shefford Road	0.21	0.3	0.25	0.3

Table 6.7: A507/Shefford Road Baseline

- 6.20 The analysis shows that the junction is expected to operate within capacity in the baseline scenario with the RFC of the busiest arm reaching 0.97.
- 6.21 Table 6.8 shows the operation of the A507/ Shefford Road junction with the proposed Beadlow Manor development in place.

Approach	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A507 (west)	0.65	1.8	0.99	25.7
Ivel Road	0.62	1.6	0.58	1.4
A507 (east)	0.56	1.3	0.81	4.0
Shefford Road	0.22	0.3	0.28	0.4

Table 6.8: A507/Shefford Road with Development

- 6.22 The analysis demonstrates that the junction is expected to continue to operate within capacity with the proposed development in place and the development would not have a material effect on the operation of the junction. To this extent no mitigation works are considered necessary at the junction to accommodate the development.

### A507/ A6001 Henlow junction.

- 6.23 The roundabout between the A507/ A6001 Henlow junction has been modelled using ARCADY. Table 6.8 shows the operation of the junction in baseline scenario.

Approach	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A507 (west)	0.77	3.2	0.82	4.4
A6001	1.25	98.9	1.00	18.4
A507 (east)	0.99	21.4	1.07	61.2
Hitchin Road	0.95	11.1	1.00	17.7

Table 6.8: A507/A6001 Henlow Junction Baseline

- 6.24 The analysis shows that the junction is expected to operate in excess of its theoretical capacity in the baseline scenario.
- 6.25 Table 6.9 shows the operation of the A507/ A6001 Henlow junction with the proposed Beadlow Manor development in place.

Approach	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A507 (west)	0.81	4.0	0.83	4.6
A6001	1.30	113.6	1.02	22.3
A507 (east)	0.99	21.5	1.10	78.8
Hitchin Road	0.95	11.7	1.01	20.2

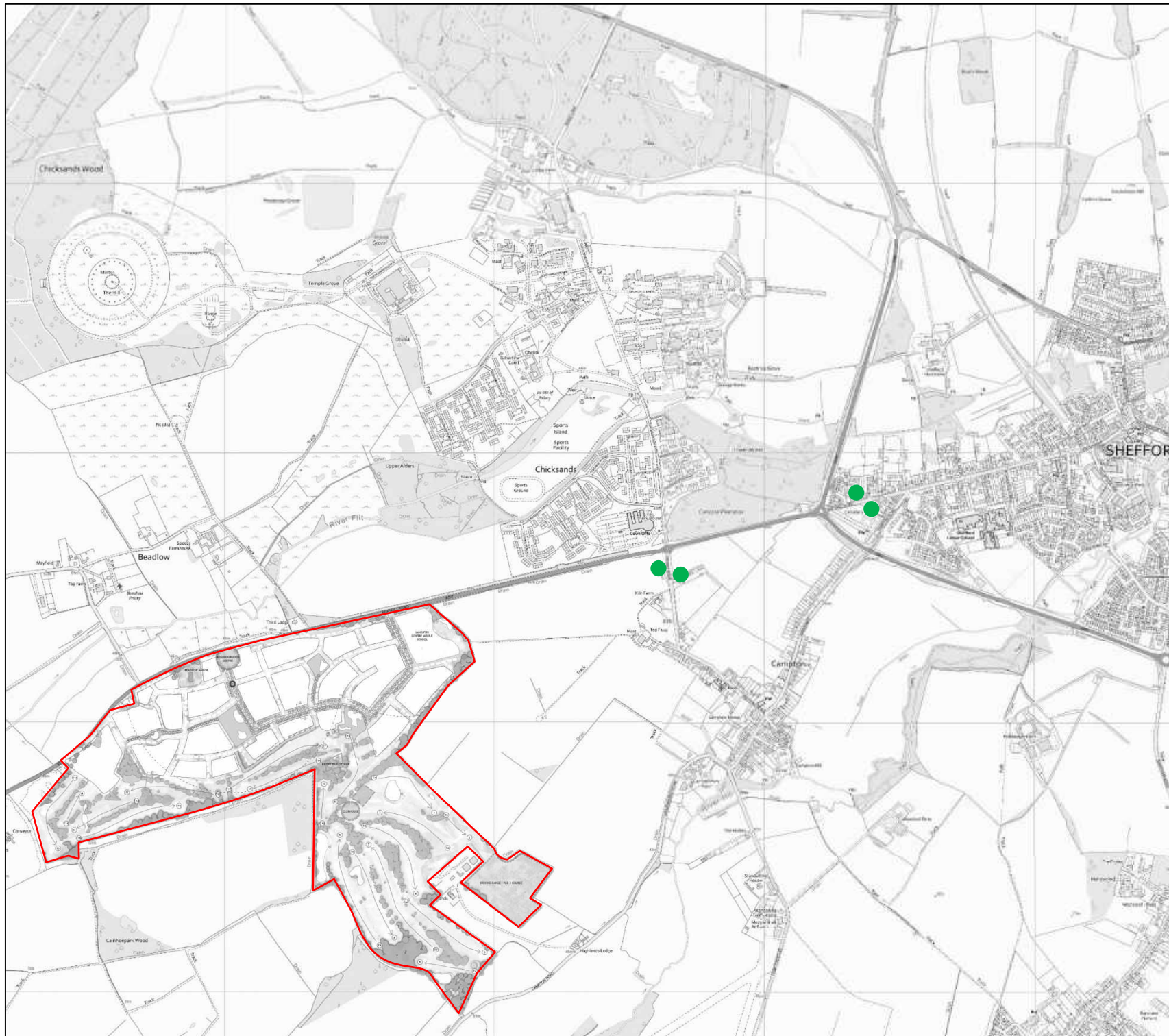
Table 6.9 A507/A6001 Henlow Junction with Development

- 6.26 The analysis shows that the junction is expected to continue to operate within capacity with the proposed development in place. The analysis shows that the Beadlow Manor development will not result a significant increase in vehicle movements at this junction and does not result in a significant change in the operation of the junction.
- 6.27 However, it is acknowledged that the junction is shown to operate over capacity and Central Bedfordshire have detailed a mitigation scheme at this junction as identified within the "Transport Modelling Stage 2B and 2C" report. That mitigation scheme comprises widening the A507 exits from the roundabout to provide increased capacity and reduced queuing at the junction by allowing through movements on the A507 to utilise both lanes when travelling eastbound and westbound through the junction.
- 6.28 Whilst the Beadlow Manor development does not have a significant impact on the overall operation of the junction, given the current operation of the junction it is considered that the development would provide a contribution towards the mitigation scheme identified by Central Bedfordshire and appropriate mechanism for contribution towards the mitigation scheme would be the comparative change in trips at the junction in comparison with other identified development sites.

## 7.0 Summary and Conclusions


- 7.1 Motion has been appointed to prepare this Preliminary Transport Assessment in relation to development proposals at Beadlow Manor, Ampthill Road within the administrative boundary of Central Bedfordshire.
- 7.2 The site is located south of Ampthill Road (A507) and is located approximately 3.5 kilometres west of Shefford. The site is located within close proximity to Campton Road to the south and Clophill Road to the west. Once constructed, the development will benefit from a wide range of services and amenities and bus stops will provide services into neighbouring town centres.
- 7.3 The current proposals seek the allocation of the Beadlow Manor site to provide in the region of 1,600 residential dwellings to be served by a new neighbourhood centre and a three-form entry primary/middle school. Beadlow Manor Hotel will be retained whilst the golf course will be reconfigured and will continue to provide 18 holes and a new clubhouse.
- 7.4 This Preliminary Transport Assessment has been prepared to assess the likely trip attraction of the development proposals and the effect of the development on the highway network local to the site. This report also considers the opportunities to enhance the public transport connections to the site through either change to an existing bus route or through the provision of a new bus route.
- 7.5 This Preliminary Transport Assessment has demonstrated that:
- ▶ There is the opportunity to improve the public transport connections to the site either through enhancement of the existing No 200 bus route or the provision of a new bus route;
  - ▶ Enhancements to the No. 200 service would provide an hourly connection from the site to Shefford, Clifton and Flitwick and Biggleswade station. Alternative, a new bus route could provide an hourly between the development site and Arlesey station serving Shefford, Clifton and Henlow could be provided with an hourly service;
  - ▶ At the A507/ Ampthill Road junction a highway mitigation scheme has been identified that can be accommodated within the adopted public highway and would be delivered under a S278 agreement; and,
  - ▶ At the A507/A6 and A507/6001 junctions mitigation schemes have been identified by Central Bedfordshire and appropriate mechanism for contribution towards the mitigation scheme would be the comparative change in trips at the junction in comparison with other identified development sites.
- 7.6 On the basis of the above, it is concluded that the Beadlow Manor site will be well served by public transport services and will have access to education, retail and other local facilities as well as a connection to a local train station. Improvements to the public transport connectivity of the site can either be provided by enhancement to an existing local bus service or provision of a new bus services and likely initial funding for this has been identified and is viable for a development of this scale the vehicle trips associated with the development can be accommodate on the local highway network and where mitigation is considered necessary this can be delivered through a combination of a contribution towards schemes identified by Central Bedfordshire or a separate mitigation works.
- 7.7 The Beadlow Manor site is therefore sustainable in transport terms and vehicle trips can be accommodated on the local road network and should be considered further for allocation for the proposed residential use.

## Figures



Legend:

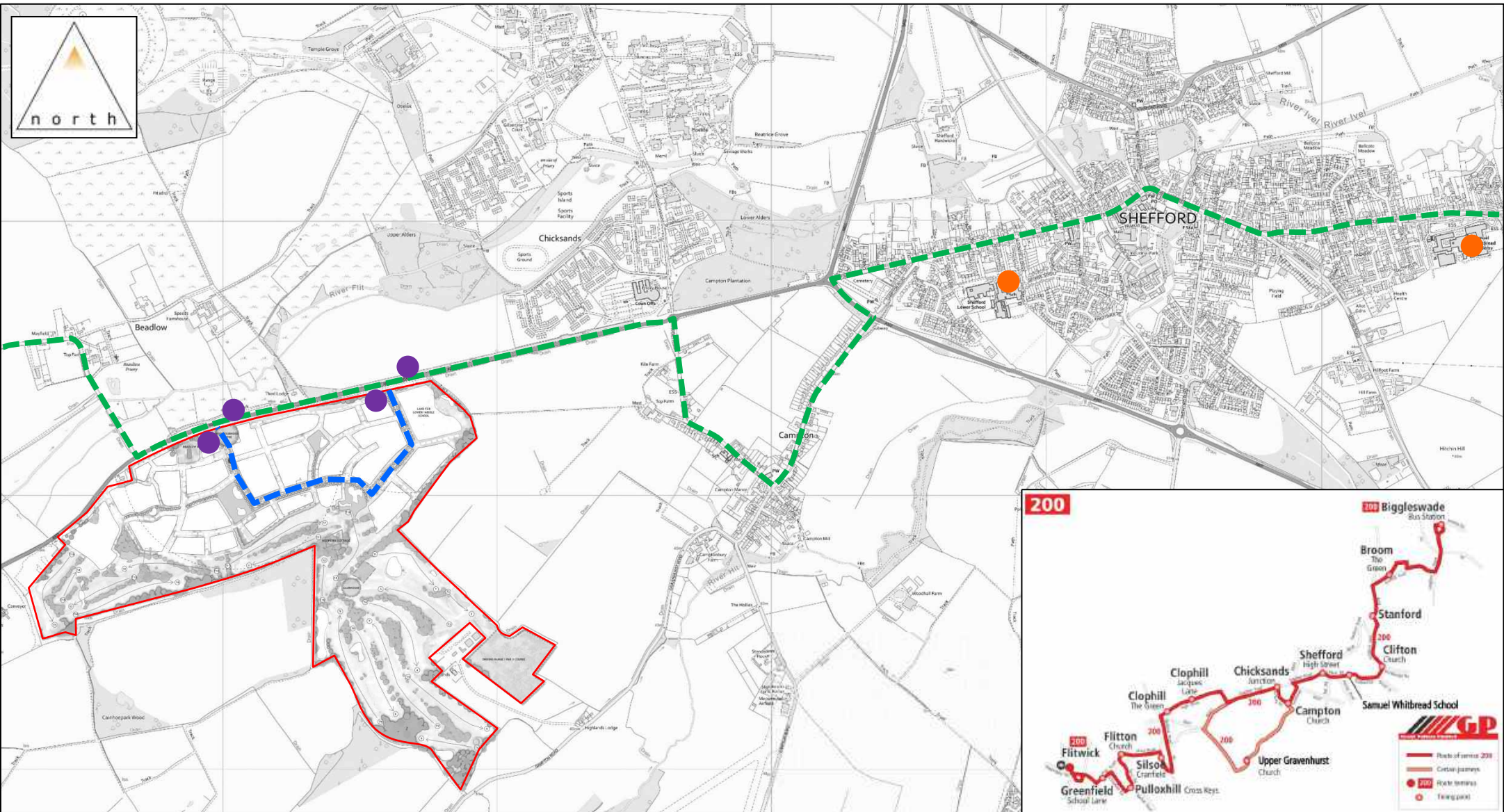
 Site Location

 Bus Stop






Beadlow Manor,  
Amphill Road

**Figure 3.1 Beadlow Manor Site  
Location**

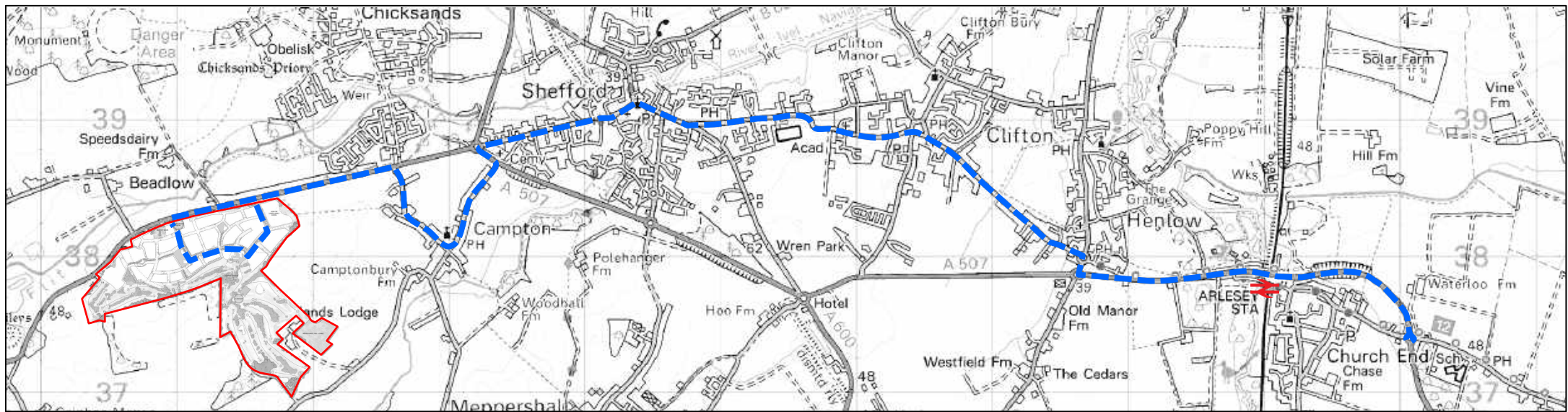
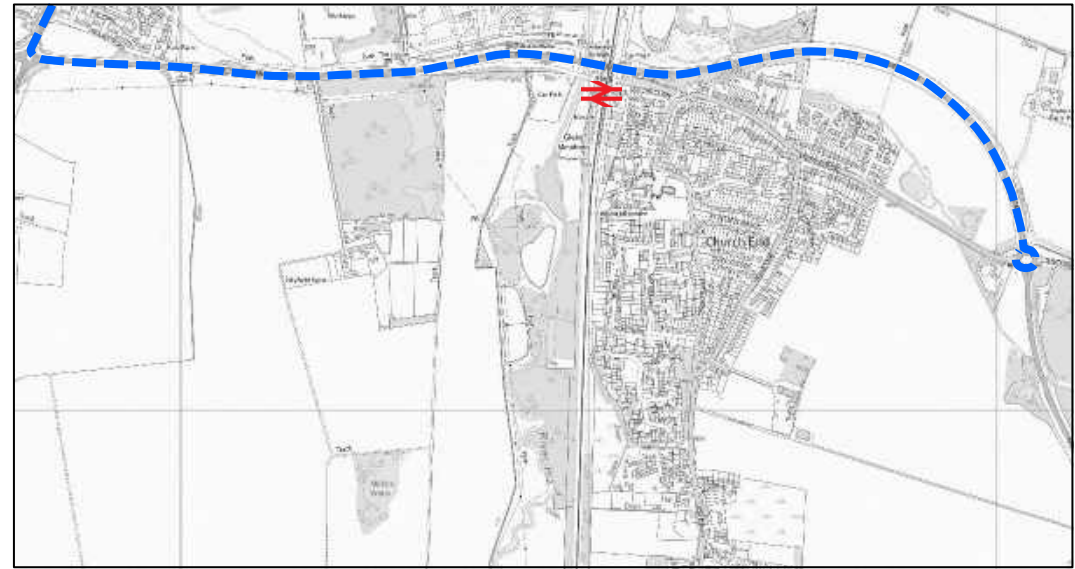
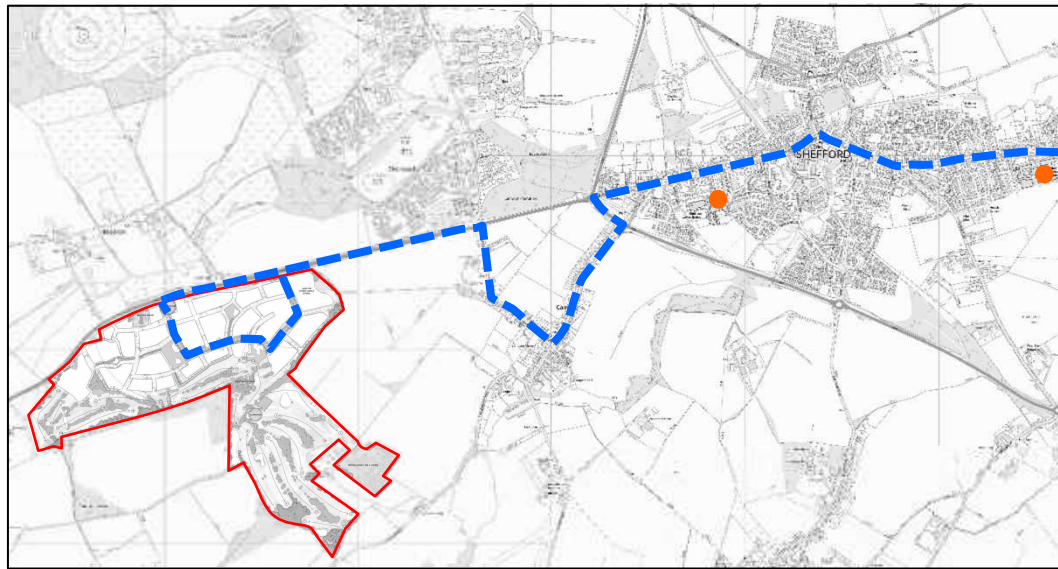
*Not to Scale*







**Legend**

-  Site Location
-  Existing Route 200
-  Potential Diversion Route
-  Potential New Bus Stops
-  Local Schools

Beadlow Manor,  
Amphill Road  
**Figure 4.1 Route 200 Diversion**  
Not to Scale



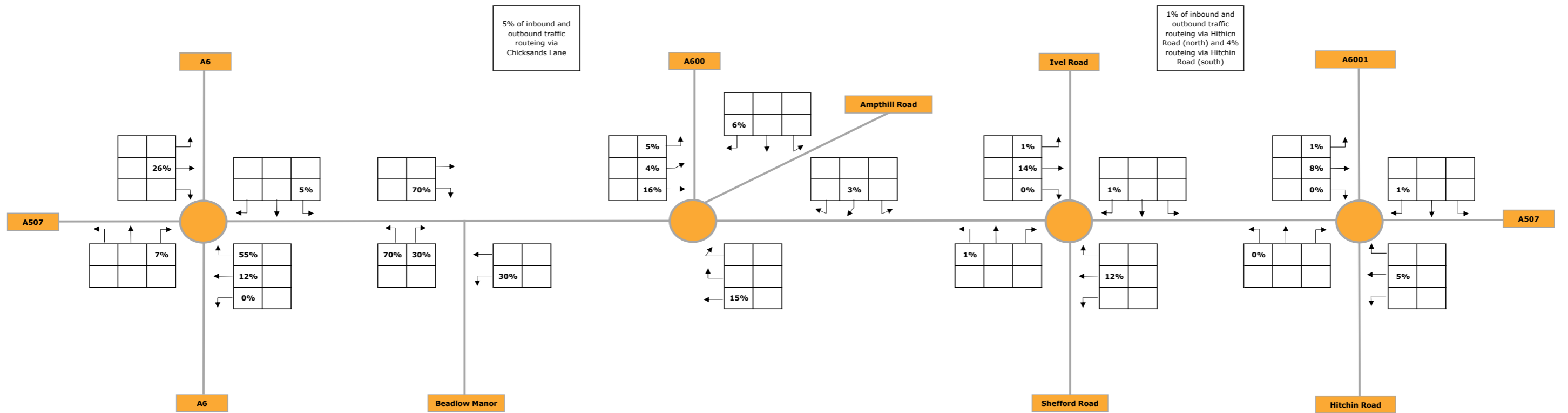
Legend

-  Site Location
-  Proposed Bus Route
-  Local Schools
-  Station

Beadlow Manor,  
Amphill Road

**Figure 4.2 Proposed Bus Route**

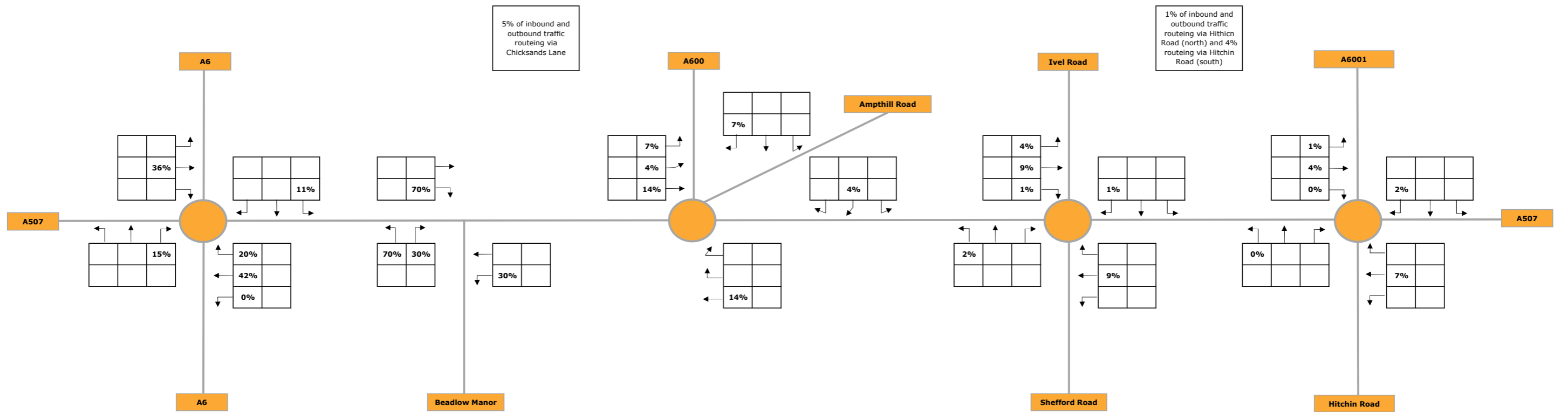
*Not to Scale*



Beadlow Manor  
 Figure 5.1 Development Trip Distribution - Weekday Morning Peak



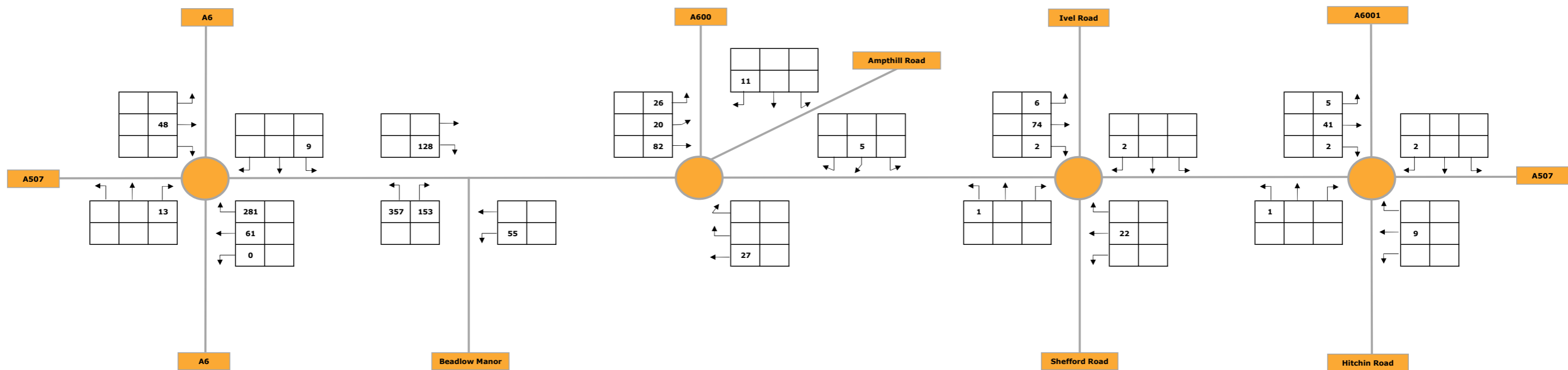




Beadlow Manor

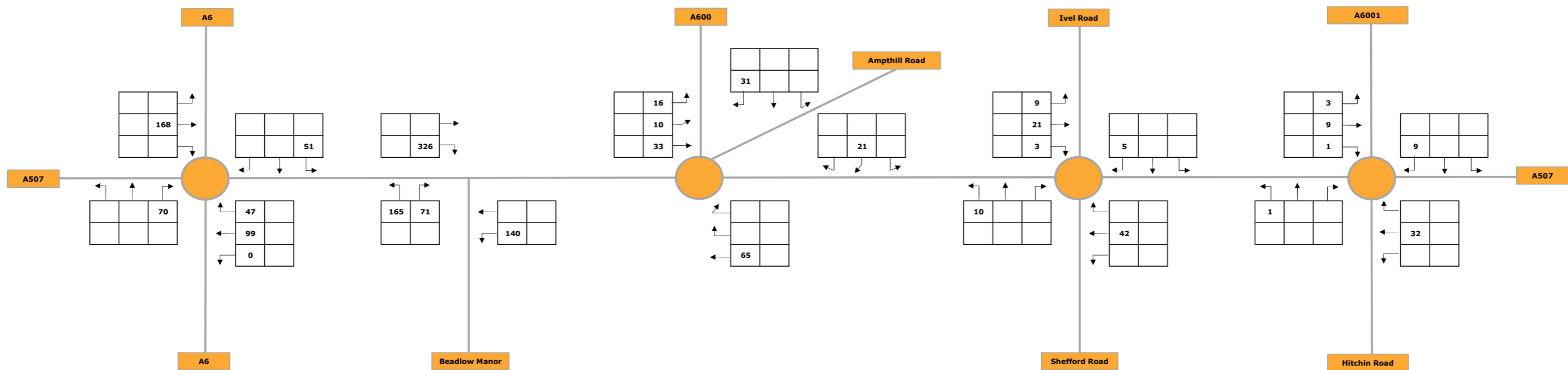
Figure 5.2 Development Trip Distribution - Weekday Evening Peak





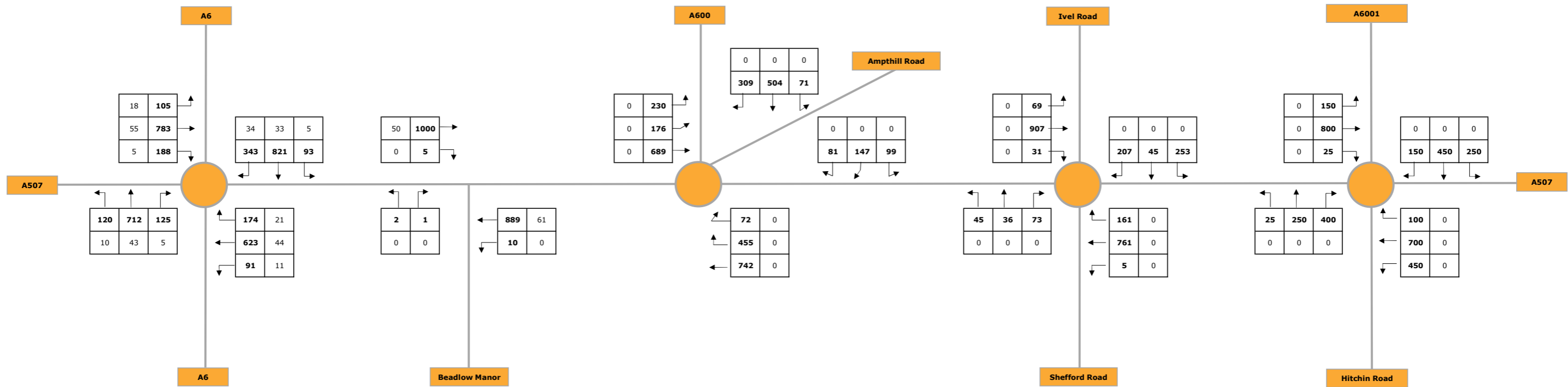
Beadlow Manor  
 Figure 5.3 Development Trips - Weekday Morning Peak





Beadlow Manor  
 Figure 5.4 Development Trips - Weekday Evening Peak

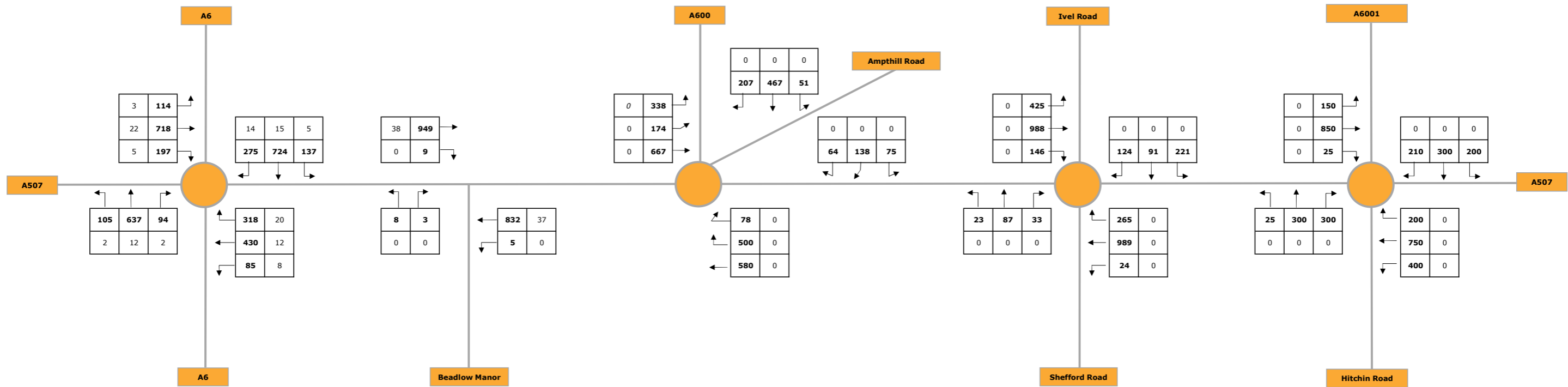




Beadlow Manor

Figure 6.1 Baseline Traffic Flows - Weekday Morning Peak

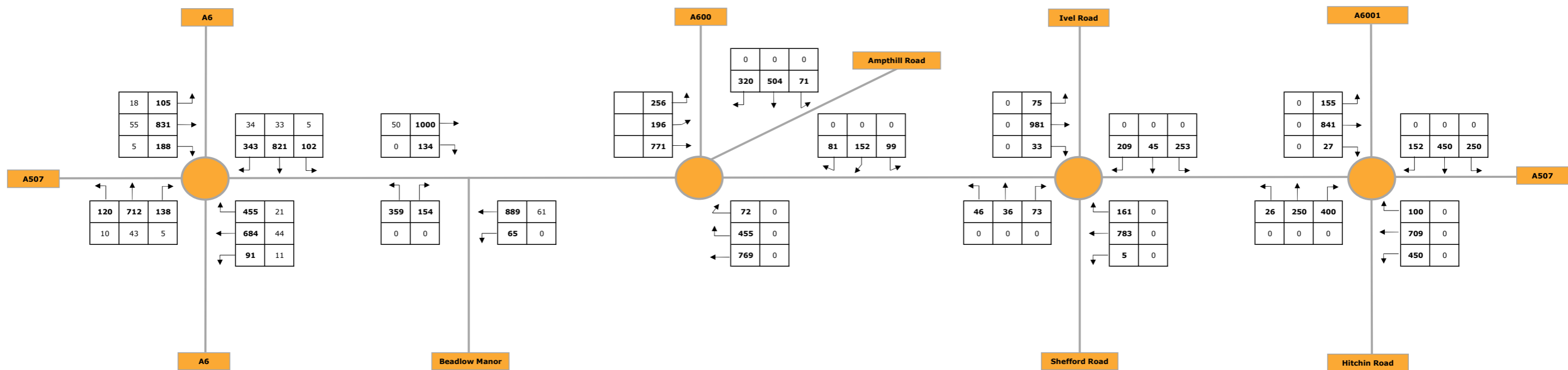




Beadlow Manor

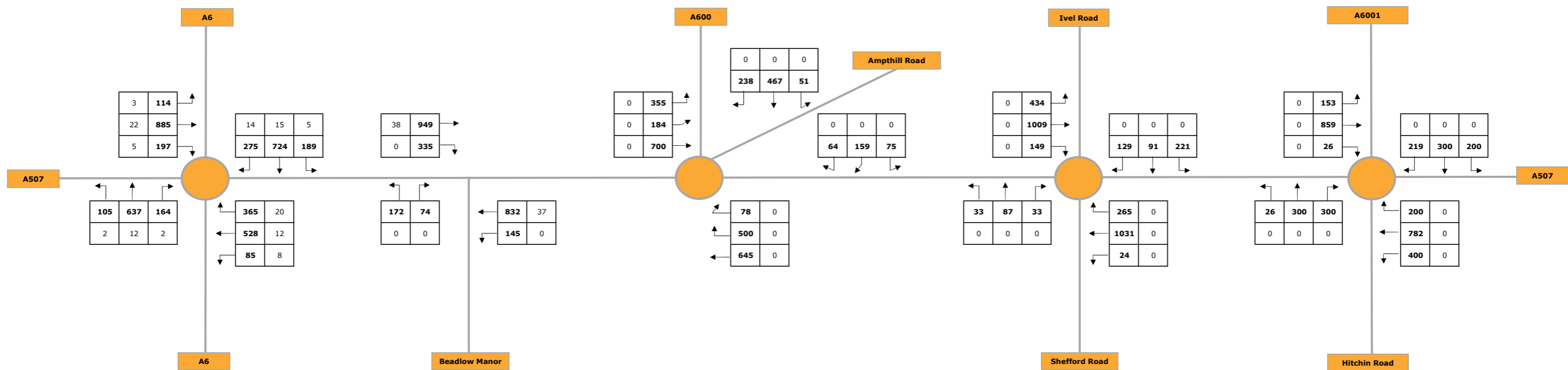
Figure 6.2 Baseline Traffic Flows - Weekday Evening Peak





Beadlow Manor  
 Figure 6.3 'With Development' Traffic Flows - Weekday Morning Peak





Beadlow Manor  
 Figure 6.4 'With Development' Traffic Flows - Weekday Evening Peak

## **Appendix A**

TRICS Output



*Private Housing*

## TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

02	SOUTH EAST WS WEST SUSSEX	1 days
04	EAST ANGLIA NF NORFOLK	2 days
07	YORKSHIRE & NORTH LINCOLNSHIRE NE NORTH EAST LINCOLNSHIRE	1 days

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

## Primary Filtering selection:

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

Parameter: No of Dwellings  
 Actual Range: 432 to 1817 (units: )  
 Range Selected by User: 400 to 2500 (units: )

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/12 to 24/09/19

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

Selected survey days:

Monday	1 days
Tuesday	2 days
Thursday	1 days

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

Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

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

Selected Locations:

Edge of Town	3
Neighbourhood Centre (PPS6 Local Centre)	1

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

Selected Location Sub Categories:

Residential Zone	2
Village	1
No Sub Category	1

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

Secondary Filtering selection:

Use Class:

C3 4 days

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

Population within 1 mile:

1,001 to 5,000 2 days  
10,001 to 15,000 2 days

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

Population within 5 miles:

50,001 to 75,000 1 days  
75,001 to 100,000 1 days  
125,001 to 250,000 2 days

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

Car ownership within 5 miles:

0.6 to 1.0 2 days  
1.1 to 1.5 2 days

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

Travel Plan:

Yes 3 days  
No 1 days

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

PTAL Rating:

No PTAL Present 4 days

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

LIST OF SITES relevant to selection parameters

1	NE-03-A-02 HANOVER WALK SCUNTHORPE	SEMI DETACHED & DETACHED	NORTH EAST LINCOLNSHIRE
	Edge of Town No Sub Category Total No of Dwellings: 432 <i>Survey date: MONDAY 12/05/14</i>		<i>Survey Type: MANUAL</i>
2	NF-03-A-08 SIR ALFRED MUNNINGS RD NEAR NORWICH COSTESSEY	MIXED HOUSES & FLATS	NORFOLK
	Neighbourhood Centre (PPS6 Local Centre) Village Total No of Dwellings: 1817 <i>Survey date: THURSDAY 19/09/19</i>		<i>Survey Type: MANUAL</i>
3	NF-03-A-09 ROUND HOUSE WAY NORWICH CRINGLEFORD	MIXED HOUSES & FLATS	NORFOLK
	Edge of Town Residential Zone Total No of Dwellings: 984 <i>Survey date: TUESDAY 24/09/19</i>		<i>Survey Type: MANUAL</i>
4	WS-03-A-11 ELLIS ROAD WEST HORSHAM S BROADBRIDGE HEATH	MIXED HOUSES	WEST SUSSEX
	Edge of Town Residential Zone Total No of Dwellings: 918 <i>Survey date: TUESDAY 02/04/19</i>		<i>Survey Type: MANUAL</i>

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

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED  
VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	1038	0.053	4	1038	0.300	4	1038	0.353
08:00 - 09:00	4	1038	0.114	4	1038	0.351	4	1038	0.465
09:00 - 10:00	4	1038	0.125	4	1038	0.150	4	1038	0.275
10:00 - 11:00	4	1038	0.098	4	1038	0.114	4	1038	0.212
11:00 - 12:00	4	1038	0.099	4	1038	0.093	4	1038	0.192
12:00 - 13:00	4	1038	0.119	4	1038	0.121	4	1038	0.240
13:00 - 14:00	4	1038	0.121	4	1038	0.113	4	1038	0.234
14:00 - 15:00	4	1038	0.141	4	1038	0.136	4	1038	0.277
15:00 - 16:00	4	1038	0.191	4	1038	0.152	4	1038	0.343
16:00 - 17:00	4	1038	0.235	4	1038	0.137	4	1038	0.372
17:00 - 18:00	4	1038	0.328	4	1038	0.149	4	1038	0.477
18:00 - 19:00	4	1038	0.308	4	1038	0.153	4	1038	0.461
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
<b>Total Rates:</b>			1.932			1.969			3.901

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

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

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## Parameter summary

Trip rate parameter range selected:	432 - 1817 (units: )
Survey date date range:	01/01/12 - 24/09/19
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	3
Surveys manually removed from selection:	0

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

*Affordable Housing*

## TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL  
 Category : B - AFFORDABLE/LOCAL AUTHORITY HOUSES  
 VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	EX ESSEX	1 days
03	SOUTH WEST	
	WL WILTSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	
	WY WEST YORKSHIRE	1 days
08	NORTH WEST	
	CH CHESHIRE	1 days
09	NORTH	
	NB NORTHUMBERLAND	1 days

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

## Primary Filtering selection:

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

Parameter: No of Dwellings  
 Actual Range: 54 to 228 (units: )  
 Range Selected by User: 50 to 280 (units: )

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/12 to 18/10/18

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

Selected survey days:

Monday	2 days
Tuesday	2 days
Thursday	1 days

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

Selected survey types:

Manual count	5 days
Directional ATC Count	0 days

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

Selected Locations:

Suburban Area (PPS6 Out of Centre)	1
Edge of Town	3
Neighbourhood Centre (PPS6 Local Centre)	1

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

Selected Location Sub Categories:

Residential Zone	4
Village	1

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

Secondary Filtering selection:

Use Class:

C3 5 days

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

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	2 days
10,001 to 15,000	1 days
15,001 to 20,000	1 days

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

Population within 5 miles:

25,001 to 50,000	1 days
50,001 to 75,000	1 days
75,001 to 100,000	1 days
125,001 to 250,000	2 days

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

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	3 days

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

Travel Plan:

No 5 days

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

PTAL Rating:

No PTAL Present 5 days

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



LIST OF SITES relevant to selection parameters

1	CH-03-B-01 WORDSWORTH CRES. CHESTER BLACON Edge of Town Residential Zone Total No of Dwellings: 80 <i>Survey date: MONDAY 17/11/14</i>	CHESHIRE	<i>Survey Type: MANUAL</i>
2	EX-03-B-01 SHIMBROOKS NEAR BRAINTREE GREAT LEIGHS Neighbourhood Centre (PPS6 Local Centre) Village Total No of Dwellings: 228 <i>Survey date: THURSDAY 10/05/18</i>	ESSEX	<i>Survey Type: MANUAL</i>
3	NB-03-B-01 WESTLEA BEDLINGTON  Edge of Town Residential Zone Total No of Dwellings: 97 <i>Survey date: MONDAY 19/11/12</i>	NORTHUMBERLAND	<i>Survey Type: MANUAL</i>
4	WL-03-B-01 BUTTERFIELD DRIVE AMESBURY  Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 54 <i>Survey date: TUESDAY 18/09/18</i>	WILTSHIRE	<i>Survey Type: MANUAL</i>
5	WY-03-B-02 WHITEACRE STREET HUDDERSFIELD DEIGHTON Edge of Town Residential Zone Total No of Dwellings: 54 <i>Survey date: TUESDAY 17/09/13</i>	WEST YORKSHIRE	<i>Survey Type: MANUAL</i>

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

TRIP RATE for Land Use 03 - RESIDENTIAL/B - AFFORDABLE/LOCAL AUTHORITY HOUSES  
VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	103	0.055	5	103	0.197	5	103	0.252
08:00 - 09:00	5	103	0.115	5	103	0.259	5	103	0.374
09:00 - 10:00	5	103	0.117	5	103	0.183	5	103	0.300
10:00 - 11:00	5	103	0.113	5	103	0.133	5	103	0.246
11:00 - 12:00	5	103	0.107	5	103	0.133	5	103	0.240
12:00 - 13:00	5	103	0.144	5	103	0.094	5	103	0.238
13:00 - 14:00	5	103	0.133	5	103	0.111	5	103	0.244
14:00 - 15:00	5	103	0.131	5	103	0.140	5	103	0.271
15:00 - 16:00	5	103	0.144	5	103	0.121	5	103	0.265
16:00 - 17:00	5	103	0.222	5	103	0.088	5	103	0.310
17:00 - 18:00	5	103	0.224	5	103	0.142	5	103	0.366
18:00 - 19:00	5	103	0.164	5	103	0.117	5	103	0.281
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
<b>Total Rates:</b>			1.669			1.718			3.387

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

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

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## Parameter summary

Trip rate parameter range selected: 54 - 228 (units: )  
Survey date range: 01/01/12 - 18/10/18  
Number of weekdays (Monday-Friday): 5  
Number of Saturdays: 0  
Number of Sundays: 0  
Surveys automatically removed from selection: 0  
Surveys manually removed from selection: 0

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

## **Appendix B**

Junction Modelling Output Files



Junctions 9
ARCADY 9 - Roundabout Module
Version: 9.5.1.7462 © Copyright TRL Limited, 2019
For sales and distribution information, program advice and maintenance, contact TRL: +44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk
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Filename: 2020-08-04 - A507-A6.j9  
 Path: L:\Projects\dlbea2 1908042\Analysis\Modelling  
 Report generation date: 04/08/2020 17:30:59

- »Without Dev, AM
- »Without Dev, PM
- »With Dev, AM
- »With Dev, PM

**Summary of junction performance**

AM						PM				
Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	
Without Dev										
Arm 1	D1	12.2	36.82	0.94	E	D2	6.2	20.21	0.87	C
Arm 2		145.2	373.00	1.23	F		33.2	88.66	1.02	F
Arm 3		65.4	238.34	1.11	F		23.0	85.45	1.01	F
Arm 4		8.3	28.58	0.90	D		2.8	11.07	0.74	B
With Dev										
Arm 1	D3	53.6	132.13	1.07	F	D4	48.4	117.48	1.06	F
Arm 2		157.4	458.77	1.24	F		104.4	297.94	1.17	F
Arm 3		413.0	1586.50	1.54	F		64.0	195.96	1.10	F
Arm 4		12.0	40.27	0.94	E		4.5	16.49	0.82	C

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

**File summary**

**File Description**

Title	
Location	
Site number	
Date	22/07/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MOTION\klewis
Description	

### Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	PCU	perHour	s	-Min	perMin

### Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

### Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Without Dev	AM	ONE HOUR	08:00	09:30	15
D2	Without Dev	PM	ONE HOUR	17:00	18:30	15
D3	With Dev	AM	ONE HOUR	08:00	09:30	15
D4	With Dev	PM	ONE HOUR	17:00	18:30	15

### Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

# Without Dev, AM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	178.62	F

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Arms

### Arms

Arm	Name	Description
1	A507 (west)	
2	A6 (north)	
3	A507 (east)	
4	A6 (south)	

### 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)	Exit only
1	3.34	9.26	17.8	164.0	70.8	22.0	
2	3.50	7.94	17.7	59.2	70.8	29.0	
3	3.20	7.50	11.6	25.0	70.8	27.0	
4	3.60	8.20	14.5	162.0	70.8	25.0	

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.568	2014
2	0.537	1872
3	0.491	1597
4	0.546	1890

The slope and intercept shown above include any corrections and adjustments.

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Without Dev	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1076	100.000
2		✓	1257	100.000
3		✓	888	100.000
4		✓	957	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	105	783	188
	2	343	0	93	821
	3	623	174	0	91
	4	120	712	125	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	16	7	3
	2	10	0	6	4
	3	7	12	0	13
	4	9	6	5	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.94	36.82	12.2	E
2	1.23	373.00	145.2	F
3	1.11	238.34	65.4	F
4	0.90	28.58	8.3	D

### Main Results for each time segment

#### 08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	868	807	1555	0.558	863	1.3	5.531	A
2	1001	870	1404	0.713	991	2.5	9.010	A
3	726	1062	1076	0.675	717	2.2	10.667	B
4	765	922	1386	0.552	760	1.3	6.060	A



**08:15 - 08:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1037	964	1467	0.707	1032	2.5	8.786	A
2	1195	1040	1312	0.911	1172	8.3	24.046	C
3	867	1259	979	0.885	849	6.6	26.966	D
4	914	1091	1294	0.706	909	2.5	9.828	A

**08:30 - 08:45**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1270	1148	1362	0.932	1240	10.0	26.689	D
2	1464	1251	1199	1.221	1193	76.1	137.887	F
3	1062	1313	953	1.114	938	37.6	99.154	F
4	1119	1176	1247	0.897	1100	7.4	23.280	C

**08:45 - 09:00**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1270	1164	1353	0.939	1261	12.2	36.824	E
2	1464	1272	1188	1.232	1187	145.2	335.362	F
3	1062	1311	954	1.113	951	65.4	206.983	F
4	1119	1186	1242	0.901	1116	8.3	28.582	D

**09:00 - 09:15**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1037	999	1447	0.717	1074	2.8	11.339	B
2	1195	1081	1290	0.926	1281	123.8	373.003	F
3	867	1366	926	0.936	911	54.3	238.341	F
4	914	1178	1247	0.733	935	3.1	13.031	B

**09:15 - 09:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	868	849	1532	0.567	874	1.4	5.911	A
2	1001	881	1398	0.716	1386	27.5	199.915	F
3	726	1430	895	0.811	878	16.4	150.711	F
4	765	1177	1247	0.614	771	1.7	8.120	A

# Without Dev, PM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	52.88	F

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Without Dev	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1029	100.000
2		✓	1136	100.000
3		✓	833	100.000
4		✓	836	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	114	718	197
	2	275	0	137	724
	3	430	318	0	85
	4	105	637	94	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	3	3	3
	2	5	0	4	2
	3	3	6	0	9
	4	2	2	2	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.87	20.21	6.2	C
2	1.02	88.66	33.2	F
3	1.01	85.45	23.0	F
4	0.74	11.07	2.8	B

### Main Results for each time segment

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	798	810	1554	0.514	794	1.1	4.851	A
2	881	778	1454	0.606	874	1.6	6.333	A
3	657	920	1146	0.573	651	1.4	7.549	A
4	642	798	1454	0.442	639	0.8	4.488	A

#### 17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	953	969	1463	0.651	950	1.9	7.169	A
2	1052	930	1372	0.767	1045	3.2	11.123	B
3	784	1099	1058	0.742	779	2.9	13.244	B
4	767	954	1369	0.560	765	1.3	6.057	A

#### 17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1167	1168	1351	0.864	1152	5.7	17.434	C
2	1288	1129	1265	1.018	1216	21.2	47.855	E
3	961	1288	965	0.996	911	15.2	48.777	E
4	939	1115	1281	0.733	933	2.7	10.390	B

#### 17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1167	1179	1344	0.868	1165	6.2	20.206	C
2	1288	1141	1258	1.024	1240	33.2	88.659	F
3	961	1312	953	1.008	929	23.0	85.455	F
4	939	1137	1269	0.740	938	2.8	11.067	B

#### 18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	953	1007	1442	0.661	969	2.1	8.112	A
2	1052	949	1362	0.772	1169	3.8	29.501	D
3	784	1212	1002	0.783	860	4.2	35.945	E
4	767	1057	1313	0.584	772	1.5	6.859	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	798	822	1547	0.516	802	1.1	4.997	A
2	881	785	1449	0.608	889	1.6	6.716	A
3	657	934	1139	0.577	668	1.5	8.194	A
4	642	817	1444	0.445	645	0.8	4.609	A

# With Dev, AM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	598.24	F

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	With Dev	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1124	100.000
2		✓	1266	100.000
3		✓	1230	100.000
4		✓	979	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	105	831	188
	2	343	0	102	821
	3	684	455	0	91
	4	120	721	138	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	16	7	3
	2	10	0	6	4
	3	7	12	0	13
	4	9	6	5	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	1.07	132.13	53.6	F
2	1.24	458.77	157.4	F
3	1.54	1586.50	413.0	F
4	0.94	40.27	12.0	E

### Main Results for each time segment

#### 08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	907	1047	1420	0.639	899	1.9	7.318	A
2	1008	917	1379	0.731	997	2.8	9.715	A
3	1012	1061	1076	0.940	972	10.1	30.597	D
4	783	1178	1246	0.628	776	1.8	8.014	A

#### 08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1083	1182	1343	0.807	1074	4.1	13.896	B
2	1204	1095	1283	0.938	1174	10.3	28.976	D
3	1209	1252	983	1.230	977	67.9	156.634	F
4	935	1233	1216	0.769	929	3.3	13.004	B

#### 08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1326	1342	1252	1.059	1220	30.6	63.553	F
2	1475	1253	1198	1.231	1193	80.7	147.859	F
3	1480	1293	963	1.538	962	197.4	503.607	F
4	1145	1225	1221	0.938	1117	10.3	30.759	D

#### 08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1326	1360	1242	1.068	1234	53.6	132.126	F
2	1475	1268	1190	1.239	1190	152.0	359.464	F
3	1480	1292	963	1.537	963	326.6	987.420	F
4	1145	1224	1221	0.938	1138	12.0	40.269	E

#### 09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1083	1212	1326	0.817	1273	6.1	81.913	F
2	1204	1279	1184	1.017	1182	157.4	458.770	F
3	1209	1292	963	1.255	963	388.0	1365.614	F
4	935	1223	1222	0.765	968	3.7	16.744	C

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	907	1036	1426	0.636	924	1.9	7.935	A
2	1008	940	1366	0.738	1357	70.2	303.719	F
3	1012	1396	912	1.110	912	413.0	1586.501	F
4	783	1224	1221	0.641	790	1.9	9.003	A

# With Dev, PM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	164.68	F

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	With Dev	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1196	100.000
2		✓	1188	100.000
3		✓	978	100.000
4		✓	906	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	114	885	197
	2	275	0	189	724
	3	528	365	0	85
	4	105	637	164	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	3	3	3
	2	5	0	4	2
	3	3	6	0	9
	4	2	2	2	0



## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	1.06	117.48	48.4	F
2	1.17	297.94	104.4	F
3	1.10	195.96	64.0	F
4	0.82	16.49	4.5	C

### Main Results for each time segment

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	927	900	1503	0.617	921	1.6	6.302	A
2	921	958	1357	0.679	913	2.1	8.209	A
3	770	918	1147	0.672	762	2.1	9.603	A
4	696	909	1394	0.499	692	1.0	5.202	A

#### 17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1107	1074	1404	0.789	1099	3.6	11.872	B
2	1100	1144	1256	0.876	1084	6.2	19.871	C
3	920	1091	1062	0.867	905	5.7	22.264	C
4	831	1079	1301	0.639	828	1.8	7.717	A

#### 17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1356	1270	1292	1.049	1257	28.4	57.621	F
2	1347	1320	1162	1.159	1151	55.2	107.450	F
3	1127	1173	1021	1.103	1004	36.4	89.076	F
4	1017	1185	1243	0.819	1008	4.2	15.010	C

#### 17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1356	1283	1285	1.055	1276	48.4	117.475	F
2	1347	1339	1152	1.170	1151	104.4	257.007	F
3	1127	1176	1020	1.105	1016	64.0	188.411	F
4	1017	1196	1237	0.823	1016	4.5	16.489	C

#### 18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1107	1121	1377	0.804	1281	4.9	60.899	F
2	1100	1311	1167	0.943	1156	90.5	297.944	F
3	920	1181	1018	0.904	1001	43.7	195.960	F
4	831	1183	1244	0.668	840	2.1	9.302	A

18:15 - 18:30

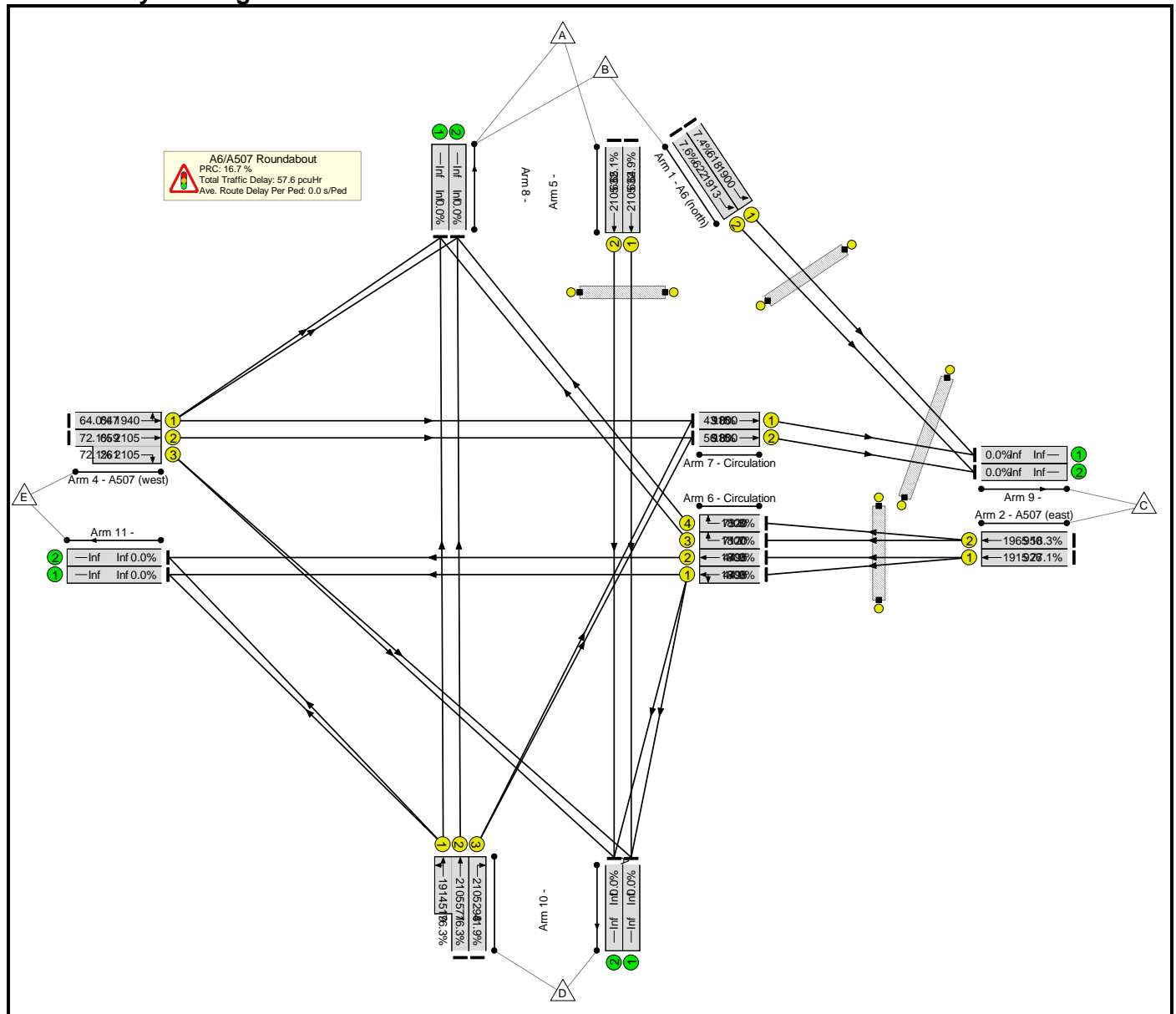
Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	927	969	1464	0.634	940	1.8	7.243	A
2	921	977	1347	0.684	1273	2.6	113.556	F
3	770	1223	997	0.773	928	4.3	80.753	F
4	696	1145	1265	0.550	699	1.3	6.531	A

Basic Results Summary  
**Basic Results Summary**

**User and Project Details**

<b>Project:</b>	
<b>Title:</b>	
<b>Location:</b>	
<b>Additional detail:</b>	
<b>File name:</b>	2020-08-04 - A507-A6 [approved mitigation].lsg3x
<b>Author:</b>	
<b>Company:</b>	
<b>Address:</b>	

**Scenario 1: 'Without Dev AM'** (FG1: 'Without Dev AM', Plan 1: 'Network Control Plan 1')  
**Network Layout Diagram**



Basic Results Summary

**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network</b>	-	-	-		-	-	-	-	-	-	77.1%	0	0	0	57.6	-	-
<b>A6/A507 Roundabout</b>	-	-	-		-	-	-	-	-	-	77.1%	0	0	0	57.6	-	-
1/1	A6 (north) Left	U	A		1	38	-	46	1900	618	7.4%	-	-	-	0.4	31.2	1.1
1/2	A6 (north) Left	U	A		1	38	-	47	1913	622	7.6%	-	-	-	0.4	31.2	1.1
2/1	A507 (east) Ahead	U	C		1	57	-	714	1915	926	77.1%	-	-	-	6.7	33.9	21.1
2/2	A507 (east) Ahead	U	C		1	57	-	174	1965	950	18.3%	-	-	-	1.0	19.9	3.4
3/2+3/1	A6 (south) Ahead Left	U	E		1	56	-	832	2105:1914	571+519	76.3 : 76.3%	-	-	-	6.9	29.6	18.5
3/3	A6 (south) Right	U	D		1	16	-	125	2105	298	41.9%	-	-	-	2.0	57.4	4.1
4/1	A507 (west) Ahead Left	U	F		1	39	-	414	1940	647	64.0%	-	-	-	4.8	41.6	12.5
4/2+4/3	A507 (west) Ahead Right	U	F		1	39	-	663	2105:2105	659+261	72.1 : 72.1%	-	-	-	7.4	39.9	14.9
5/1	Ahead	U	B		1	35	-	410	2105	632	64.9%	-	-	-	5.1	44.6	12.8
5/2	Ahead	U	B		1	35	-	411	2105	632	65.1%	-	-	-	5.1	44.6	12.8
6/1	Circulation Left Ahead	U	H		1	52	-	357	1800	795	44.9%	-	-	-	3.4	34.5	6.8
6/2	Circulation Ahead	U	H		1	52	-	357	1800	795	44.9%	-	-	-	3.4	34.5	6.8
6/3	Circulation Right	U	G		1	7	-	86	1800	120	71.7%	-	-	-	2.9	123.1	4.0
6/4	Circulation Right	U	G		1	7	-	88	1800	120	73.3%	-	-	-	3.1	125.8	4.2
7/1	Circulation Ahead	U	I		1	60	-	393	1800	915	43.0%	-	-	-	2.3	21.3	5.5
7/2	Circulation Ahead	U	I		1	60	-	515	1800	915	56.3%	-	-	-	2.7	19.0	5.7

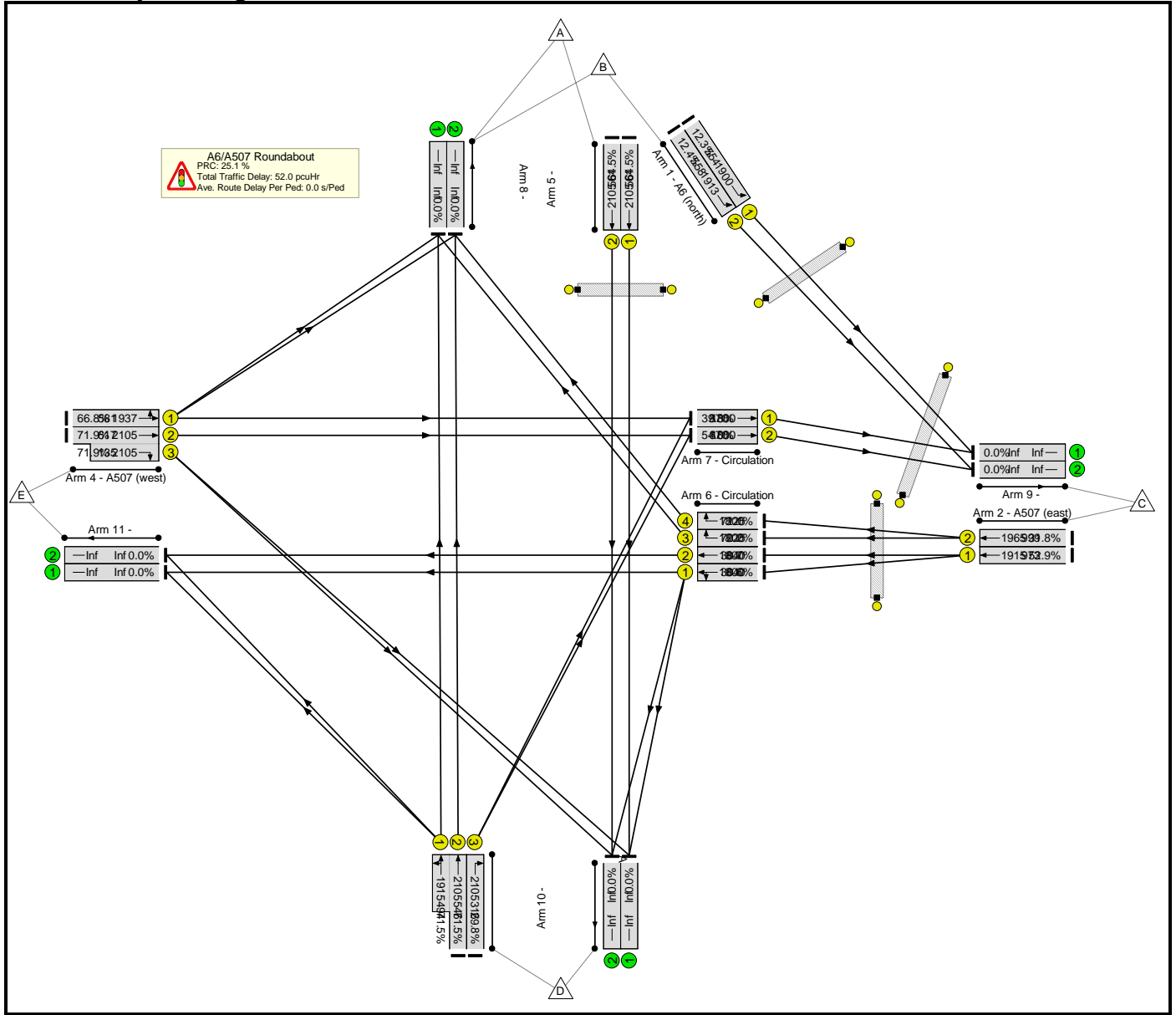
### Basic Results Summary

Ped Link: P1	Unnamed Ped Link	-	J		1	54	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	L		1	8	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	K		1	16	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	M		1	54	-	0	-	0	0.0%	-	-	-	-	-	-
		C1		PRC for Signalled Lanes (%):		16.7		Total Delay for Signalled Lanes (pcuHr):		57.56		Cycle Time (s): 120					
				PRC Over All Lanes (%):		16.7		Total Delay Over All Lanes(pcuHr):		57.56							

Basic Results Summary

Scenario 2: 'Without Dev PM' (FG2: 'Without Dev PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network</b>	-	-	-		-	-	-	-	-	-	<b>71.9%</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>52.0</b>	-	-
<b>A6/A507 Roundabout</b>	-	-	-		-	-	-	-	-	-	<b>71.9%</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>52.0</b>	-	-
1/1	A6 (north) Left	U	A		1	34	-	68	1900	554	12.3%	-	-	-	0.7	34.9	1.7
1/2	A6 (north) Left	U	A		1	34	-	69	1913	558	12.4%	-	-	-	0.7	34.9	1.8
2/1	A507 (east) Ahead	U	C		1	60	-	515	1915	973	52.9%	-	-	-	3.4	23.8	12.0
2/2	A507 (east) Ahead	U	C		1	60	-	318	1965	999	31.8%	-	-	-	1.8	20.0	6.4
3/2+3/1	A6 (south) Ahead Left	U	E		1	53	-	743	2105:1915	546+494	71.5 : 71.5%	-	-	-	6.1	29.7	15.5
3/3	A6 (south) Right	U	D		1	17	-	94	2105	316	29.8%	-	-	-	1.4	53.5	3.0
4/1	A507 (west) Ahead Left	U	F		1	35	-	388	1937	581	66.8%	-	-	-	5.0	46.0	12.3
4/2+4/3	A507 (west) Ahead Right	U	F		1	35	-	541	2105:2105	617+135	71.9 : 71.9%	-	-	-	6.7	44.5	14.3
5/1	Ahead	U	B		1	31	-	362	2105	561	64.5%	-	-	-	4.8	47.9	11.6
5/2	Ahead	U	B		1	31	-	362	2105	561	64.5%	-	-	-	4.8	47.9	11.6
6/1	Circulation Left Ahead	U	H		1	55	-	257	1800	840	30.6%	-	-	-	1.5	21.4	3.4
6/2	Circulation Ahead	U	H		1	55	-	258	1800	840	30.7%	-	-	-	1.5	21.4	3.5
6/3	Circulation Right	U	G		1	14	-	158	1800	225	70.2%	-	-	-	4.4	99.2	6.4
6/4	Circulation Right	U	G		1	14	-	160	1800	225	71.1%	-	-	-	4.4	100.0	6.5
7/1	Circulation Ahead	U	I		1	57	-	342	1800	870	39.3%	-	-	-	2.2	23.0	4.8
7/2	Circulation Ahead	U	I		1	57	-	470	1800	870	54.0%	-	-	-	2.7	20.5	5.3

Basic Results Summary

Ped Link: P1	Unnamed Ped Link	-	J		1	57	-	0	-	0	0.0%	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	L		1	15	-	0	-	0	0.0%	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	K		1	17	-	0	-	0	0.0%	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	M		1	57	-	0	-	0	0.0%	-	-	-	-	-

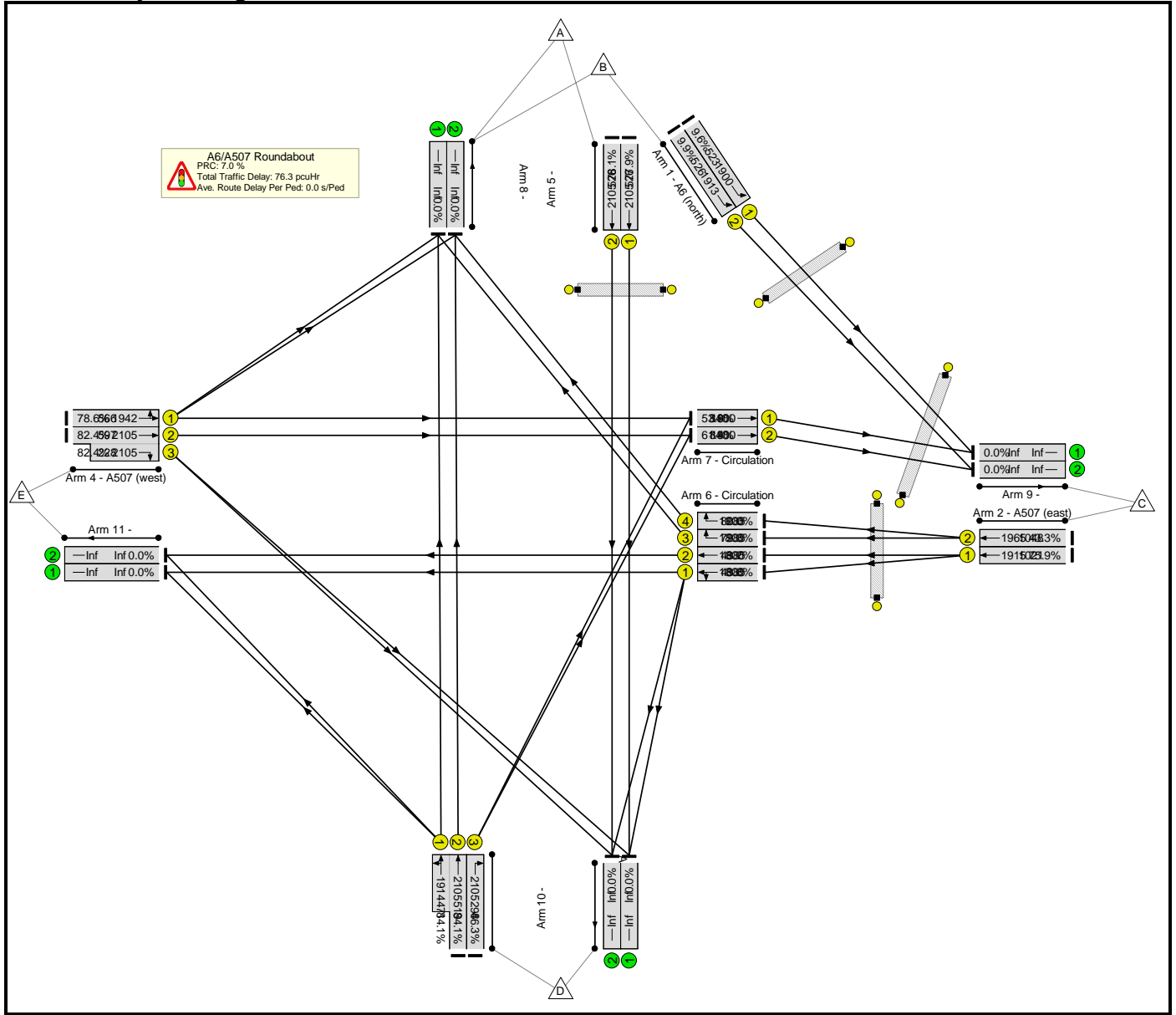
C1		PRC for Signalled Lanes (%):		25.1	Total Delay for Signalled Lanes (pcuHr):		52.03	Cycle Time (s):		120
		PRC Over All Lanes (%):		25.1	Total Delay Over All Lanes(pcuHr):		52.03			



Basic Results Summary

Scenario 3: 'With Dev AM' (FG3: 'With Dev AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network</b>	-	-	-		-	-	-	-	-	-	84.1%	0	0	0	76.3	-	-
<b>A6/A507 Roundabout</b>	-	-	-		-	-	-	-	-	-	84.1%	0	0	0	76.3	-	-
1/1	A6 (north) Left	U	A		1	32	-	50	1900	523	9.6%	-	-	-	0.5	36.2	1.3
1/2	A6 (north) Left	U	A		1	32	-	52	1913	526	9.9%	-	-	-	0.5	36.3	1.3
2/1	A507 (east) Ahead	U	C		1	63	-	775	1915	1021	75.9%	-	-	-	6.3	29.2	21.8
2/2	A507 (east) Ahead	U	C		1	63	-	454	1965	1048	43.3%	-	-	-	2.5	20.0	9.5
3/2+3/1	A6 (south) Ahead Left	U	E		1	50	-	832	2105:1914	519+471	84.1 : 84.1%	-	-	-	9.0	38.8	21.8
3/3	A6 (south) Right	U	D		1	16	-	138	2105	298	46.3%	-	-	-	2.2	58.5	4.6
4/1	A507 (west) Ahead Left	U	F		1	34	-	445	1942	566	78.6%	-	-	-	6.6	53.5	15.4
4/2+4/3	A507 (west) Ahead Right	U	F		1	34	-	680	2105:2105	597+228	82.4 : 82.4%	-	-	-	9.4	49.6	17.3
5/1	Ahead	U	B		1	29	-	410	2105	526	77.9%	-	-	-	6.5	57.0	14.4
5/2	Ahead	U	B		1	29	-	411	2105	526	78.1%	-	-	-	6.5	57.1	14.4
6/1	Circulation Left Ahead	U	H		1	58	-	388	1800	885	43.8%	-	-	-	2.8	26.2	6.3
6/2	Circulation Ahead	U	H		1	58	-	387	1800	885	43.7%	-	-	-	2.8	26.2	6.2
6/3	Circulation Right	U	G		1	18	-	226	1800	285	79.3%	-	-	-	6.4	101.6	9.3
6/4	Circulation Right	U	G		1	18	-	228	1800	285	80.0%	-	-	-	6.5	102.5	9.5
7/1	Circulation Ahead	U	I		1	55	-	453	1800	840	53.9%	-	-	-	3.9	31.2	8.1
7/2	Circulation Ahead	U	I		1	55	-	516	1800	840	61.4%	-	-	-	3.9	27.2	7.2

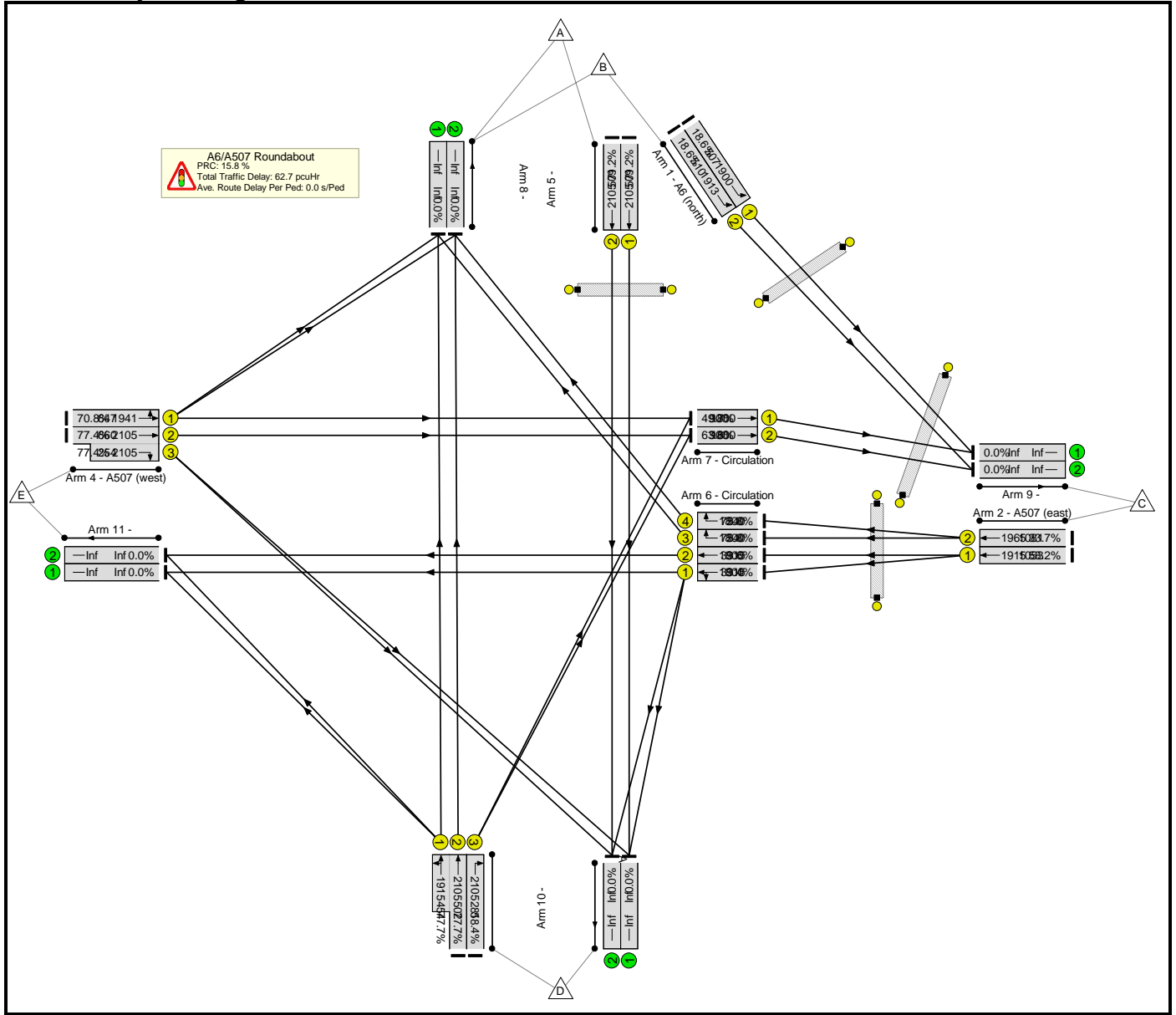
Basic Results Summary

Ped Link: P1	Unnamed Ped Link	-	J		1	60	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	L		1	19	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	K		1	16	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	M		1	60	-	0	-	0	0.0%	-	-	-	-	-	-
		C1		PRC for Signalled Lanes (%):		7.0		Total Delay for Signalled Lanes (pcuHr):		76.34		Cycle Time (s):		120			
				PRC Over All Lanes (%):		7.0		Total Delay Over All Lanes(pcuHr):		76.34							

Basic Results Summary

Scenario 4: 'With Dev PM' (FG4: 'With Dev PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network</b>	-	-	-		-	-	-	-	-	-	77.7%	0	0	0	62.7	-	-
<b>A6/A507 Roundabout</b>	-	-	-		-	-	-	-	-	-	77.7%	0	0	0	62.7	-	-
1/1	A6 (north) Left	U	A		1	31	-	94	1900	507	18.6%	-	-	-	1.0	38.3	2.5
1/2	A6 (north) Left	U	A		1	31	-	95	1913	510	18.6%	-	-	-	1.0	38.3	2.5
2/1	A507 (east) Ahead	U	C		1	65	-	613	1915	1053	58.2%	-	-	-	3.7	21.9	14.1
2/2	A507 (east) Ahead	U	C		1	65	-	364	1965	1081	33.7%	-	-	-	1.8	17.4	6.9
3/2+3/1	A6 (south) Ahead Left	U	E		1	48	-	743	2105:1915	502+454	77.7 : 77.7%	-	-	-	7.4	36.0	17.6
3/3	A6 (south) Right	U	D		1	15	-	164	2105	281	58.4%	-	-	-	2.9	64.1	5.8
4/1	A507 (west) Ahead Left	U	F		1	39	-	458	1941	647	70.8%	-	-	-	5.6	44.3	14.4
4/2+4/3	A507 (west) Ahead Right	U	F		1	39	-	708	2105:2105	660+254	77.4 : 77.4%	-	-	-	8.3	42.2	16.6
5/1	Ahead	U	B		1	28	-	362	2105	509	71.2%	-	-	-	5.4	53.7	12.2
5/2	Ahead	U	B		1	28	-	362	2105	509	71.2%	-	-	-	5.4	53.7	12.2
6/1	Circulation Left Ahead	U	H		1	60	-	306	1800	915	33.4%	-	-	-	1.6	18.7	3.9
6/2	Circulation Ahead	U	H		1	60	-	307	1800	915	33.6%	-	-	-	1.6	18.7	3.9
6/3	Circulation Right	U	G		1	15	-	182	1800	240	75.8%	-	-	-	5.1	101.0	7.6
6/4	Circulation Right	U	G		1	15	-	182	1800	240	75.8%	-	-	-	5.1	101.0	7.6
7/1	Circulation Ahead	U	I		1	59	-	447	1800	900	49.7%	-	-	-	3.0	24.3	6.9
7/2	Circulation Ahead	U	I		1	59	-	572	1800	900	63.6%	-	-	-	3.7	23.2	7.5

### Basic Results Summary

Ped Link: P1	Unnamed Ped Link	-	J		1	62	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	L		1	16	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	K		1	15	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	M		1	62	-	0	-	0	0.0%	-	-	-	-	-	-

C1

PRC for Signalled Lanes (%): 15.8  
 PRC Over All Lanes (%): 15.8

Total Delay for Signalled Lanes (pcuHr): 62.70  
 Total Delay Over All Lanes(pcuHr): 62.70

Cycle Time (s): 120

*A600/A507/Amphill Road*

Junctions 9
ARCADY 9 - Roundabout Module
Version: 9.5.1.7462 © Copyright TRL Limited, 2019
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Filename: 2020-08-04 - A507-A600-Ampthill Road-A507.j9  
 Path: L:\Projects\dlbea2 1908042\Analysis\Modelling  
 Report generation date: 05/08/2020 09:49:05

- »Without Dev, AM
- »Without Dev, PM
- »With Dev, AM
- »With Dev, PM

**Summary of junction performance**

AM						PM				
Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	
Without Dev										
Arm 1	D1	9.5	30.22	0.92	D	D2	30.4	81.95	1.02	F
Arm 2		22.5	82.19	1.01	F		3.8	18.05	0.80	C
Arm 3		28.9	269.63	1.17	F		3.2	40.64	0.78	E
Arm 4		3.5	9.13	0.78	A		2.2	6.14	0.69	A
With Dev										
Arm 1	D3	34.7	88.84	1.02	F	D4	54.8	131.33	1.07	F
Arm 2		41.3	138.80	1.07	F		4.9	22.42	0.84	C
Arm 3		39.8	436.46	1.26	F		5.8	68.17	0.89	F
Arm 4		3.7	9.64	0.79	A		2.8	7.60	0.74	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.

**File summary**

**File Description**

Title	
Location	
Site number	
Date	22/07/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MOTION\klewis
Description	



### Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	PCU	perHour	s	-Min	perMin

### Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

### Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Without Dev	AM	ONE HOUR	08:00	09:30	15
D2	Without Dev	PM	ONE HOUR	17:00	18:30	15
D3	With Dev	AM	ONE HOUR	08:00	09:30	15
D4	With Dev	PM	ONE HOUR	17:00	18:30	15

### Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

# Without Dev, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	57.49	F

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Arms

### Arms

Arm	Name	Description
1	A507	
2	A600	
3	Amphill Road	
4	A507	

### 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)	Exit only
1	3.30	7.10	22.0	70.1	37.3	40.0	
2	5.10	6.10	5.9	10.4	37.3	44.0	
3	3.40	7.20	3.4	8.4	37.3	57.0	
4	6.80	7.40	3.8	56.0	37.3	37.0	

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.656	1742
2	0.595	1579
3	0.473	1075
4	0.750	2197

The slope and intercept shown above include any corrections and adjustments.

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Without Dev	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1095	100.000
2		✓	884	100.000
3		✓	327	100.000
4		✓	1269	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	230	176	689
	2	309	0	71	504
	3	147	81	0	99
	4	742	455	72	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.92	30.22	9.5	D
2	1.01	82.19	22.5	F
3	1.17	269.63	28.9	F
4	0.78	9.13	3.5	A

### Main Results for each time segment

#### 08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	824	455	1443	0.571	819	1.3	5.721	A
2	666	701	1162	0.573	660	1.3	7.106	A
3	246	1123	545	0.452	243	0.8	11.813	B
4	955	400	1897	0.504	951	1.0	3.793	A

**08:15 - 08:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	984	545	1385	0.711	980	2.4	8.806	A
2	795	839	1080	0.736	789	2.7	12.172	B
3	294	1343	441	0.667	290	1.9	23.222	C
4	1141	478	1838	0.621	1138	1.6	5.125	A

**08:30 - 08:45**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1206	653	1313	0.918	1182	8.4	23.937	C
2	973	1012	977	0.997	924	15.0	47.140	E
3	360	1593	322	1.117	307	15.1	125.695	F
4	1397	537	1794	0.779	1390	3.4	8.760	A

**08:45 - 09:00**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1206	656	1312	0.919	1201	9.5	30.223	D
2	973	1028	967	1.006	943	22.5	82.195	F
3	360	1623	308	1.169	305	28.9	269.634	F
4	1397	543	1790	0.781	1397	3.5	9.135	A

**09:00 - 09:15**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	984	571	1367	0.720	1012	2.7	10.849	B
2	795	864	1065	0.746	872	3.2	25.328	D
3	294	1438	395	0.743	382	6.8	178.090	F
4	1141	571	1768	0.645	1147	1.8	5.854	A

**09:15 - 09:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	824	465	1437	0.574	830	1.4	5.977	A
2	666	710	1157	0.575	673	1.4	7.543	A
3	246	1141	536	0.459	270	0.9	14.695	B
4	955	423	1879	0.508	959	1.0	3.924	A

# Without Dev, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	38.36	E

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Without Dev	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1179	100.000
2		✓	725	100.000
3		✓	277	100.000
4		✓	1158	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	338	174	667
	2	207	0	51	467
	3	138	64	0	75
	4	580	500	78	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	1.02	81.95	30.4	F
2	0.80	18.05	3.8	C
3	0.78	40.64	3.2	E
4	0.69	6.14	2.2	A

### Main Results for each time segment

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	888	481	1426	0.622	881	1.6	6.533	A
2	546	687	1170	0.466	542	0.9	5.705	A
3	209	1003	601	0.347	206	0.5	9.070	A
4	872	305	1968	0.443	869	0.8	3.266	A

#### 17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1060	576	1364	0.777	1053	3.3	11.340	B
2	652	821	1090	0.598	649	1.5	8.121	A
3	249	1200	508	0.490	247	0.9	13.708	B
4	1041	366	1922	0.542	1040	1.2	4.071	A

#### 17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1298	703	1280	1.014	1230	20.3	45.881	E
2	798	963	1006	0.794	790	3.5	16.075	C
3	305	1430	399	0.764	298	2.8	33.239	D
4	1275	442	1865	0.684	1271	2.1	6.024	A

#### 17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1298	706	1278	1.015	1257	30.4	81.953	F
2	798	983	994	0.803	797	3.8	18.047	C
3	305	1452	389	0.784	303	3.2	40.639	E
4	1275	449	1860	0.685	1275	2.2	6.145	A

**18:00 - 18:15**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1060	581	1361	0.779	1166	3.8	27.297	D
2	652	902	1042	0.625	660	1.7	9.631	A
3	249	1274	473	0.526	257	1.2	17.261	C
4	1041	376	1915	0.544	1045	1.2	4.157	A

**18:15 - 18:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	888	485	1424	0.623	896	1.7	6.929	A
2	546	698	1164	0.469	549	0.9	5.889	A
3	209	1017	594	0.351	211	0.5	9.447	A
4	872	311	1964	0.444	873	0.8	3.305	A

# With Dev, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	104.18	F

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	With Dev	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1223	100.000
2		✓	895	100.000
3		✓	332	100.000
4		✓	1296	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	256	196	771
	2	320	0	71	504
	3	152	81	0	99
	4	769	455	72	0

## Vehicle Mix



### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	1.02	88.84	34.7	F
2	1.07	138.80	41.3	F
3	1.26	436.46	39.8	F
4	0.79	9.64	3.7	A

### Main Results for each time segment

#### 08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	921	455	1443	0.638	914	1.7	6.716	A
2	674	777	1117	0.603	668	1.5	7.917	A
3	250	1191	512	0.488	246	0.9	13.353	B
4	976	412	1888	0.517	971	1.1	3.909	A

#### 08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1099	544	1385	0.794	1092	3.6	11.976	B
2	805	928	1027	0.784	797	3.4	15.188	C
3	298	1422	403	0.740	292	2.5	30.812	D
4	1165	490	1829	0.637	1162	1.7	5.376	A

#### 08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1347	649	1316	1.023	1271	22.5	48.432	E
2	985	1084	934	1.055	905	23.5	67.320	F
3	366	1634	303	1.207	294	20.5	168.351	F
4	1427	530	1800	0.793	1419	3.7	9.279	A

#### 08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1347	651	1315	1.024	1298	34.7	88.838	F
2	985	1105	921	1.070	914	41.3	138.797	F
3	366	1660	291	1.257	290	39.5	391.422	F
4	1427	530	1799	0.793	1427	3.7	9.635	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1099	549	1381	0.796	1221	4.3	34.888	D
2	805	1031	966	0.833	940	7.4	99.282	F
3	298	1635	302	0.987	297	39.8	436.456	F
4	1165	545	1788	0.652	1172	1.9	5.912	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	921	497	1416	0.650	930	1.9	7.554	A
2	674	790	1109	0.608	697	1.6	9.220	A
3	250	1228	495	0.505	405	1.1	105.268	F
4	976	533	1797	0.543	979	1.2	4.413	A

# With Dev, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	59.52	F

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	With Dev	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1239	100.000
2		✓	756	100.000
3		✓	298	100.000
4		✓	1223	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	355	184	700
	2	238	0	51	467
	3	159	64	0	75
	4	645	500	78	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	1.07	131.33	54.8	F
2	0.84	22.42	4.9	C
3	0.89	68.17	5.8	F
4	0.74	7.60	2.8	A

### Main Results for each time segment

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	933	481	1426	0.654	925	1.8	7.089	A
2	569	719	1151	0.494	565	1.0	6.104	A
3	224	1050	579	0.387	222	0.6	10.014	B
4	921	344	1939	0.475	917	0.9	3.513	A

#### 17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1114	576	1364	0.817	1105	4.1	13.424	B
2	680	858	1068	0.636	677	1.7	9.122	A
3	268	1255	482	0.556	266	1.2	16.455	C
4	1099	412	1888	0.582	1098	1.4	4.543	A

#### 17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1364	701	1282	1.064	1253	31.9	63.333	F
2	832	980	996	0.836	821	4.5	19.444	C
3	328	1474	379	0.866	315	4.6	48.674	E
4	1347	494	1826	0.737	1341	2.7	7.338	A

#### 17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1364	706	1279	1.067	1272	54.8	131.326	F
2	832	994	988	0.843	831	4.9	22.417	C
3	328	1493	369	0.888	323	5.8	68.166	F
4	1347	503	1819	0.740	1346	2.8	7.599	A

**18:00 - 18:15**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1114	583	1359	0.819	1310	5.8	81.256	F
2	680	1005	981	0.693	690	2.3	12.775	B
3	268	1383	421	0.636	283	1.9	28.527	D
4	1099	429	1875	0.586	1105	1.4	4.709	A

**18:15 - 18:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	933	485	1423	0.655	948	1.9	7.814	A
2	569	735	1141	0.499	575	1.0	6.409	A
3	224	1072	569	0.394	229	0.7	10.743	B
4	921	352	1933	0.476	923	0.9	3.574	A

Junctions 9
ARCADY 9 - Roundabout Module
Version: 9.5.1.7462 © Copyright TRL Limited, 2019
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Filename: 2020-08-05 - A507-A600-Ampthill Road-A507 (Mitigation).j9  
 Path: L:\Projects\dlbea2 1908042\Analysis\Modelling  
 Report generation date: 05/08/2020 12:57:16

- »Without Dev, AM
- »Without Dev, PM
- »With Dev, AM
- »With Dev, PM

**Summary of junction performance**

AM					PM					
Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	
<b>Without Dev</b>										
Arm 1	D1	4.6	14.35	0.83	B	D2	8.8	25.82	0.91	D
Arm 2		7.7	30.28	0.90	D		2.6	12.07	0.73	B
Arm 3		5.8	62.37	0.89	F		1.6	18.83	0.62	C
Arm 4		3.8	9.96	0.80	A		2.2	6.16	0.69	A
<b>With Dev</b>										
Arm 1	D3	10.2	29.01	0.92	D	D4	14.5	40.66	0.96	E
Arm 2		15.4	58.47	0.97	F		3.4	15.07	0.78	C
Arm 3		12.8	125.31	1.01	F		2.3	26.48	0.71	D
Arm 4		4.2	10.89	0.81	B		2.8	7.64	0.74	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.

**File summary**

**File Description**

Title	
Location	
Site number	
Date	22/07/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MOTION\klewis
Description	

### Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	PCU	perHour	s	-Min	perMin

### Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

### Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Without Dev	AM	ONE HOUR	08:00	09:30	15
D2	Without Dev	PM	ONE HOUR	17:00	18:30	15
D3	With Dev	AM	ONE HOUR	08:00	09:30	15
D4	With Dev	PM	ONE HOUR	17:00	18:30	15

### Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

# Without Dev, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	21.12	C

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Arms

### Arms

Arm	Name	Description
1	A507	
2	A600	
3	Amphill Road	
4	A507	

### 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)	Exit only
1	3.30	8.00	27.0	70.1	37.3	40.0	
2	5.10	7.00	10.0	10.4	37.3	44.0	
3	3.40	8.00	7.0	8.4	37.3	57.0	
4	6.80	7.40	3.8	56.0	37.3	37.0	

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.691	1915
2	0.624	1725
3	0.506	1241
4	0.750	2197

The slope and intercept shown above include any corrections and adjustments.

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Without Dev	AM	ONE HOUR	08:00	09:30	15



Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1095	100.000
2		✓	884	100.000
3		✓	327	100.000
4		✓	1269	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	230	176	689
	2	309	0	71	504
	3	147	81	0	99
	4	742	455	72	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.83	14.35	4.6	B
2	0.90	30.28	7.7	D
3	0.89	62.37	5.8	F
4	0.80	9.96	3.8	A

### Main Results for each time segment

#### 08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	824	455	1600	0.515	820	1.1	4.590	A
2	666	702	1287	0.517	661	1.1	5.717	A
3	246	1124	672	0.366	244	0.6	8.364	A
4	955	401	1896	0.504	951	1.0	3.796	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	984	545	1538	0.640	982	1.7	6.434	A
2	795	840	1201	0.662	791	1.9	8.720	A
3	294	1345	560	0.525	292	1.1	13.319	B
4	1141	480	1837	0.621	1138	1.6	5.138	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1206	663	1457	0.827	1195	4.4	13.218	B
2	973	1023	1087	0.896	954	6.8	24.215	C
3	360	1629	417	0.864	346	4.6	44.348	E
4	1397	575	1766	0.791	1389	3.6	9.363	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1206	668	1453	0.829	1205	4.6	14.352	B
2	973	1031	1082	0.900	970	7.7	30.281	D
3	360	1650	406	0.886	355	5.8	62.370	F
4	1397	587	1757	0.795	1397	3.8	9.955	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	984	555	1532	0.643	996	1.8	6.850	A
2	795	852	1193	0.666	817	2.1	10.109	B
3	294	1378	544	0.541	312	1.2	16.697	C
4	1141	503	1819	0.627	1149	1.7	5.436	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	824	459	1598	0.516	827	1.1	4.694	A
2	666	708	1283	0.519	669	1.1	5.900	A
3	246	1136	666	0.370	249	0.6	8.676	A
4	955	407	1891	0.505	958	1.0	3.870	A

# Without Dev, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	15.44	C

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Without Dev	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1179	100.000
2		✓	725	100.000
3		✓	277	100.000
4		✓	1158	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	338	174	667
	2	207	0	51	467
	3	138	64	0	75
	4	580	500	78	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.91	25.82	8.8	D
2	0.73	12.07	2.6	B
3	0.62	18.83	1.6	C
4	0.69	6.16	2.2	A

### Main Results for each time segment

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	888	481	1582	0.561	883	1.3	5.108	A
2	546	688	1296	0.421	543	0.7	4.765	A
3	209	1004	733	0.285	207	0.4	6.824	A
4	872	306	1967	0.443	869	0.8	3.267	A

#### 17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1060	576	1517	0.699	1056	2.3	7.742	A
2	652	823	1211	0.538	650	1.1	6.396	A
3	249	1202	633	0.393	248	0.6	9.329	A
4	1041	366	1922	0.542	1039	1.2	4.073	A

#### 17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1298	704	1428	0.909	1276	7.9	21.043	C
2	798	996	1104	0.723	793	2.5	11.386	B
3	305	1459	503	0.606	302	1.5	17.604	C
4	1275	446	1862	0.685	1271	2.1	6.052	A

#### 17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1298	707	1427	0.910	1295	8.8	25.821	D
2	798	1009	1095	0.729	798	2.6	12.071	B
3	305	1474	495	0.616	305	1.6	18.833	C
4	1275	450	1859	0.686	1275	2.2	6.157	A

**18:00 - 18:15**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1060	580	1514	0.700	1085	2.4	8.863	A
2	652	845	1198	0.544	657	1.2	6.728	A
3	249	1225	621	0.401	252	0.7	9.855	A
4	1041	372	1918	0.543	1045	1.2	4.140	A

**18:15 - 18:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	888	484	1580	0.562	892	1.3	5.264	A
2	546	695	1291	0.423	548	0.7	4.855	A
3	209	1014	728	0.286	210	0.4	6.961	A
4	872	309	1965	0.444	873	0.8	3.302	A

# With Dev, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	38.31	E

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	With Dev	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1223	100.000
2		✓	895	100.000
3		✓	332	100.000
4		✓	1296	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	256	196	771
	2	320	0	71	504
	3	152	81	0	99
	4	769	455	72	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.92	29.01	10.2	D
2	0.97	58.47	15.4	F
3	1.01	125.31	12.8	F
4	0.81	10.89	4.2	B

### Main Results for each time segment

#### 08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	921	455	1600	0.575	915	1.3	5.216	A
2	674	778	1240	0.544	669	1.2	6.259	A
3	250	1193	637	0.392	247	0.6	9.176	A
4	976	413	1887	0.517	971	1.1	3.913	A

#### 08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1099	545	1539	0.715	1095	2.4	8.038	A
2	805	930	1144	0.703	800	2.3	10.326	B
3	298	1427	519	0.575	296	1.3	15.945	C
4	1165	494	1827	0.638	1162	1.7	5.399	A

#### 08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1347	659	1459	0.923	1321	8.9	22.654	C
2	985	1123	1024	0.962	949	11.4	37.121	E
3	366	1706	378	0.968	339	7.9	69.372	F
4	1427	577	1764	0.809	1418	4.0	10.147	B

#### 08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1347	664	1456	0.925	1341	10.2	29.009	D
2	985	1140	1014	0.972	969	15.4	58.468	F
3	366	1738	362	1.011	346	12.8	125.306	F
4	1427	589	1755	0.813	1426	4.2	10.890	B

**09:00 - 09:15**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1099	561	1527	0.720	1130	2.7	9.693	A
2	805	958	1127	0.714	856	2.6	15.651	C
3	298	1500	482	0.619	343	1.7	33.183	D
4	1165	547	1787	0.652	1174	1.9	5.962	A

**09:15 - 09:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	921	460	1597	0.577	926	1.4	5.404	A
2	674	786	1234	0.546	679	1.2	6.551	A
3	250	1209	629	0.397	254	0.7	9.706	A
4	976	421	1881	0.519	979	1.1	4.005	A



# With Dev, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	22.47	C

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	With Dev	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1239	100.000
2		✓	756	100.000
3		✓	298	100.000
4		✓	1223	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	355	184	700
	2	238	0	51	467
	3	159	64	0	75
	4	645	500	78	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.96	40.66	14.5	E
2	0.78	15.07	3.4	C
3	0.71	26.48	2.3	D
4	0.74	7.64	2.8	A

### Main Results for each time segment

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	933	481	1582	0.589	927	1.4	5.447	A
2	569	720	1276	0.446	566	0.8	5.051	A
3	224	1052	709	0.316	223	0.5	7.376	A
4	921	345	1938	0.475	917	0.9	3.514	A

#### 17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1114	576	1517	0.734	1109	2.7	8.712	A
2	680	861	1188	0.572	678	1.3	7.031	A
3	268	1258	604	0.443	267	0.8	10.619	B
4	1099	413	1887	0.583	1098	1.4	4.548	A

#### 17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1364	703	1429	0.955	1327	11.9	28.521	D
2	832	1033	1081	0.770	825	3.1	13.708	B
3	328	1519	472	0.695	323	2.1	23.319	C
4	1347	501	1821	0.740	1341	2.8	7.419	A

#### 17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1364	707	1427	0.956	1354	14.5	40.665	E
2	832	1052	1069	0.779	832	3.4	15.067	C
3	328	1540	462	0.711	327	2.3	26.475	D
4	1347	507	1817	0.741	1346	2.8	7.641	A

**18:00 - 18:15**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1114	581	1514	0.736	1160	2.9	11.465	B
2	680	898	1164	0.584	687	1.4	7.664	A
3	268	1297	585	0.458	274	0.9	11.771	B
4	1099	421	1881	0.585	1105	1.4	4.671	A

**18:15 - 18:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	933	485	1580	0.590	939	1.5	5.661	A
2	569	728	1270	0.448	572	0.8	5.171	A
3	224	1063	703	0.319	226	0.5	7.572	A
4	921	349	1935	0.476	923	0.9	3.565	A

*A507/Shefford Road*

Junctions 9
ARCADY 9 - Roundabout Module
Version: 9.5.1.7462 © Copyright TRL Limited, 2019
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Filename: 2020-08-05 - A507-lvel Road-A507-Shefford Road.j9  
 Path: L:\Projects\dlbea2 1908042\Analysis\Modelling  
 Report generation date: 05/08/2020 14:21:46

- »Without Dev, AM
- »Without Dev, PM
- »With Dev, AM
- »With Dev, PM

**Summary of junction performance**

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
<b>Without Dev</b>										
Arm 1	D1	1.5	4.83	0.60	A	D2	18.9	41.51	0.97	E
Arm 2		1.4	9.17	0.59	A		1.3	9.60	0.56	A
Arm 3		1.2	4.24	0.55	A		3.4	8.89	0.78	A
Arm 4		0.3	5.77	0.21	A		0.3	7.54	0.25	A
<b>With Dev</b>										
Arm 1	D3	1.8	5.50	0.65	A	D4	25.7	53.58	0.99	F
Arm 2		1.6	10.54	0.62	B		1.3	10.02	0.58	B
Arm 3		1.3	4.39	0.56	A		4.0	10.16	0.80	B
Arm 4		0.3	5.93	0.22	A		0.4	8.24	0.28	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.

**File summary**

**File Description**

Title	
Location	
Site number	
Date	22/07/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MOTION\klewis
Description	

**Units**

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	PCU	perHour	s	-Min	perMin

**Analysis Options**

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

**Demand Set Summary**

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Without Dev	AM	ONE HOUR	08:00	09:30	15
D2	Without Dev	PM	ONE HOUR	17:00	18:30	15
D3	With Dev	AM	ONE HOUR	08:00	09:30	15
D4	With Dev	PM	ONE HOUR	17:00	18:30	15

**Analysis Set Details**

ID	Network flow scaling factor (%)
A1	100.000

# Without Dev, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	5.52	A

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Arms

### Arms

Arm	Name	Description
1	A507	
2	Ivel Road	
3	A507	
4	Shefford Road	

### 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)	Exit only
1	4.80	7.20	35.0	24.3	50.1	32.0	
2	4.20	6.10	9.7	17.5	50.1	33.0	
3	6.30	7.40	3.1	28.7	50.1	32.0	
4	3.15	7.75	9.0	37.0	50.1	31.0	

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.676	2054
2	0.584	1598
3	0.682	2081
4	0.578	1511

The slope and intercept shown above include any corrections and adjustments.

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Without Dev	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1007	100.000
2		✓	505	100.000
3		✓	927	100.000
4		✓	154	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	69	907	31
	2	207	0	253	45
	3	761	161	0	5
	4	45	36	73	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.60	4.83	1.5	A
2	0.59	9.17	1.4	A
3	0.55	4.24	1.2	A
4	0.21	5.77	0.3	A

### Main Results for each time segment

#### 08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	758	203	1917	0.395	756	0.7	3.092	A
2	380	758	1155	0.329	378	0.5	4.622	A
3	698	212	1937	0.360	696	0.6	2.896	A
4	116	847	1022	0.113	115	0.1	3.969	A



**08:15 - 08:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	905	242	1890	0.479	904	0.9	3.647	A
2	454	908	1068	0.425	453	0.7	5.842	A
3	833	254	1908	0.437	833	0.8	3.343	A
4	138	1014	926	0.150	138	0.2	4.570	A

**08:30 - 08:45**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1109	297	1854	0.598	1106	1.5	4.803	A
2	556	1111	950	0.586	553	1.4	9.028	A
3	1021	310	1870	0.546	1019	1.2	4.223	A
4	170	1240	795	0.213	169	0.3	5.751	A

**08:45 - 09:00**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1109	297	1853	0.598	1109	1.5	4.833	A
2	556	1113	948	0.586	556	1.4	9.171	A
3	1021	312	1869	0.546	1021	1.2	4.245	A
4	170	1243	793	0.214	170	0.3	5.772	A

**09:00 - 09:15**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	905	243	1890	0.479	907	0.9	3.674	A
2	454	911	1066	0.426	457	0.7	5.931	A
3	833	256	1907	0.437	835	0.8	3.366	A
4	138	1018	923	0.150	139	0.2	4.590	A

**09:15 - 09:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	758	204	1917	0.396	759	0.7	3.112	A
2	380	762	1153	0.330	381	0.5	4.671	A
3	698	214	1935	0.361	699	0.6	2.914	A
4	116	851	1020	0.114	116	0.1	3.985	A

# Without Dev, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	23.81	C

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Without Dev	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1559	100.000
2		✓	436	100.000
3		✓	1278	100.000
4		✓	143	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	425	988	146
	2	124	0	221	91
	3	989	265	0	24
	4	23	87	33	0

## Vehicle Mix

### Heavy Vehicle Percentages

	To				
	1	2	3	4	
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.97	41.51	18.9	E
2	0.56	9.60	1.3	A
3	0.78	8.89	3.4	A
4	0.25	7.54	0.3	A

### Main Results for each time segment

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1174	289	1859	0.631	1167	1.7	5.151	A
2	328	874	1088	0.302	327	0.4	4.716	A
3	962	270	1897	0.507	958	1.0	3.820	A
4	108	1033	915	0.118	107	0.1	4.455	A

#### 17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1402	345	1821	0.770	1395	3.2	8.340	A
2	392	1045	988	0.397	391	0.7	6.019	A
3	1149	324	1860	0.618	1147	1.6	5.027	A
4	129	1236	797	0.161	128	0.2	5.382	A

#### 17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1716	422	1769	0.970	1669	15.0	27.950	D
2	480	1250	868	0.553	478	1.2	9.172	A
3	1407	392	1814	0.776	1400	3.3	8.563	A
4	157	1510	639	0.246	157	0.3	7.460	A

#### 17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1716	424	1768	0.971	1701	18.9	41.512	E
2	480	1274	855	0.562	480	1.3	9.597	A
3	1407	396	1811	0.777	1407	3.4	8.887	A
4	157	1517	635	0.248	157	0.3	7.538	A

**18:00 - 18:15**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1402	348	1819	0.770	1463	3.5	11.761	B
2	392	1094	959	0.409	394	0.7	6.392	A
3	1149	331	1855	0.619	1156	1.7	5.200	A
4	129	1246	791	0.162	129	0.2	5.440	A

**18:15 - 18:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1174	291	1858	0.632	1181	1.7	5.369	A
2	328	884	1082	0.303	329	0.4	4.787	A
3	962	273	1895	0.508	965	1.0	3.879	A
4	108	1040	910	0.118	108	0.1	4.486	A

# With Dev, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	6.08	A

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	With Dev	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1089	100.000
2		✓	507	100.000
3		✓	949	100.000
4		✓	155	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	75	981	33
	2	209	0	253	45
	3	783	161	0	5
	4	46	36	73	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.65	5.50	1.8	A
2	0.62	10.54	1.6	B
3	0.56	4.39	1.3	A
4	0.22	5.93	0.3	A

### Main Results for each time segment

#### 08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	820	203	1917	0.428	817	0.7	3.263	A
2	382	815	1122	0.340	380	0.5	4.836	A
3	714	215	1935	0.369	712	0.6	2.940	A
4	117	865	1012	0.115	116	0.1	4.019	A

#### 08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	979	242	1890	0.518	978	1.1	3.938	A
2	456	976	1028	0.443	455	0.8	6.264	A
3	853	257	1906	0.448	852	0.8	3.414	A
4	139	1035	913	0.153	139	0.2	4.649	A

#### 08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1199	297	1854	0.647	1196	1.8	5.450	A
2	558	1194	901	0.619	555	1.6	10.307	B
3	1045	314	1867	0.560	1043	1.3	4.361	A
4	171	1266	780	0.219	170	0.3	5.903	A

#### 08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1199	297	1853	0.647	1199	1.8	5.500	A
2	558	1197	899	0.621	558	1.6	10.536	B
3	1045	316	1866	0.560	1045	1.3	4.385	A
4	171	1269	778	0.219	171	0.3	5.927	A

**09:00 - 09:15**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	979	243	1890	0.518	982	1.1	3.977	A
2	456	980	1026	0.444	459	0.8	6.383	A
3	853	260	1904	0.448	855	0.8	3.436	A
4	139	1040	911	0.153	140	0.2	4.671	A

**09:15 - 09:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	820	204	1917	0.428	821	0.8	3.289	A
2	382	820	1120	0.341	383	0.5	4.893	A
3	714	217	1933	0.370	715	0.6	2.957	A
4	117	869	1009	0.116	117	0.1	4.037	A

# With Dev, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

# Junction Network

## Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	29.78	D

## Junction Network Options

Driving side	Lighting
Left	Normal/unknown

# Traffic Demand

## Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	With Dev	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

## Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1592	100.000
2		✓	441	100.000
3		✓	1320	100.000
4		✓	153	100.000

# Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	434	1009	149
	2	129	0	221	91
	3	1031	265	0	24
	4	33	87	33	0

# Vehicle Mix



### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.99	53.58	25.7	F
2	0.58	10.02	1.3	B
3	0.80	10.16	4.0	B
4	0.28	8.24	0.4	A

### Main Results for each time segment

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1199	289	1859	0.645	1191	1.8	5.334	A
2	332	891	1078	0.308	330	0.4	4.808	A
3	994	276	1893	0.525	989	1.1	3.966	A
4	115	1068	894	0.129	115	0.1	4.614	A

#### 17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1431	345	1821	0.786	1424	3.5	8.920	A
2	396	1066	976	0.406	396	0.7	6.191	A
3	1187	331	1856	0.639	1184	1.7	5.340	A
4	138	1278	773	0.178	137	0.2	5.661	A

#### 17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1753	422	1769	0.991	1692	18.8	32.847	D
2	486	1267	859	0.565	483	1.3	9.527	A
3	1453	399	1809	0.804	1445	3.9	9.670	A
4	168	1560	610	0.276	168	0.4	8.128	A

#### 17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1753	424	1768	0.991	1725	25.7	53.580	F
2	486	1291	844	0.575	485	1.3	10.019	B
3	1453	404	1806	0.805	1453	4.0	10.163	B
4	168	1568	605	0.278	168	0.4	8.244	A

**18:00 - 18:15**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1431	348	1819	0.787	1519	3.9	15.278	C
2	396	1134	936	0.424	399	0.7	6.730	A
3	1187	341	1848	0.642	1195	1.8	5.585	A
4	138	1290	766	0.180	138	0.2	5.743	A

**18:15 - 18:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1199	291	1858	0.645	1207	1.8	5.598	A
2	332	903	1071	0.310	333	0.5	4.885	A
3	994	279	1891	0.526	997	1.1	4.040	A
4	115	1076	890	0.129	115	0.1	4.652	A

*A507/A6001 Henlow*

Junctions 9
ARCADY 9 - Roundabout Module
Version: 9.5.1.7462 © Copyright TRL Limited, 2019
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Filename: 2020-08-04 - A507-A6001.j9  
 Path: L:\Projects\dlbea2 1908042\Analysis\Modelling  
 Report generation date: 05/08/2020 09:46:02

- »Without Dev, AM
- »Without Dev, PM
- »With Dev, AM
- »With Dev, PM

**Summary of junction performance**

AM						PM				
Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	
Without Dev										
Arm 1	D1	3.2	11.16	0.77	B	D2	4.4	14.47	0.82	B
Arm 2		98.9	357.59	1.25	F		18.4	84.93	1.00	F
Arm 3		21.4	57.77	0.99	F		61.2	133.66	1.07	F
Arm 4		11.1	57.02	0.95	F		17.7	93.75	1.00	F
With Dev										
Arm 1	D3	4.0	13.27	0.81	B	D4	4.6	14.93	0.83	B
Arm 2		113.6	433.20	1.30	F		22.3	99.22	1.02	F
Arm 3		21.5	57.49	0.99	F		78.8	167.10	1.10	F
Arm 4		11.7	59.64	0.95	F		20.2	105.33	1.01	F

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

**File summary**

**File Description**

Title	
Location	
Site number	
Date	22/07/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MOTION\klewis
Description	

### Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	PCU	perHour	s	-Min	perMin

### Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

### Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Without Dev	AM	ONE HOUR	08:00	09:30	15
D2	Without Dev	PM	ONE HOUR	17:00	18:30	15
D3	With Dev	AM	ONE HOUR	08:00	09:30	15
D4	With Dev	PM	ONE HOUR	17:00	18:30	15

### Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

# Without Dev, AM

### Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	113.47	F

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Arms

### Arms

Arm	Name	Description
1	A507 (west)	
2	A6001	
3	A507 (east)	
4	Hitchin Road	

### 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)	Exit only
1	5.50	7.90	5.0	49.8	39.7	37.0	
2	3.53	7.45	12.7	12.1	39.7	44.0	
3	4.30	8.00	7.8	58.4	39.7	37.0	
4	4.40	5.80	12.1	4.4	39.7	45.0	

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.696	1961
2	0.585	1533
3	0.657	1762
4	0.489	1272

The slope and intercept shown above include any corrections and adjustments.

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Without Dev	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	975	100.000
2		✓	850	100.000
3		✓	1250	100.000
4		✓	675	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	150	800	25
	2	150	0	250	450
	3	700	100	0	450
	4	25	250	400	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.77	11.16	3.2	B
2	1.25	357.59	98.9	F
3	0.99	57.77	21.4	F
4	0.95	57.02	11.1	F

### Main Results for each time segment

#### 08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	734	559	1572	0.467	731	0.9	4.264	A
2	640	916	997	0.642	633	1.7	9.716	A
3	941	466	1456	0.646	934	1.8	6.809	A
4	508	709	926	0.549	503	1.2	8.434	A

**08:15 - 08:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	877	669	1495	0.586	874	1.4	5.779	A
2	764	1097	891	0.857	751	5.1	23.646	C
3	1124	552	1399	0.803	1116	3.8	12.364	B
4	607	846	859	0.707	602	2.3	13.811	B

**08:30 - 08:45**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1073	797	1406	0.764	1067	3.1	10.411	B
2	936	1328	756	1.238	749	51.7	150.378	F
3	1376	556	1396	0.986	1327	16.2	37.197	E
4	743	981	793	0.938	718	8.6	39.114	E

**08:45 - 09:00**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1073	815	1394	0.770	1073	3.2	11.164	B
2	936	1342	748	1.251	747	98.9	357.587	F
3	1376	555	1397	0.985	1355	21.4	57.766	F
4	743	999	784	0.948	733	11.1	57.016	F

**09:00 - 09:15**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	877	711	1466	0.598	883	1.5	6.248	A
2	764	1126	874	0.874	865	73.6	352.930	F
3	1124	634	1345	0.835	1187	5.7	28.361	D
4	607	912	826	0.734	639	3.0	22.037	C

**09:15 - 09:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	734	572	1563	0.470	736	0.9	4.369	A
2	640	928	990	0.646	926	2.1	125.011	F
3	941	672	1320	0.713	953	2.6	10.138	B
4	508	774	894	0.568	515	1.3	9.638	A



# Without Dev, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	84.68	F

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Without Dev	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1025	100.000
2		✓	710	100.000
3		✓	1350	100.000
4		✓	625	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	150	850	25
	2	210	0	200	300
	3	750	200	0	400
	4	25	300	300	0

## Vehicle Mix

### Heavy Vehicle Percentages

	To				
	1	2	3	4	
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.82	14.47	4.4	B
2	1.00	84.93	18.4	F
3	1.07	133.66	61.2	F
4	1.00	93.75	17.7	F

### Main Results for each time segment

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	772	596	1546	0.499	768	1.0	4.603	A
2	535	879	1019	0.525	530	1.1	7.303	A
3	1016	400	1499	0.678	1008	2.1	7.215	A
4	471	866	849	0.554	466	1.2	9.280	A

#### 17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	921	712	1465	0.629	919	1.7	6.555	A
2	638	1051	918	0.695	634	2.2	12.477	B
3	1214	478	1448	0.838	1203	4.7	14.106	B
4	562	1034	767	0.733	556	2.6	16.680	C

#### 17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1129	826	1386	0.814	1119	4.1	13.041	B
2	782	1267	792	0.987	740	12.5	49.819	E
3	1486	559	1394	1.066	1367	34.6	62.977	F
4	688	1181	695	0.990	650	12.1	55.746	F

#### 17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1129	844	1374	0.821	1127	4.4	14.466	B
2	782	1282	783	0.998	758	18.4	84.925	F
3	1486	572	1386	1.073	1380	61.2	133.663	F
4	688	1195	688	1.000	666	17.7	93.747	F

**18:00 - 18:15**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	921	794	1408	0.654	931	1.9	7.692	A
2	638	1089	896	0.712	701	2.6	23.923	C
3	1214	526	1416	0.857	1393	16.4	104.795	F
4	562	1188	692	0.812	612	5.1	55.238	F

**18:15 - 18:30**

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	772	625	1526	0.506	775	1.0	4.820	A
2	535	895	1010	0.529	540	1.1	7.770	A
3	1016	407	1494	0.680	1073	2.2	9.700	A
4	471	915	825	0.570	486	1.4	11.047	B

# With Dev, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	130.01	F

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	With Dev	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1023	100.000
2		✓	852	100.000
3		✓	1259	100.000
4		✓	676	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	155	841	27
	2	152	0	250	450
	3	709	100	0	450
	4	26	250	400	0

## Vehicle Mix

### Heavy Vehicle Percentages

	To				
	1	2	3	4	
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.81	13.27	4.0	B
2	1.30	433.20	113.6	F
3	0.99	57.49	21.5	F
4	0.95	59.64	11.7	F

### Main Results for each time segment

#### 08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	770	559	1572	0.490	766	1.0	4.450	A
2	641	949	978	0.656	634	1.8	10.255	B
3	948	468	1454	0.652	941	1.8	6.915	A
4	509	717	922	0.552	504	1.2	8.526	A

#### 08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	920	669	1495	0.615	917	1.6	6.198	A
2	766	1135	869	0.881	750	5.9	27.116	D
3	1132	554	1398	0.810	1123	4.0	12.728	B
4	608	856	854	0.711	603	2.3	14.087	B

#### 08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1126	796	1407	0.801	1118	3.8	12.098	B
2	938	1373	730	1.285	725	59.2	175.506	F
3	1386	542	1406	0.986	1337	16.3	37.317	E
4	744	988	789	0.943	718	9.0	40.396	E

#### 08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1126	814	1395	0.808	1125	4.0	13.270	B
2	938	1389	721	1.302	720	113.6	419.951	F
3	1386	539	1408	0.985	1366	21.5	57.486	F
4	744	1006	781	0.953	733	11.7	59.640	F

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	920	713	1465	0.628	929	1.7	6.823	A
2	766	1168	850	0.901	842	94.5	433.199	F
3	1132	620	1355	0.836	1195	5.7	28.173	D
4	608	918	824	0.738	642	3.0	22.996	C

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	770	572	1563	0.493	773	1.0	4.574	A
2	641	961	971	0.661	961	14.7	209.538	F
3	948	699	1302	0.728	959	2.8	10.835	B
4	509	788	887	0.574	516	1.4	9.847	A

# With Dev, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	101.92	F

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	With Dev	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1038	100.000
2		✓	719	100.000
3		✓	1382	100.000
4		✓	626	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	153	859	26
	2	219	0	200	300
	3	782	200	0	400
	4	26	300	300	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.83	14.93	4.6	B
2	1.02	99.22	22.3	F
3	1.10	167.10	78.8	F
4	1.01	105.33	20.2	F

### Main Results for each time segment

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	781	596	1546	0.505	777	1.0	4.659	A
2	541	886	1015	0.534	537	1.1	7.468	A
3	1040	407	1494	0.696	1032	2.2	7.639	A
4	471	896	834	0.565	466	1.3	9.664	A

#### 17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	933	711	1466	0.637	930	1.7	6.686	A
2	646	1060	913	0.708	642	2.3	13.038	B
3	1242	486	1442	0.862	1229	5.5	15.990	C
4	563	1069	750	0.750	557	2.8	18.077	C

#### 17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1143	818	1392	0.821	1133	4.2	13.417	B
2	792	1276	787	1.006	743	14.4	55.189	F
3	1522	565	1391	1.094	1371	43.2	74.880	F
4	689	1200	686	1.005	646	13.5	61.038	F

#### 17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1143	834	1380	0.828	1142	4.6	14.930	B
2	792	1291	778	1.017	760	22.3	99.221	F
3	1522	577	1382	1.101	1379	78.8	167.105	F
4	689	1212	680	1.013	662	20.2	105.329	F



**18:00 - 18:15**

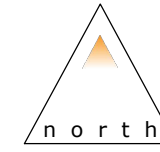
Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	933	795	1407	0.663	943	2.0	7.919	A
2	646	1102	889	0.727	724	2.9	30.882	D
3	1242	546	1403	0.886	1385	43.1	160.099	F
4	563	1205	683	0.823	621	5.7	67.420	F

**18:15 - 18:30**

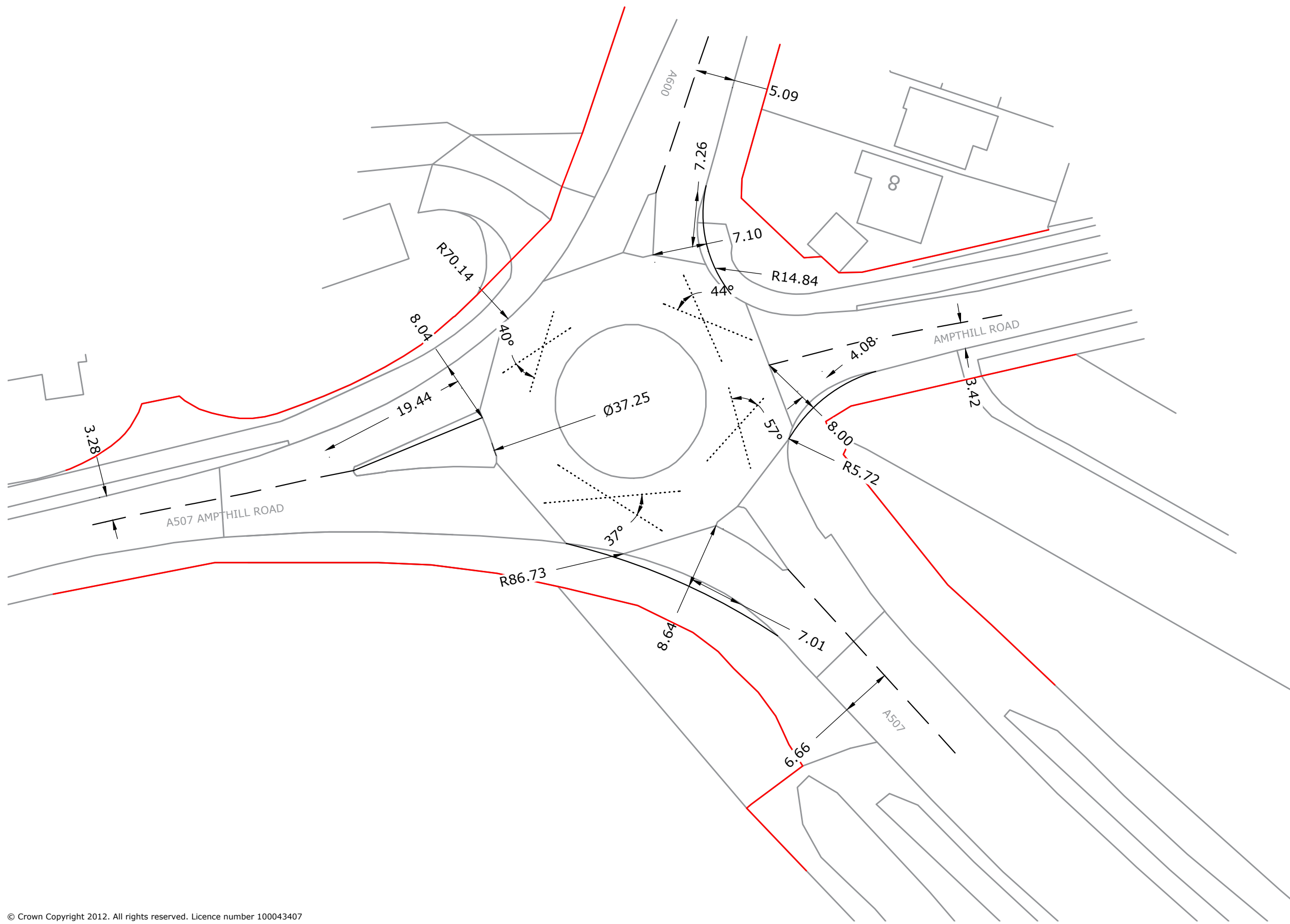
Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	781	642	1514	0.516	785	1.1	4.963	A
2	541	903	1005	0.539	548	1.2	7.997	A
3	1040	415	1489	0.699	1203	2.4	21.567	C
4	471	1022	773	0.610	488	1.6	13.305	B

## **Appendix C**

A600/A507/Ampthill Road Mitigation Scheme



Highway Boundary



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Guildford  
Surrey  
GU1 4AU  
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Cargo Works  
1-2 Hatfields  
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Project:  
**Beadlow Manor**

Title:  
**A507/A600/Amphill Road  
Junction Alterations**

Scale: 1:500 (@ A3)

Drawing:  
**1908042-06**

Revision:  
-

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