

**PROPOSED DISCOUNT FOODSTORE,
NON-FOOD RETAIL AND DRIVE-THRU RESTAURANT, UTTOXETER
ADDENDUM TECHNICAL NOTE
SEPTEMBER 2018**

1 INTRODUCTION

- 1.1 Vectos have been commissioned by Lidl UK GmbH to provide transport and highways advice to support a hybrid planning application for the development of an area of land located to the north of Brookside Road in Uttoxeter. The site lies within the jurisdiction of East Staffordshire Borough Council (ESBC), with Staffordshire County Council (SCC) acting as local highway authority.
- 1.2 This Addendum Technical Note should be read in conjunction with a Transport Assessment (TA) dated April 2018. This TA was produced by Vectos in support of a planning application (LPA reference: P/2018/00530) which seeks detailed consent for the following:
- A Lidl foodstore with a gross internal floor area (GIA) of 2,125 sqm (22,873 sqft);
 - Two non-food retail units, each with a GIA of 700 sqm (7,535 sqft);
 - 182 car parking spaces; and
 - Customer and service vehicle access from Brookside Road.
- 1.3 In addition, outline consent is sought for:
- A drive thru A3/ A5 restaurant with a GIA of 169 sqm (1,819 sqft).
- 1.4 This Note responds to comments prepared by consultant Amey which relate to the evidence presented within Vectos' April TA. This review was undertaken on behalf of SCC and presented within a Transport Assessment Review document.
- 1.5 For ease of reference, this Note responds to the comments in the order in which they were presented by Amey in their review.

2 BACKGROUND INFORMATION

Pedestrian Facilities

2.1 It is noted that Amey accept the information presented within the TA in respect of pedestrian facilities.

Cyclist Facilities

2.2 It is noted that Amey accept the information presented within the TA in respect of cyclist facilities.

Public Transport Facilities

2.3 It is noted that Amey accept the information presented within the TA in respect of public transport provision.

Collision Statistics

2.4 It is noted that Amey consider that the information presented in the TA on collision statistics is correct.

3 DEVELOPMENT DESCRIPTION

Proposed Vehicle Site Accesses

3.1 Amey indicated that they consider the geometric inputs used in the capacity assessment of the site access are correct.

Parking

3.2 Amey request further justification for the level of parking provision proposed at the site. Section 7.3 and 7.4 of the TA presented considerable evidence to support the proposed level of parking, and it is noted that Amey's review does not reference this evidence or provide any commentary as to its acceptability.

3.3 The National Planning Policy Framework states that "If setting local parking standards for residential and non-residential development, policies should take into account factors including":

- the accessibility of the development;
- the type, mix and use of development; and
- the availability of and opportunities for public transport.

3.4 This guidance is noted in paragraph 1.13 of ESBC's parking standards.

- 3.5 As detailed in the Transport Assessment the site is very well located in accessibility terms, being highly accessible on foot, by bicycle and by both bus and rail. The locational and accessibility characteristics of the site would therefore encourage users to access the site by sustainable modes. This would in turn reduce demand for parking facilities. As the NPPF outlines these factors are pertinent when considering parking standards.
- 3.6 In addition, and again as outlined in the TA, due to the complimentary uses at the site the development will generate a high level of cross-visitation trips as many users will be visiting both the food and non-food retail as part of the same journey. A single parking space would be required for both visits to each of the respective land uses.
- 3.7 It is considered that the requirement to provide minimum parking standards in isolation would result in an overprovision of car parking facilities. This in turn would encourage vehicle trips to the site, acting to perpetuate the use of private motor vehicles as the primary means of accessing the site. This approach would undermine sustainable transport options.
- 3.8 This characteristic reflects the NPPF's guidance that the type and mix of developments should also be material considered.
- 3.9 Furthermore, a parking accumulation forecast was presented in detail in the TA. This analysis of parking demand revealed that the maximum parking demand on a weekday would be 60 parking spaces and the maximum parking demand on a Saturday would be 78 parking spaces. The peak forecast demand on a weekday would leave 67% of the total proposed car parking provision unoccupied. The peak forecast demand on a Saturday would leave 57% of the total proposed car parking provision unoccupied. This parking accumulation forecast therefore indicates that there will be considerable spare parking capacity at the site. As noted in the TA that this analysis does not allow for any cross visitation between the Lidl store and adjacent non-food retail units and is therefore particularly robust.
- 3.10 The Council's car parking standards state that the minimum standards are expected to be met unless exceptional circumstances can be demonstrated. The Transport Assessment, and this subsequent Technical Note have demonstrated that:
- The site benefits from being in a highly sustainable location, which will reduce the demand for car parking;
 - The mix of uses on the site will encourage linked cross visitation trips which will reduce the demand for car parking; and
 - The car parking accumulation analysis has demonstrated that the proposed level of car parking is sufficient to meet forecast demand.

3.11 Based upon these exceptional circumstances it is concluded that the proposed level of parking is appropriate and should be acceptable.

Servicing

3.12 It is noted that Amey accept the information presented within the TA in respect of servicing.

4 TRIP GENERATION ASSESSMENT

TRICS

4.1 Amey query the use of average trip rates and request justification for the regions selected in the TRICS assessments for each of the proposed land uses.

4.2 The use of 85th percentile trip rates is not considered reliable or appropriate in this instance. TRICS provide the following advice in respect of using percentile trip rates: *“using 85th and 15th percentile highlighted trip rates in data sets of under 20 surveys is not recommended by TRICS, and may be misleading”*.

4.3 In generating the trip forecasts, care has been taken to ensure that the survey sites used in the TRICS exercise are representative of the proposed development land uses. Expanding the number of survey sites to reach the minimum 20 surveys required by TRICS to generate an 85th percentile trip rate would result in the inclusion of unrepresentative sites. Such an analysis would incorporate sites with different locational and accessibility characteristics to the proposed site, as well as surveys undertaken a number of years ago. This approach would result in trip rates which are less reliable.

4.4 It is also noted that the assessment submitted in support of the redevelopment of Brookside Business Park (LPA ref: P/2015/00299) adjacent to the proposed development site used average trip rates. This approach was accepted by the highway authority and provides a precedent for the use of average trip rates.

4.5 Therefore, on the basis of the advice included within TRICS, as well as the precedent established by other developments in the site vicinity, the use of average trip rates is considered to be appropriate.

4.6 In their review, Amey also request further justification for the regions selected in the three TRICS exercises undertaken for each of the respective land uses. For clarity, when generating outputs, TRICS only displays the regions for the survey sites which have been generated through the primary and secondary filtering stages. It is not possible for Amey to determine which regions have been included or excluded from the outputs generated by TRICS.

- 4.7 Typically, for a site in this type of location, Greater London and Ireland are excluded from the TRICS exercise. This is a commonly used approach in TRICS as the locational and accessibility characteristics of survey sites in these regions are unlikely to be representative of the proposed development site, particularly in the case of London. It is confirmed that no other regions have been manually removed.
- 4.8 However, in the case of the TRICS exercise undertaken for the discount foodstore element of the proposals, a site in Northern Ireland was included. This is because this survey was undertaken at a new format Lidl foodstore, and as such was very specific to that element of the development. As such, in this particular instance it was considered that the retention of an Ireland survey was justified.
- 4.9 In summary, we would suggest that the use of average trip rates is considered valid and the survey sites selected in the TRICS exercise are robust. As such we propose no alterations to this aspect of the assessment presented within the TA.

Modal Split

- 4.10 In their review, Amey indicate that modal split has not been addressed within the TA.
- 4.11 To address this point, modal split information for the site has been generated using data from the 2011 Census. The dataset WU03EW has been interrogated for Middle Super Output Area (MSOA) East Staffordshire 003 in which the proposed development site is located. This information has been summarised in **Table 1**.

Mode	%
Driving a car or van	71%
Passenger in a car or van	5%
Bus, minibus or coach	1%
Train	1%
On foot	18%
Bicycle	2%

Table 1: Modal split

- 4.12 It is noted that this modal split information is also referenced in the TP as the basis for preliminary travel targets.

Trip Types

- 4.13 In their review, Amey request further justification of the trip type proportions used in the assessment presented within the TA. However, Amey accept that the traffic flow diagrams included within the TA accurately reflect the assumed trip type proportions.
- 4.14 The trip type proportions used in the assessment have been derived through a combination of best practice guidelines and experience of working on a number of similar sites. While TRICS Research Report 14/1 has been consulted, the document does not provide prescriptive guidance for the trip proportions that should be used in a traffic impact assessment.
- 4.15 TRICS Research Report 14/1 indicates that the characteristics of a development will greatly influence the level of non-primary trips. The following factors would contribute to the level of non-primary trips at the proposed development site:
- There are a wide range of facilities at the existing Dovefields Retail Park which would encourage a higher proportion of non-primary trips. This will act to increase the likelihood of linked trips to the proposed development;
 - The proposed development will provide additional facilities including a non-food retail unit and a drive thru, further encouraging linked journeys with these land uses;
 - The site is in close proximity to the A518 which acts as the principal route through Uttoxeter. There is therefore a high potential for pass-by trips due to the high traffic volumes along this route; and
 - The site is in close proximity to Uttoxeter rail station. Commuters and other rail users using their car to access to station will have an opportunity to visit the site as part of a linked trip.

4.16 **Table 2** presents a sample of recent planning applications for foodstores in Staffordshire and the trip type proportions used in the supporting traffic impact assessments. These foodstores have all received planning approval and have been constructed.

Application ref	Site	Peak	Trip type				
			New	Transfer	Pass-by	Divert	Linked
14/20194/FUL	Aldi, Queensville, Stafford	PM/ Sat	30%	30%	30%	0%	10%
13/00712/FUL	Aldi, Newcastle- under-Lyme	PM/ Sat	10%	45%	15%	30%	0%
P/2012/00771	Asda, Uttoxeter	PM/ Sat	10%	60%	30%	0%	0%
11/01385/FULLM	Aldi, Burntwood	PM/Sat	30%	40%	30%	0%	0%
11/16362/FUL	Aldi, Stafford	PM	12%	48%	20%	20%	0%
		Sat	14%	56%	15%	15%	0%

Table 2: Sample of trip type proportions – planning applications in Staffordshire

4.17 As shown in **Table 2**, there is an established precedent of using trip type proportions in the assessment of traffic impact from foodstores in Staffordshire. In the context of the trip type proportions used in the assessment of approved schemes, the assumptions in the TA are considered robust.

4.18 Significantly, the assessment presented within the TA assumes that all primary trips to the foodstore are new trips. The assessment in the TA makes no allowance for transfer trips from other stores. This approach is considered highly robust as foodstore's typically generate very little in way of new vehicle movements. The TA uses a 50% and 70% proportion of primary trips in the PM and Saturday peaks respectively (which in practice have been adopted as new trips) which is far in excess of the assumptions summarised in **Table 2** for other schemes.

- 4.19 The non-food use assumes a degree of non-primary trips. The trip type proportions presented within the TA are considered reasonable in the context of the development proposals. As stated in the TA, this site will be located adjacent to both the proposed Lidl foodstore and the existing Dovefields Retail Park. As such it is reasonable to assume that a significant proportion of visitors to the non-food retail will use the store as part of a primary trip to another use, particularly during peak hours.
- 4.20 A recently approved planning application for a large retail scheme in Burntwood (LPA ref: 16/01379/FULLM) applied trip type proportions to the traffic impact assessment. The scheme included both food retail (1,041 sqm) and non-food retail (5,919 sqm). The following trip type proportions were applied to both the food and non-food retail development traffic forecasts, and were agreed by the highway authority:
- 15% pass-by;
 - 20% linked;
 - 10% diverted; and
 - 55% primary.
- 4.21 The proportions are akin to those adopted in the Transport Assessment (which assumed 50% primary, 25% pass-by and 25% cross visitation (linked)). Therefore, in the context of these approved trip type proportions it is considered that the trip types used in the traffic impact assessment undertaken in the TA are reasonable.
- 4.22 As stated in the TA, in respect of the trip type proportions assumed for the drive thru restaurant use, it would reasonably be expected that during network peak times all trips to this development would be linked pass-by or cross visitation trips. This is because customers to such a use would be unlikely to make a dedicated trip when the surrounding highway network is perceived to be at its busiest. Indeed, a proliferation of drive thru facilities at retail parks in recent years reflects the complimentary nature of this land use as operators seek to exploit passing trade.
- 4.23 Amey indicate that they presume that trip distribution used in the traffic impact assessment is based on existing local turning movements. They request reasoning and clarification of this.
- 4.24 We can confirm that the trip distribution is based on existing turning movements. This is a commonly adopted approach, and given the prevalence of other similar retail destinations in the vicinity of the site it is considered that existing travel patterns are a robust indication of future traffic assignment characteristics.

4.25 In summary, the trip type proportions used in the assessment presented within the TA are robust in light of numerous local factors. There is an established precedent in Staffordshire for the application of trip type proportions and those used in the TA are robust in this context. Additionally, the approach undertaken in the TA is robust as all primary trips are assumed to be new to the network, whereas in practice the large majority of primary trips would be transferred from other existing food retail destinations.

4.26 Amey's interpretation of the trip distribution methodology used in the assessment is correct. The methodology adopted is considered robust.

Area of Influence

4.27 Amey request further information on the development site's area of influence and what methodology was used to identify the junctions required for assessment. Amey further indicate that any approaches/ junction exceeding the 5% impact threshold require further assessment.

4.28 **Table 3** provides a summary of the percentage impact of development traffic at the two off site junctions assessed as part of the TA.

	PM Peak			Saturday Peak		
	Baseline w/out dev	Baseline with dev	% increase	Baseline w/out dev	Baseline with dev	% increase
A518/ Brookside Road Rbt	2561	2721	6%	2224	2448	10%
A518 N	1206	1230	2%	952	990	4%
Brookside Road	82	190	131%	67	198	194%
A518 S	930	951	2%	803	840	5%
Bridge Street	342	350	2%	402	421	5%
A518/ Dove Bank Rbt	2955	2997	1%	2735	2805	3%
A518 N	1283	1301	1%	986	1011	3%
Town Meadows Way	324	324	0%	339	339	0%
A518 S	913	931	2%	919	952	4%
Dove Bank	434	441	1%	492	504	3%

Table 3: Percentage increase in traffic at off-site junctions

4.29 As demonstrated in **Table 3**, at the two off-site junctions considered in the Transport Assessment the stated 5% threshold is not exceeded. The exception to this is the Brookside Road arm of the A518/ Brookside Road roundabout, as this arm leads to the site access junction and as such it used by all inbound and outbound development traffic.

- 4.30 As development traffic travels beyond the above junctions the percentage impact will become further diluted, and based on **Table 3** it is evident that a greater than 5% impact will not be experienced at any subsequent junction.
- 4.31 Importantly, and as previously stated in this Note, the traffic impact assessment has assumed all primary trips to the foodstore are new trips to the local highway network. This provides an extremely robust appraisal of the development's traffic impact as in reality a significant proportion of trips would transfer from competitor stores and would not be new to the network.
- 4.32 If properly accounted for, the presence of primary transfer trips would materially reduce the net traffic impact of the development, such that in practice the percentage impact of the proposed development will be materially less than the Transport Assessment and Table 3 suggest.
- 4.33 On this basis the scope of highway network appraised in the Transport Assessment is considered appropriate, and no wider assessment is considered necessary.

5 JUNCTION CAPACITY ASSESSMENT

Raw Data

- 5.1 It is noted that Amey accept the raw traffic survey data used in the junction capacity assessments presented within the TA document.

Assessment Years

- 5.2 In their commentary on the assessment years presented within the TA, Amey recommend that a year of opening is identified and assessed accordingly.
- 5.3 The Transport Assessment has considered a 2022 future year assessment. This represents the represents year of application registration plus five years. The derivation of this future year is based upon the approach advocated in the DfT's 'Guidance on Transport Assessments'. This document in turn is referenced in SCC's own 'Guidelines for Transport Assessments and Travel Plans' document.
- 5.4 Therefore, based upon this guidance the 2022 future year assessment is considered appropriate.
- 5.5 The 2022 future year assessment has been derived through the addition of traffic related to committed developments as well as Temprow background traffic growth factors. Our analysis therefore provides a robust representation of future year traffic flow conditions.

5.6 Amey request for a year of opening assessment to also be undertaken is counter intuitive as this would assess an earlier year than 2022, and therefore lower traffic flows. As such it is not clear what conclusions could be drawn from an opening year assessment which could not be drawn from the 2022 analysis already undertaken.

5.7 To be clear, the 2022 'With Development' analysis demonstrates that all junctions would continue to operate within capacity following the proposed development. Logic dictates that these conclusions would also be drawn from an opening year assessment.

Committed Developments

5.8 It is noted that Amey confirm that the committed developments of Brookside Business Park (LPA ref: P/2015/00299) and West Uttoxeter Mixed Use Development (LPA ref: P/2013/00882) have been correctly incorporated into our traffic flow diagrams.

5.9 Amey identify two additional planning applications and have provided the following application reference numbers:

- P/2016/00505; and
- P/2017/01307.

5.10 Amey have requested justification for the exclusion of these planning applications in our assessment.

5.11 The two applications referenced by Amey relate to the same development site.

5.12 Application P/2016/00505 is a Discharge of Condition application and is not relevant to the traffic impact assessment presented in the TA. This application relates to Condition 22 of planning permission P/2014/00969. This Condition relates to a contaminated land assessment and remedial strategy.

5.13 Application P/2017/01307 is an application for outline consent for the development of up to 148 dwellings. This application has not yet been determined and therefore does not benefit from an extant planning consent; it is therefore not technically a committed development. However to provide a robust analysis we have included development traffic from this site in our assessment.

5.14 A TA has been produced by SCP and submitted in support of the 148 residential dwelling application. This TA does not present a detailed traffic impact assessment of the local highway network and no distribution or assignment of development flows has been presented. Instead the SCP TA argues that the proposals represent a reduction in trips generated when compared with an extant consent which exists upon its development site.

- 5.15 The extant consent referenced by SCP is for a mixed-use development consisting of 257 dwellings, an A1 foodstore, B1 office and D1 uses (LPA ref: OU/0525/018/JR/PO).
- 5.16 As the SCP does not include an assignment of development traffic across the local highway network, however a distribution profile is included in the Transport Assessment prepared for extant consent OU/0525/018/JR/PO. Therefore, to accurately reflect the latest proposals, the extant consent distribution has been applied to the 148 dwelling trip generation forecast prepared by SCP.
- 5.17 It is noted that, SCP's report did not include a Saturday analysis presumably because the development was not considered to have a material impact during this time period. Accordingly, no allowance for the Saturday impact of this committed development has been included in our analysis. Therefore the resultant flows are shown in **Traffic Figure 1** for the PM peak.
- 5.18 The updated 2022 Baseline 'Without Development' flows are shown in **Traffic Figure 2** for the PM peak.
- 5.19 The updated 2022 Baseline 'With Development' flows are shown in **Traffic Figure 3** for the PM peak.

6 SITE ACCESS JUNCTION ASSESSMENTS

- 6.1 The additional committed development flows have been used to generate an updated 2022 baseline. The updated demand flows have been incorporated into the junction models used in the assessment presented within the TA. The results of the Saturday assessment remain the same but have been included for completeness.

Brookside Road/ Proposed Site Access Priority Junction

- 6.2 The Brookside Road/ Proposed Site Access junction has been further assessed using the updated 2022 Baseline 'With Development' traffic flows. The results of this assessment have been presented in **Table 4**. The full modelling output files have been included as **Appendix A** of this note.

Movement	Weekday PM Peak		Saturday Peak	
	RFC	Q (pcu)	RFC	Q (pcu)
Site Access	0.22	1	0.26	1
Brookside Road	0.00	0	0.00	0

Table 4: 2022 Baseline 'With Development' Traffic Flow JUNCTIONS Results

- 6.3 The results of the assessment demonstrate that the proposed site access is forecast to operate well within capacity, with a maximum RFC of 0.22 recorded on the site access arm of the junction during the PM peak hour, and a maximum RFC of 0.26 recorded on the site access arm during the Saturday peak hour.

7 OFF-SITE JUNCTION ASSESSMENTS

- 7.1 In their review, Amey indicate that until dimensioned drawings of the modelled junctions and evidence of model validation and calibration are provided, they cannot accept the assessments of the off-site junctions considered in the TA.
- 7.2 Scaled drawings of the A518 Town Meadows Way/ Brookside Road/ A518/ Bridge Street roundabout (**Drawing VN70855-D103**) and A518 Town Meadows Way/ A522 Dove Bank roundabout (**Drawing VN70855-D104**) have been provided at the rear of this report.
- 7.3 Turning to the ‘calibration’ and ‘validation’ of the models, Amey appear to suggest that queue information should be used for this exercise.
- 7.4 There are a number of practical difficulties in measuring mean queues over successive time intervals. During peak periods, when flow/ capacity ratios are high, TRL advises that there are large daily variations in queue lengths even if the average traffic flow for each time segment does not vary from day to day.
- 7.5 **Figure 1** illustrates an example of the large variation in observed queueing compared with the mean queue lengths.

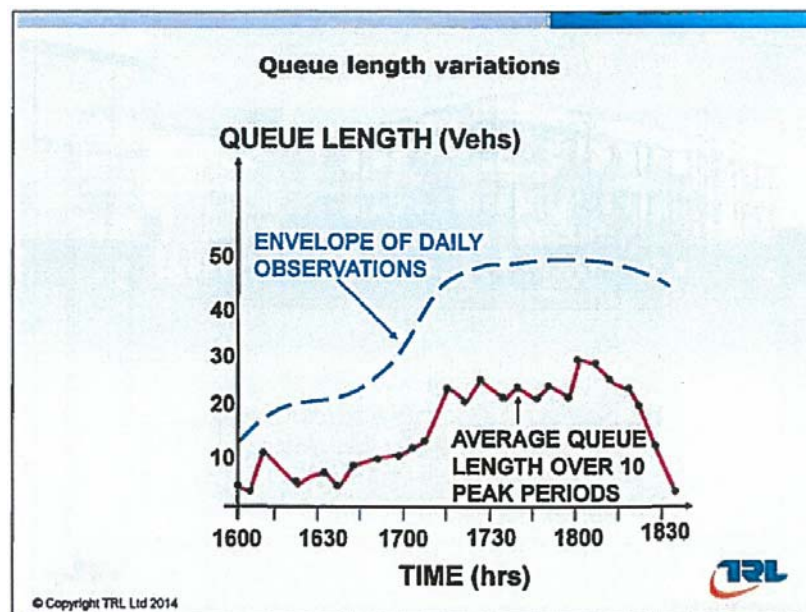


Figure 1: Queue Length Variations (Source: TRL)

- 7.6 DMRB Volume 12, Section 2, Part 1 also states that “precise validation of queue lengths can be difficult because of the volatility of the observed data” and does not provide an acceptable threshold for modelled versus observed queue lengths.

7.7 Therefore, the use of observed queue lengths to ‘calibrate’ and ‘validate’ ARCADY or PICADY models is limited and more weight should be applied to the review of demand flows and geometric inputs.

7.8 It is important to note that in the assessment of off-site junctions’ identical models are used to consider ‘Without Development’ and ‘With Development’. As a result, the same parameters are applied to both scenarios.

7.9 Therefore, the models provide a consistent indication of ‘impact, which is ultimately what is important in considering whether the impact of a development is ‘severe’. Therefore, the proportional impact of development traffic can be understood without reference to observed or modelled mean queue lengths.

A518 Town Meadows Way/ Brookside Road/ A518/ Bridge Street roundabout

7.10 The A518 Town Meadows Way/ Brookside Road/ A518/ Bridge Street junction has been further assessed using the updated 2022 Baseline ‘Without Development’ traffic flows. The results of this assessment have been presented in **Table 5**. The full modelling output files have been included as **Appendix B** of this note.

Movement	Weekday PM Peak		Saturday Peak	
	RFC	Q (pcu)	RFC	Q (pcu)
A518 Town Meadows Way	0.78	4	0.61	2
Brookside Road	0.24	1	0.14	1
A518	0.62	2	0.54	2
Bridge Street	0.33	1	0.37	1

Table 5: 2022 Baseline ‘Without Development’ Traffic Flow JUNCTIONS Results

7.11 The results of the JUNCTIONS assessment demonstrates that under 2022 Baseline ‘Without Development’ highway conditions the A518 Town Meadows Way/ Brookside Road/ A518/ Bridge Street roundabout is forecast to operate within capacity and without material levels of queuing on any arm.

7.12 The A518 Town Meadows Way/ Brookside Road/ A518/ Bridge Street junction has then been further assessed using the updated 2022 Baseline 'With Development' traffic flows. The results of this assessment have been presented in **Table 6**. The full modelling output files have been included as **Appendix B** of this note.

Movement	Weekday PM Peak		Saturday Peak	
	RFC	Q (pcu)	RFC	Q (pcu)
A518 Town Meadows Way	0.82	5	0.66	2
Brookside Road	0.51	1	0.40	1
A518	0.66	2	0.59	2
Bridge Street	0.35	1	0.41	1

Table 6: 2022 Baseline 'With Development' Traffic Flow JUNCTIONS Results

7.13 The results of the JUNCTIONS assessment demonstrate that the introduction of traffic generated by the proposed development would not materially alter the operation of the junction, with all arms continuing to operate within capacity during both the PM and Saturday peak hours..

7.14 The results also demonstrate that the junction would experience only minimal levels of queueing, with a maximum queue of five vehicles on the northern A518 arm of the junction during the PM peak hour, an increase of one vehicle compared with the 'Without Development' scenario.

A518 Town Meadows Way/ A522 Dove Bank Roundabout

7.15 The A518 Town Meadows Way/ A522 Dove Bank junction has been further assessed using the updated 2022 Baseline 'Without Development' traffic flows. The results of this assessment have been presented in **Table 7**. The full modelling output files have been included as **Appendix C** of this note.

Movement	Weekday PM Peak		Saturday Peak	
	RFC	Q (pcu)	RFC	Q (pcu)
A518	0.84	5	0.66	2
Dovefields Retail Park	0.84	5	0.58	2
A518 Meadows Way	0.77	4	0.73	3
A522 Dove Bank	0.68	2	0.71	3

Table 7: 2022 Baseline 'Without Development' Traffic Flow JUNCTIONS Results

- 7.16 The results of the JUNCTIONS assessment demonstrate that under 2022 Baseline 'With Development' highway conditions the A518 Town Meadows Way/ A522 Dove Bank roundabout is forecast to operate within capacity and without material levels of queuing on any arm.
- 7.17 The A518 Town Meadows Way/ A522 Dove Bank junction has then been further assessed using the updated 2022 Baseline 'With Development' traffic flows. The results of this assessment have been presented in **Table 8**. The full modelling output files have been included as **Appendix C** of this note.

Movement	Weekday PM Peak		Saturday Peak	
	RFC	Q (pcu)	RFC	Q (pcu)
A518	0.85	6	0.68	2
Dovefields Retail Park	0.87	6	0.60	2
A518 Meadows Way	0.79	4	0.76	3
A522 Dove Bank	0.69	3	0.75	3

Table 8: 2022 Baseline 'With Development' Traffic Flow JUNCTIONS Results

- 7.18 The results of the JUNCTIONS assessment demonstrate that the introduction of traffic generated by the proposed development would not materially alter the operation of the junction, with all arms continuing to operate within capacity during both the PM and Saturday peak hours.
- 7.19 The results also demonstrate that the junction would experience only minimal levels of queuing, with a maximum queue of six vehicles on the northern A518 and retail park arms of the junction during the PM peak hour, an increase of one vehicle compared with the 'Without Development' scenario.
- 7.20 In summary, the updated traffic impact assessment has demonstrated that the proposed development would not have a material impact upon the operation of the two off-site junctions.
- 7.21 It is important to note that the traffic impact assessment has been undertaken with robust parameters, most notably the assumption that all primary trips generated by the Lidl store are new to the local highway network. This adds additional weight to the conclusions drawn from the traffic modelling exercise.

8 SUMMARY AND CONCLUSIONS

8.1 This Addendum Technical Note responds to comments prepared by consultant Amey which relate to the evidence presented within Vectos' April Transport Assessment. In summary, the following key information is provided in the Note:

- A of justification to support the proposed level of parking provision;
- Additional justification on the use of average trip rates and survey sites selected;
- A modal split for the development site using Census data;
- Further justification for the trip type proportions used in the assessment and clarification on the trip distribution methodology;
- Further justification on the scope of off-site junction capacity assessments;
- Further justification on the assessment years used in the assessment;
- An update to traffic flows to incorporate an additional committed development; and
- Updated assessments of the site access junction and off-site junctions to incorporate these additional committed development flows.

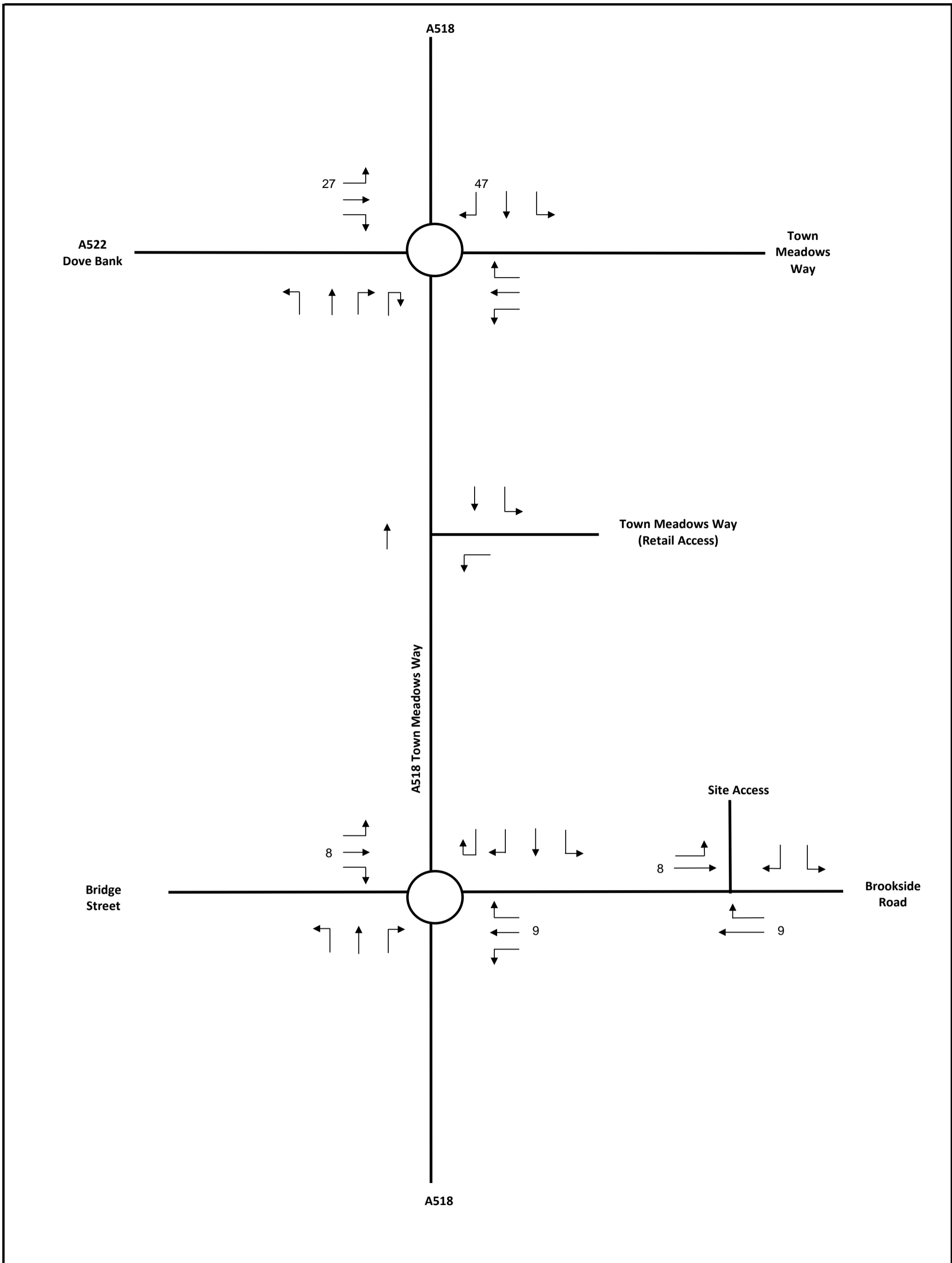
8.2 The April Transport Assessment provided the following concluding sentence:

"This report has demonstrated that the residual cumulative impacts of the propose development would not be severe, and therefore in accordance with NPPF guidance there are no reasons why the planning application should be refused on highway or transportation grounds."

8.3 On the basis of the information presented within this Addendum Technical Note, this conclusion is upheld.

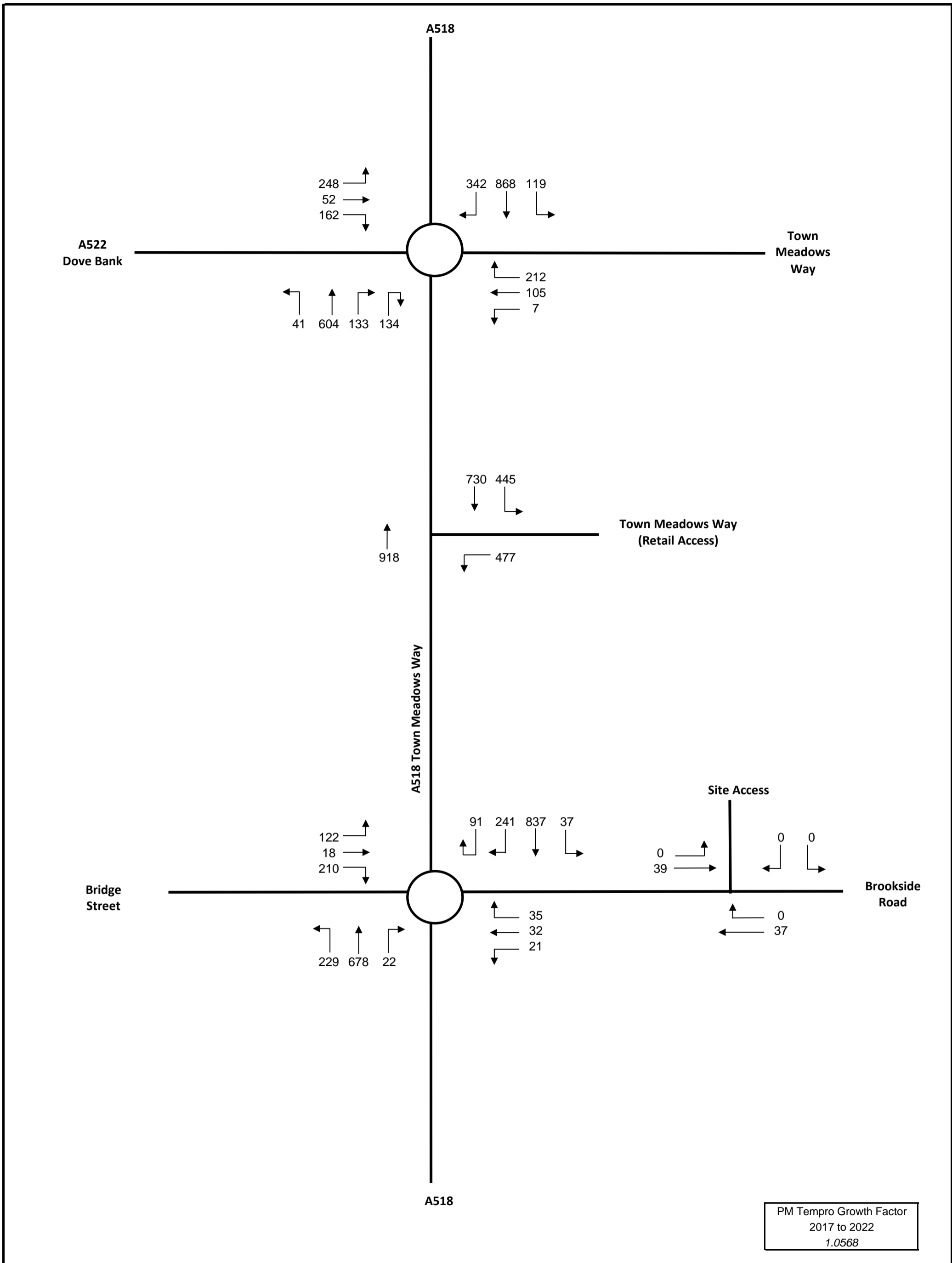
FIGURES





Traffic Figure 1

Proposed Residential Development, Former JCB Heavy Products Factory, Uttoxeter
 (LPA Ref: P/2017/01307)
 PM Peak Hour

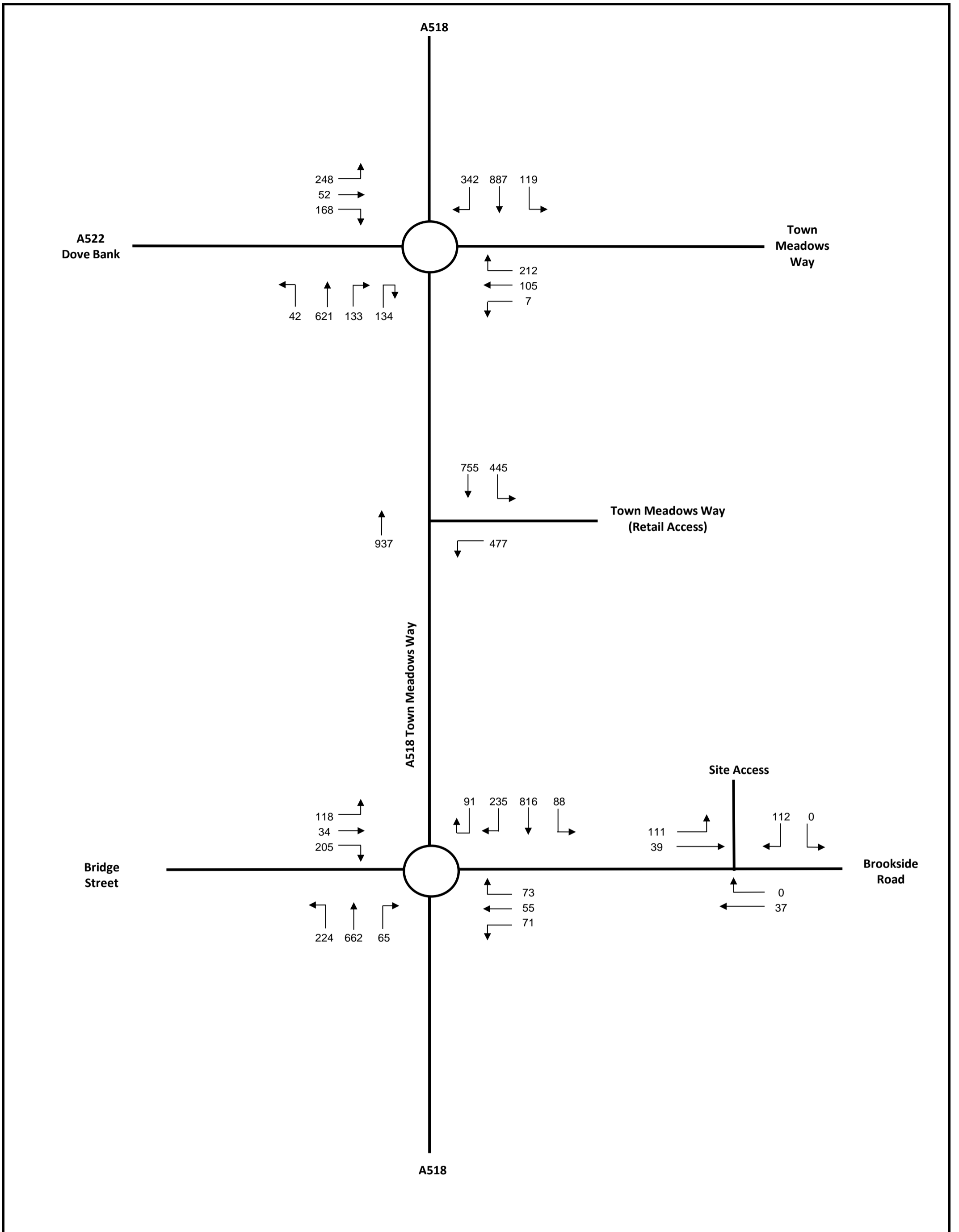


Traffic Figure 2

2022 Baseline Without Development Traffic Flows (PCU's) - No Existing Site Traffic
 PM Peak Hour (16:30 - 17:30)



4th Floor Oxford Place, 61 Oxford Street, Manchester M1 6EQ
 Tel: 0161 228 1008 www.vectos.co.uk
 Company no. 07794057



Traffic Figure 3

2022 Baseline With Development Traffic Flows (PCUs)
Weekday Peak Hour (16:30-17:30)

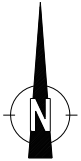


DRAWINGS



4th Floor Oxford Place, 61 Oxford Street, Manchester M1 6EQ
Tel: 0161 228 1008 www.vectos.co.uk

Company no. 07794057
Registered address: Vectos North Limited, 4th Floor Oxford Place, 61 Oxford Street, Manchester, M1 6EQ



HALF WIDTH - 3.2m
 ENTRY WIDTH - 5.5m
 FLARE LENGTH - 13m
 ENTRY RADIUS - 34m
 ICD - 40m
 ENTRY ANGLE - 22°

HALF WIDTH - 7.5m
 ENTRY WIDTH - 8m
 FLARE LENGTH - 2m
 ENTRY RADIUS - 16m
 ICD - 40m
 ENTRY ANGLE - 57°

HALF WIDTH - 3.6m
 ENTRY WIDTH - 5.2m
 FLARE LENGTH - 8m
 ENTRY RADIUS - 22m
 ICD - 40m
 ENTRY ANGLE - 32°

HALF WIDTH - 3.5m
 ENTRY WIDTH - 7.5m
 FLARE LENGTH - 25m
 ENTRY RADIUS - 26m
 ICD - 40m
 ENTRY ANGLE - 49°

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REV.	DETAILS	DRAWN	CHECKED	DATE

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.
2. White lining is indicative only.

Lidl Uttoxeter

A518 Town Meadows Way /
 A522 Dove Bank

Geometric Measurements

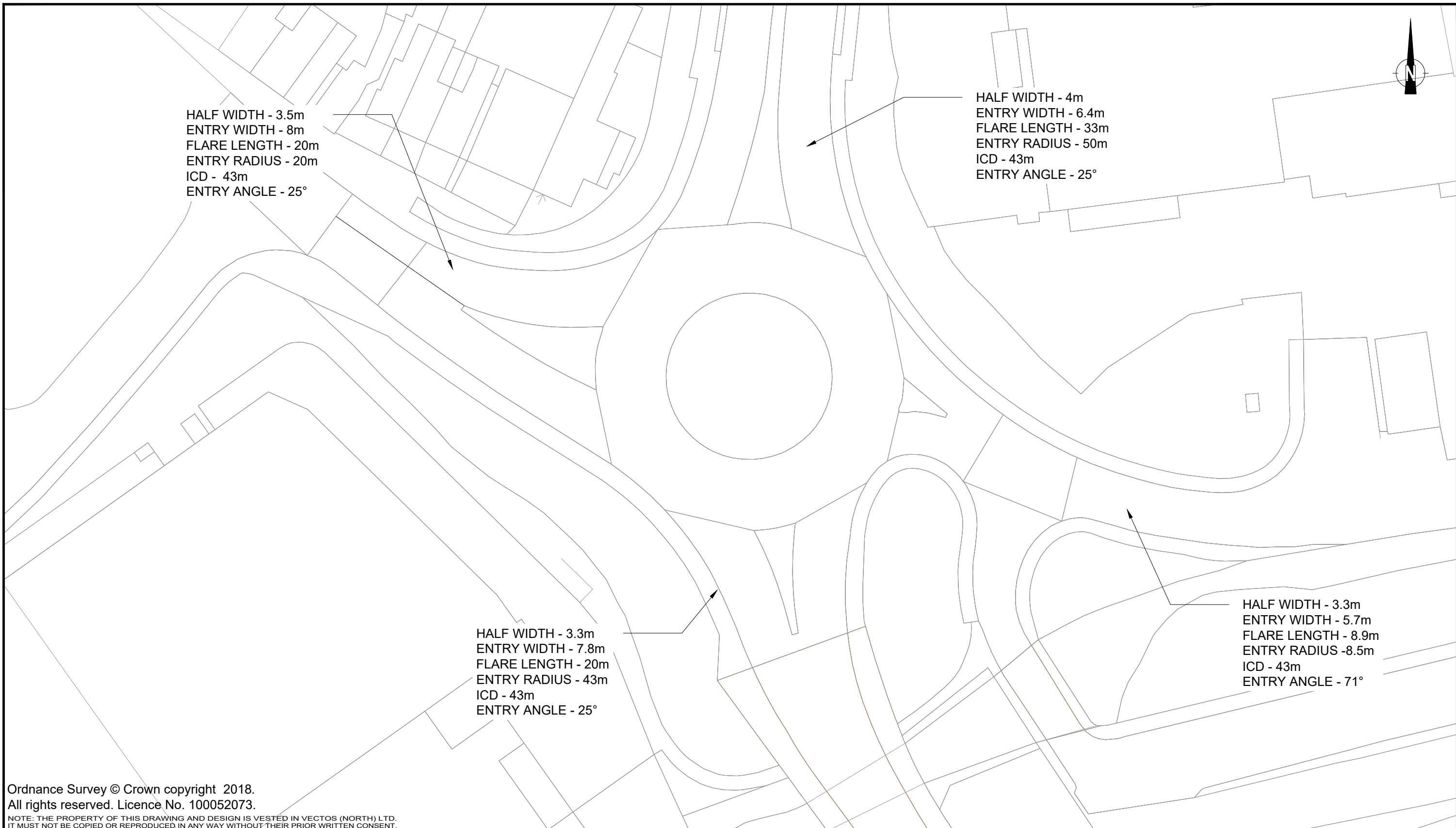
DRAWN: TO	CHECKED: OM	DATE: 10.09.18	SCALES: 1:500 at A3
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Lidl UK GmbH



4th Floor Oxford Place, 61 Oxford Street, Manchester, M1 6EQ
 0161 228 1008 e: manchester@vectos.co.uk

DRAWING NUMBER: VN70855-D103	REVISION: .
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REV.	DETAILS	DRAWN	CHECKED	DATE

Notes:

- This is not a construction drawing and is intended for illustrative purposes only.
- White lining is indicative only.

Lidl Uttoxeter

A518 Town Meadows Way / Brookside Road
A518 / Bridge Street
Geometric Measurements

DRAWN: TO	CHECKED: OM	DATE: 10.09.18	SCALES: 1:500 at A3
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Lidl UK GmbH



4th Floor Oxford Place, 61 Oxford Street, Manchester, M1 6EQ
0161 228 1008 e: manchester@vectos.co.uk

DRAWING NUMBER: VN70855-D104	REVISION: .
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APPENDICES





APPENDIX A

Site Access JUNCTIONS Modelling Outputs

<h1>Junctions 8</h1>
<h2>PICADY 8 - Priority Intersection Module</h2>
Version: 8.0.6.541 [19821,26/11/2015] © Copyright TRL Limited, 2018
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Filename: Site Access - Brookside Rd v3.arc8
Path: N:\Vectos Job Data\2017\VN70855 Lidl Uttoxeter\Arcady
Report generation date: 19/09/2018 14:18:52

- » (Default Analysis Set) - Base, PM
- » (Default Analysis Set) - Base, Saturday
- » (Default Analysis Set) - Base + Dev, PM
- » (Default Analysis Set) - Base + Dev, Saturday

Summary of junction performance

	PM				Saturday			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
A1 - Base								
Stream B-C	0.00	0.00	0.00	A	0.00	0.00	0.00	A
Stream B-A	0.00	0.00	0.00	A	0.00	0.00	0.00	A
Stream C-AB	0.00	0.00	0.00	A	0.00	0.00	0.00	A
Stream C-A	-	-	-	-	-	-	-	-
Stream A-B	-	-	-	-	-	-	-	-
Stream A-C	-	-	-	-	-	-	-	-
A1 - Base + Dev								
Stream B-C	0.00	0.00	0.00	A	0.00	0.00	0.00	A
Stream B-A	0.29	8.45	0.22	A	0.36	8.91	0.26	A
Stream C-AB	0.00	0.00	0.00	A	0.00	0.00	0.00	A
Stream C-A	-	-	-	-	-	-	-	-
Stream A-B	-	-	-	-	-	-	-	-
Stream A-C	-	-	-	-	-	-	-	-

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

"D1 - Base, PM" model duration: 16:15 - 17:45

"D2 - Base, Saturday" model duration: 10:45 - 12:15

"D3 - Base + Dev, PM" model duration: 16:15 - 17:45

"D4 - Base + Dev, Saturday" model duration: 10:45 - 12:15

Run using Junctions 8.0.6.541 at 19/09/2018 14:18:48

File summary

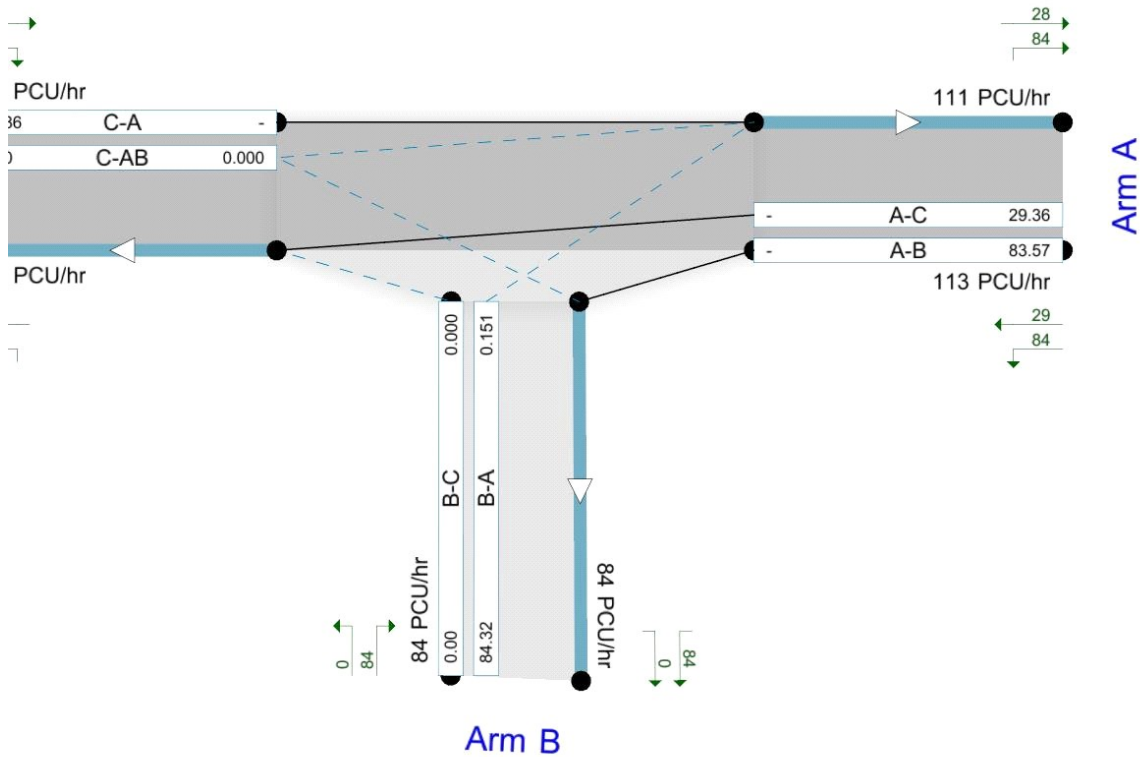
Title	(untitled)
Location	
Site Number	
Date	30/10/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Office
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

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	PCU	PCU	perHour	s	-Min	perMin



Showing modelled flow through junction (PCU/hr).
 Streams (upstreams) show Total Demand (PCU/hr). Streams (downstreams) show RFC ()
 Time Segment: (16:15-16:30)
 Showing Analysis Set "A1", Demand Set "D1 - Base, PM"

The junction diagram reflects the last run of ARCADY.

(Default Analysis Set) - Base, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Base, PM	Base	PM		ONE HOUR	16:15	17:45	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	Brookside Rd Site Access	T-Junction	Two-way	A,B,C		0.00	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	Brookside Rd (West)		Major
B	B	Site Access		Minor
C	C	Brookside Rd (East)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
C	6.00		0.00		2.20	60.00	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				8.00	5.00	4.50	4.50	4.00		1.00	25	30

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	487.905	0.089	0.225	0.141	0.321
1	B-C	626.733	0.096	0.243	-	-
1	C-B	608.710	0.236	0.236	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	40.00	100.000
B	ONE HOUR	✓	4.00	100.000
C	ONE HOUR	✓	37.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:15-16:30	A	30.11	30.11		
16:15-16:30	B	0.00	0.00		
16:15-16:30	C	27.86	27.86		
16:30-16:45	A	35.96	35.96		
16:30-16:45	B	0.00	0.00		
16:30-16:45	C	33.26	33.26		
16:45-17:00	A	44.04	44.04		
16:45-17:00	B	0.00	0.00		
16:45-17:00	C	40.74	40.74		
17:00-17:15	A	44.04	44.04		
17:00-17:15	B	0.00	0.00		
17:00-17:15	C	40.74	40.74		
17:15-17:30	A	35.96	35.96		
17:15-17:30	B	0.00	0.00		
17:15-17:30	C	33.26	33.26		
17:30-17:45	A	30.11	30.11		
17:30-17:45	B	0.00	0.00		
17:30-17:45	C	27.86	27.86		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.000	1.000	39.000
	B	4.000	0.000	0.000
	C	37.000	0.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.00	0.03	0.98
	B	1.00	0.00	0.00
	C	1.00	0.00	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-C	0.00	0.00	0.00	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B-A	0.00	0.00	0.00	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-AB	0.00	0.00	0.00	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-A	-	-	-	-	33.95	50.93	-	-	-	-	-
A-B	-	-	-	-	0.92	1.38	-	-	-	-	-
A-C	-	-	-	-	35.79	53.68	-	-	-	-	-

Main Results for each time segment

Main results: (16:15-16:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	619.53	0.000	0.00	0.00	0.000	A
B-A	0.00	0.00	0.00	0.00	477.31	0.000	0.00	0.00	0.000	A
C-AB	0.00	0.00	0.00	0.00	601.61	0.000	0.00	0.00	0.000	A
C-A	27.86	6.96	27.86	0.00	-	-	-	-	-	-
A-B	0.75	0.19	0.75	0.00	-	-	-	-	-	-
A-C	29.36	7.34	29.36	0.00	-	-	-	-	-	-

Main results: (16:30-16:45)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	618.13	0.000	0.00	0.00	0.000	A
B-A	0.00	0.00	0.00	0.00	475.25	0.000	0.00	0.00	0.000	A
C-AB	0.00	0.00	0.00	0.00	600.23	0.000	0.00	0.00	0.000	A
C-A	33.26	8.32	33.26	0.00	-	-	-	-	-	-
A-B	0.90	0.22	0.90	0.00	-	-	-	-	-	-
A-C	35.06	8.77	35.06	0.00	-	-	-	-	-	-

Main results: (16:45-17:00)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	616.20	0.000	0.00	0.00	0.000	A
B-A	0.00	0.00	0.00	0.00	472.41	0.000	0.00	0.00	0.000	A
C-AB	0.00	0.00	0.00	0.00	598.32	0.000	0.00	0.00	0.000	A
C-A	40.74	10.18	40.74	0.00	-	-	-	-	-	-
A-B	1.10	0.28	1.10	0.00	-	-	-	-	-	-
A-C	42.94	10.73	42.94	0.00	-	-	-	-	-	-

Main results: (17:00-17:15)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	616.20	0.000	0.00	0.00	0.000	A
B-A	0.00	0.00	0.00	0.00	472.41	0.000	0.00	0.00	0.000	A
C-AB	0.00	0.00	0.00	0.00	598.32	0.000	0.00	0.00	0.000	A
C-A	40.74	10.18	40.74	0.00	-	-	-	-	-	-
A-B	1.10	0.28	1.10	0.00	-	-	-	-	-	-
A-C	42.94	10.73	42.94	0.00	-	-	-	-	-	-

Main results: (17:15-17:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	618.13	0.000	0.00	0.00	0.000	A
B-A	0.00	0.00	0.00	0.00	475.25	0.000	0.00	0.00	0.000	A
C-AB	0.00	0.00	0.00	0.00	600.23	0.000	0.00	0.00	0.000	A
C-A	33.26	8.32	33.26	0.00	-	-	-	-	-	-
A-B	0.90	0.22	0.90	0.00	-	-	-	-	-	-
A-C	35.06	8.77	35.06	0.00	-	-	-	-	-	-

Main results: (17:30-17:45)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	619.53	0.000	0.00	0.00	0.000	A
B-A	0.00	0.00	0.00	0.00	477.31	0.000	0.00	0.00	0.000	A
C-AB	0.00	0.00	0.00	0.00	601.61	0.000	0.00	0.00	0.000	A
C-A	27.86	6.96	27.86	0.00	-	-	-	-	-	-
A-B	0.75	0.19	0.75	0.00	-	-	-	-	-	-
A-C	29.36	7.34	29.36	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment
Queueing Delay results: (16:15-16:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	0.00	0.00	0.000	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (16:30-16:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	0.00	0.00	0.000	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (16:45-17:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	0.00	0.00	0.000	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:00-17:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	0.00	0.00	0.000	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:15-17:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	0.00	0.00	0.000	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:30-17:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	0.00	0.00	0.000	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - Base, Saturday

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relatio
Base, Saturday	Base	Saturday		ONE HOUR	10:45	12:15	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	Brookside Rd Site Access	T-Junction	Two-way	A,B,C		0.00	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	Brookside Rd (West)		Major
B	B	Site Access		Minor
C	C	Brookside Rd (East)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
C	6.00		0.00		2.20	60.00	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				8.00	5.00	4.50	4.50	4.00		1.00	25	30

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	487.905	0.089	0.225	0.141	0.321
1	B-C	626.733	0.096	0.243	-	-
1	C-B	608.710	0.236	0.236	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	31.00	100.000
B	ONE HOUR	✓	1.00	100.000
C	ONE HOUR	✓	26.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
10:45-11:00	A	23.34	23.34		
10:45-11:00	B	0.00	0.00		
10:45-11:00	C	19.57	19.57		
11:00-11:15	A	27.87	27.87		
11:00-11:15	B	0.00	0.00		
11:00-11:15	C	23.37	23.37		
11:15-11:30	A	34.13	34.13		
11:15-11:30	B	0.00	0.00		
11:15-11:30	C	28.63	28.63		
11:30-11:45	A	34.13	34.13		
11:30-11:45	B	0.00	0.00		
11:30-11:45	C	28.63	28.63		
11:45-12:00	A	27.87	27.87		
11:45-12:00	B	0.00	0.00		
11:45-12:00	C	23.37	23.37		
12:00-12:15	A	23.34	23.34		
12:00-12:15	B	0.00	0.00		
12:00-12:15	C	19.57	19.57		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.000	1.000	30.000
	B	1.000	0.000	0.000
	C	26.000	0.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.00	0.03	0.97
	B	1.00	0.00	0.00
	C	1.00	0.00	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
From		A	B	C
	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-C	0.00	0.00	0.00	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B-A	0.00	0.00	0.00	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-AB	0.00	0.00	0.00	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-A	-	-	-	-	23.86	35.79	-	-	-	-	-
A-B	-	-	-	-	0.92	1.38	-	-	-	-	-
A-C	-	-	-	-	27.53	41.29	-	-	-	-	-

Main Results for each time segment

Main results: (10:45-11:00)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	621.18	0.000	0.00	0.00	0.000	A
B-A	0.00	0.00	0.00	0.00	480.00	0.000	0.00	0.00	0.000	A
C-AB	0.00	0.00	0.00	0.00	603.21	0.000	0.00	0.00	0.000	A
C-A	19.57	4.89	19.57	0.00	-	-	-	-	-	-
A-B	0.75	0.19	0.75	0.00	-	-	-	-	-	-
A-C	22.59	5.65	22.59	0.00	-	-	-	-	-	-

Main results: (11:00-11:15)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	620.10	0.000	0.00	0.00	0.000	A
B-A	0.00	0.00	0.00	0.00	478.46	0.000	0.00	0.00	0.000	A
C-AB	0.00	0.00	0.00	0.00	602.14	0.000	0.00	0.00	0.000	A
C-A	23.37	5.84	23.37	0.00	-	-	-	-	-	-
A-B	0.90	0.22	0.90	0.00	-	-	-	-	-	-
A-C	26.97	6.74	26.97	0.00	-	-	-	-	-	-

Main results: (11:15-11:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	618.61	0.000	0.00	0.00	0.000	A
B-A	0.00	0.00	0.00	0.00	476.34	0.000	0.00	0.00	0.000	A
C-AB	0.00	0.00	0.00	0.00	600.66	0.000	0.00	0.00	0.000	A
C-A	28.63	7.16	28.63	0.00	-	-	-	-	-	-
A-B	1.10	0.28	1.10	0.00	-	-	-	-	-	-
A-C	33.03	8.26	33.03	0.00	-	-	-	-	-	-

Main results: (11:30-11:45)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	618.61	0.000	0.00	0.00	0.000	A
B-A	0.00	0.00	0.00	0.00	476.34	0.000	0.00	0.00	0.000	A
C-AB	0.00	0.00	0.00	0.00	600.66	0.000	0.00	0.00	0.000	A
C-A	28.63	7.16	28.63	0.00	-	-	-	-	-	-
A-B	1.10	0.28	1.10	0.00	-	-	-	-	-	-
A-C	33.03	8.26	33.03	0.00	-	-	-	-	-	-

Main results: (11:45-12:00)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	620.10	0.000	0.00	0.00	0.000	A
B-A	0.00	0.00	0.00	0.00	478.46	0.000	0.00	0.00	0.000	A
C-AB	0.00	0.00	0.00	0.00	602.14	0.000	0.00	0.00	0.000	A
C-A	23.37	5.84	23.37	0.00	-	-	-	-	-	-
A-B	0.90	0.22	0.90	0.00	-	-	-	-	-	-
A-C	26.97	6.74	26.97	0.00	-	-	-	-	-	-

Main results: (12:00-12:15)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	621.18	0.000	0.00	0.00	0.000	A
B-A	0.00	0.00	0.00	0.00	480.00	0.000	0.00	0.00	0.000	A
C-AB	0.00	0.00	0.00	0.00	603.21	0.000	0.00	0.00	0.000	A
C-A	19.57	4.89	19.57	0.00	-	-	-	-	-	-
A-B	0.75	0.19	0.75	0.00	-	-	-	-	-	-
A-C	22.59	5.65	22.59	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (10:45-11:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	0.00	0.00	0.000	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (11:00-11:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	0.00	0.00	0.000	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (11:15-11:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	0.00	0.00	0.000	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (11:30-11:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	0.00	0.00	0.000	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (11:45-12:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	0.00	0.00	0.000	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (12:00-12:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	0.00	0.00	0.000	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - Base + Dev, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Base + Dev, PM	Base + Dev	PM		ONE HOUR	16:15	17:45	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	Brookside Rd Site Access	T-Junction	Two-way	A,B,C		8.45	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	Brookside Rd (West)		Major
B	B	Site Access		Minor
C	C	Brookside Rd (East)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
C	6.00		0.00		2.20	60.00	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				8.00	5.00	4.50	4.50	4.00		1.00	25	30

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	580.594	0.106	0.267	0.168	0.382
1	B-C	498.018	0.076	0.193	-	-
1	C-B	608.710	0.236	0.236	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	150.00	100.000
B	ONE HOUR	✓	112.00	100.000
C	ONE HOUR	✓	37.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:15-16:30	A	112.93	112.93		
16:15-16:30	B	84.32	84.32		
16:15-16:30	C	27.86	27.86		
16:30-16:45	A	134.85	134.85		
16:30-16:45	B	100.69	100.69		
16:30-16:45	C	33.26	33.26		
16:45-17:00	A	165.15	165.15		
16:45-17:00	B	123.31	123.31		
16:45-17:00	C	40.74	40.74		
17:00-17:15	A	165.15	165.15		
17:00-17:15	B	123.31	123.31		
17:00-17:15	C	40.74	40.74		
17:15-17:30	A	134.85	134.85		
17:15-17:30	B	100.69	100.69		
17:15-17:30	C	33.26	33.26		
17:30-17:45	A	112.93	112.93		
17:30-17:45	B	84.32	84.32		
17:30-17:45	C	27.86	27.86		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.000	111.000	39.000
	B	112.000	0.000	0.000
	C	37.000	0.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.00	0.74	0.26
	B	1.00	0.00	0.00
	C	1.00	0.00	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
From		A	B	C
	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-C	0.00	0.00	0.00	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B-A	0.22	8.45	0.29	A	102.77	154.16	20.44	7.96	0.23	20.44	7.96
C-AB	0.00	0.00	0.00	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-A	-	-	-	-	33.95	50.93	-	-	-	-	-
A-B	-	-	-	-	101.86	152.78	-	-	-	-	-
A-C	-	-	-	-	35.79	53.68	-	-	-	-	-

Main Results for each time segment

Main results: (16:15-16:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	467.65	0.000	0.00	0.00	0.000	A
B-A	84.32	21.08	83.62	0.00	559.23	0.151	0.00	0.18	7.558	A
C-AB	0.00	0.00	0.00	0.00	582.08	0.000	0.00	0.00	0.000	A
C-A	27.86	6.96	27.86	0.00	-	-	-	-	-	-
A-B	83.57	20.89	83.57	0.00	-	-	-	-	-	-
A-C	29.36	7.34	29.36	0.00	-	-	-	-	-	-

Main results: (16:30-16:45)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	461.55	0.000	0.00	0.00	0.000	A
B-A	100.69	25.17	100.51	0.00	555.08	0.181	0.18	0.22	7.913	A
C-AB	0.00	0.00	0.00	0.00	576.91	0.000	0.00	0.00	0.000	A
C-A	33.26	8.32	33.26	0.00	-	-	-	-	-	-
A-B	99.79	24.95	99.79	0.00	-	-	-	-	-	-
A-C	35.06	8.77	35.06	0.00	-	-	-	-	-	-

Main results: (16:45-17:00)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	453.25	0.000	0.00	0.00	0.000	A
B-A	123.31	30.83	123.05	0.00	549.34	0.224	0.22	0.29	8.439	A
C-AB	0.00	0.00	0.00	0.00	569.76	0.000	0.00	0.00	0.000	A
C-A	40.74	10.18	40.74	0.00	-	-	-	-	-	-
A-B	122.21	30.55	122.21	0.00	-	-	-	-	-	-
A-C	42.94	10.73	42.94	0.00	-	-	-	-	-	-

Main results: (17:00-17:15)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	453.19	0.000	0.00	0.00	0.000	A
B-A	123.31	30.83	123.31	0.00	549.34	0.224	0.29	0.29	8.449	A
C-AB	0.00	0.00	0.00	0.00	569.76	0.000	0.00	0.00	0.000	A
C-A	40.74	10.18	40.74	0.00	-	-	-	-	-	-
A-B	122.21	30.55	122.21	0.00	-	-	-	-	-	-
A-C	42.94	10.73	42.94	0.00	-	-	-	-	-	-

Main results: (17:15-17:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	461.45	0.000	0.00	0.00	0.000	A
B-A	100.69	25.17	100.94	0.00	555.08	0.181	0.29	0.22	7.931	A
C-AB	0.00	0.00	0.00	0.00	576.91	0.000	0.00	0.00	0.000	A
C-A	33.26	8.32	33.26	0.00	-	-	-	-	-	-
A-B	99.79	24.95	99.79	0.00	-	-	-	-	-	-
A-C	35.06	8.77	35.06	0.00	-	-	-	-	-	-

Main results: (17:30-17:45)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	467.46	0.000	0.00	0.00	0.000	A
B-A	84.32	21.08	84.50	0.00	559.23	0.151	0.22	0.18	7.585	A
C-AB	0.00	0.00	0.00	0.00	582.08	0.000	0.00	0.00	0.000	A
C-A	27.86	6.96	27.86	0.00	-	-	-	-	-	-
A-B	83.57	20.89	83.57	0.00	-	-	-	-	-	-
A-C	29.36	7.34	29.36	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (16:15-16:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	2.54	0.17	7.558	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (16:30-16:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	3.22	0.21	7.913	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (16:45-17:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	4.18	0.28	8.439	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:00-17:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	4.31	0.29	8.449	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:15-17:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	3.44	0.23	7.931	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:30-17:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	2.75	0.18	7.585	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - Base + Dev, Saturday

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relation
Base + Dev, Saturday	Base + Dev	Saturday		ONE HOUR	10:45	12:15	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	Brookside Rd Site Access	T-Junction	Two-way	A,B,C		8.91	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	Brookside Rd (West)		Major
B	B	Site Access		Minor
C	C	Brookside Rd (East)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
C	6.00		0.00		2.20	60.00	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				8.00	5.00	4.50	4.50	4.00		1.00	25	30

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	580.594	0.106	0.267	0.168	0.382
1	B-C	498.018	0.076	0.193	-	-
1	C-B	608.710	0.236	0.236	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	180.00	100.000
B	ONE HOUR	✓	132.00	100.000
C	ONE HOUR	✓	26.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
10:45-11:00	A	135.51	135.51		
10:45-11:00	B	99.38	99.38		
10:45-11:00	C	19.57	19.57		
11:00-11:15	A	161.82	161.82		
11:00-11:15	B	118.67	118.67		
11:00-11:15	C	23.37	23.37		
11:15-11:30	A	198.18	198.18		
11:15-11:30	B	145.33	145.33		
11:15-11:30	C	28.63	28.63		
11:30-11:45	A	198.18	198.18		
11:30-11:45	B	145.33	145.33		
11:30-11:45	C	28.63	28.63		
11:45-12:00	A	161.82	161.82		
11:45-12:00	B	118.67	118.67		
11:45-12:00	C	23.37	23.37		
12:00-12:15	A	135.51	135.51		
12:00-12:15	B	99.38	99.38		
12:00-12:15	C	19.57	19.57		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.000	150.000	30.000
	B	132.000	0.000	0.000
	C	26.000	0.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.00	0.83	0.17
	B	1.00	0.00	0.00
	C	1.00	0.00	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
From		A	B	C
	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-C	0.00	0.00	0.00	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B-A	0.26	8.91	0.36	A	121.13	181.69	25.14	8.30	0.28	25.14	8.30
C-AB	0.00	0.00	0.00	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-A	-	-	-	-	23.86	35.79	-	-	-	-	-
A-B	-	-	-	-	137.64	206.46	-	-	-	-	-
A-C	-	-	-	-	27.53	41.29	-	-	-	-	-

Main Results for each time segment

Main results: (10:45-11:00)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	463.50	0.000	0.00	0.00	0.000	A
B-A	99.38	24.84	98.52	0.00	559.32	0.178	0.00	0.21	7.799	A
C-AB	0.00	0.00	0.00	0.00	576.75	0.000	0.00	0.00	0.000	A
C-A	19.57	4.89	19.57	0.00	-	-	-	-	-	-
A-B	112.93	28.23	112.93	0.00	-	-	-	-	-	-
A-C	22.59	5.65	22.59	0.00	-	-	-	-	-	-

Main results: (11:00-11:15)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	456.55	0.000	0.00	0.00	0.000	A
B-A	118.67	29.67	118.45	0.00	555.20	0.214	0.21	0.27	8.238	A
C-AB	0.00	0.00	0.00	0.00	570.55	0.000	0.00	0.00	0.000	A
C-A	23.37	5.84	23.37	0.00	-	-	-	-	-	-
A-B	134.85	33.71	134.85	0.00	-	-	-	-	-	-
A-C	26.97	6.74	26.97	0.00	-	-	-	-	-	-

Main results: (11:15-11:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	447.13	0.000	0.00	0.00	0.000	A
B-A	145.33	36.33	144.99	0.00	549.49	0.264	0.27	0.36	8.893	A
C-AB	0.00	0.00	0.00	0.00	561.97	0.000	0.00	0.00	0.000	A
C-A	28.63	7.16	28.63	0.00	-	-	-	-	-	-
A-B	165.15	41.29	165.15	0.00	-	-	-	-	-	-
A-C	33.03	8.26	33.03	0.00	-	-	-	-	-	-

Main results: (11:30-11:45)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	447.05	0.000	0.00	0.00	0.000	A
B-A	145.33	36.33	145.33	0.00	549.49	0.264	0.36	0.36	8.907	A
C-AB	0.00	0.00	0.00	0.00	561.97	0.000	0.00	0.00	0.000	A
C-A	28.63	7.16	28.63	0.00	-	-	-	-	-	-
A-B	165.15	41.29	165.15	0.00	-	-	-	-	-	-
A-C	33.03	8.26	33.03	0.00	-	-	-	-	-	-

Main results: (11:45-12:00)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	456.43	0.000	0.00	0.00	0.000	A
B-A	118.67	29.67	118.99	0.00	555.20	0.214	0.36	0.27	8.259	A
C-AB	0.00	0.00	0.00	0.00	570.55	0.000	0.00	0.00	0.000	A
C-A	23.37	5.84	23.37	0.00	-	-	-	-	-	-
A-B	134.85	33.71	134.85	0.00	-	-	-	-	-	-
A-C	26.97	6.74	26.97	0.00	-	-	-	-	-	-

Main results: (12:00-12:15)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	463.26	0.000	0.00	0.00	0.000	A
B-A	99.38	24.84	99.60	0.00	559.32	0.178	0.27	0.22	7.834	A
C-AB	0.00	0.00	0.00	0.00	576.75	0.000	0.00	0.00	0.000	A
C-A	19.57	4.89	19.57	0.00	-	-	-	-	-	-
A-B	112.93	28.23	112.93	0.00	-	-	-	-	-	-
A-C	22.59	5.65	22.59	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (10:45-11:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	3.09	0.21	7.799	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (11:00-11:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	3.94	0.26	8.238	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (11:15-11:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	5.18	0.35	8.893	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (11:30-11:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	5.35	0.36	8.907	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (11:45-12:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	4.24	0.28	8.259	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (12:00-12:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-C	0.00	0.00	0.000	A	A
B-A	3.35	0.22	7.834	A	A
C-AB	0.00	0.00	0.000	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-



APPENDIX B

A518 Town Meadows Way/ Brookside Road JUNCTIONS Modelling Outputs

<h1>Junctions 8</h1>
<h2>ARCADY 8 - Roundabout Module</h2>
Version: 8.0.6.541 [19821,26/11/2015] © Copyright TRL Limited, 2018
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Filename: South Rbt - A518 Brookside Rd v3.arc8
Path: N:\Vectos Job Data\2017\VN70855 Lidl Uttoxeter\Arcady
Report generation date: 19/09/2018 14:21:04

- » (Default Analysis Set) - Base, PM
- » (Default Analysis Set) - Base, Sat
- » (Default Analysis Set) - Base + Dev, PM
- » (Default Analysis Set) - Base + Dev, Sat

Summary of junction performance

	PM				Sat			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
A1 - Base								
Arm 1	0.30	11.42	0.24	B	0.16	7.74	0.14	A
Arm 2	1.65	5.84	0.62	A	1.17	4.78	0.54	A
Arm 3	0.50	4.66	0.33	A	0.58	4.70	0.37	A
Arm 4	3.51	9.70	0.78	A	1.56	5.40	0.61	A
A1 - Base + Dev								
Arm 1	1.02	17.19	0.51	C	0.65	10.74	0.40	B
Arm 2	1.88	6.54	0.66	A	1.40	5.50	0.59	A
Arm 3	0.54	4.99	0.35	A	0.68	5.30	0.41	A
Arm 4	4.32	11.82	0.82	B	1.92	6.39	0.66	A

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

"D1 - Base, PM" model duration: 16:00 - 17:30
 "D2 - Base, Sat" model duration: 11:00 - 12:30
 "D3 - Base + Dev, PM" model duration: 16:00 - 17:30
 "D4 - Base + Dev, Sat" model duration: 11:00 - 12:30

Run using Junctions 8.0.6.541 at 19/09/2018 14:21:00

File summary

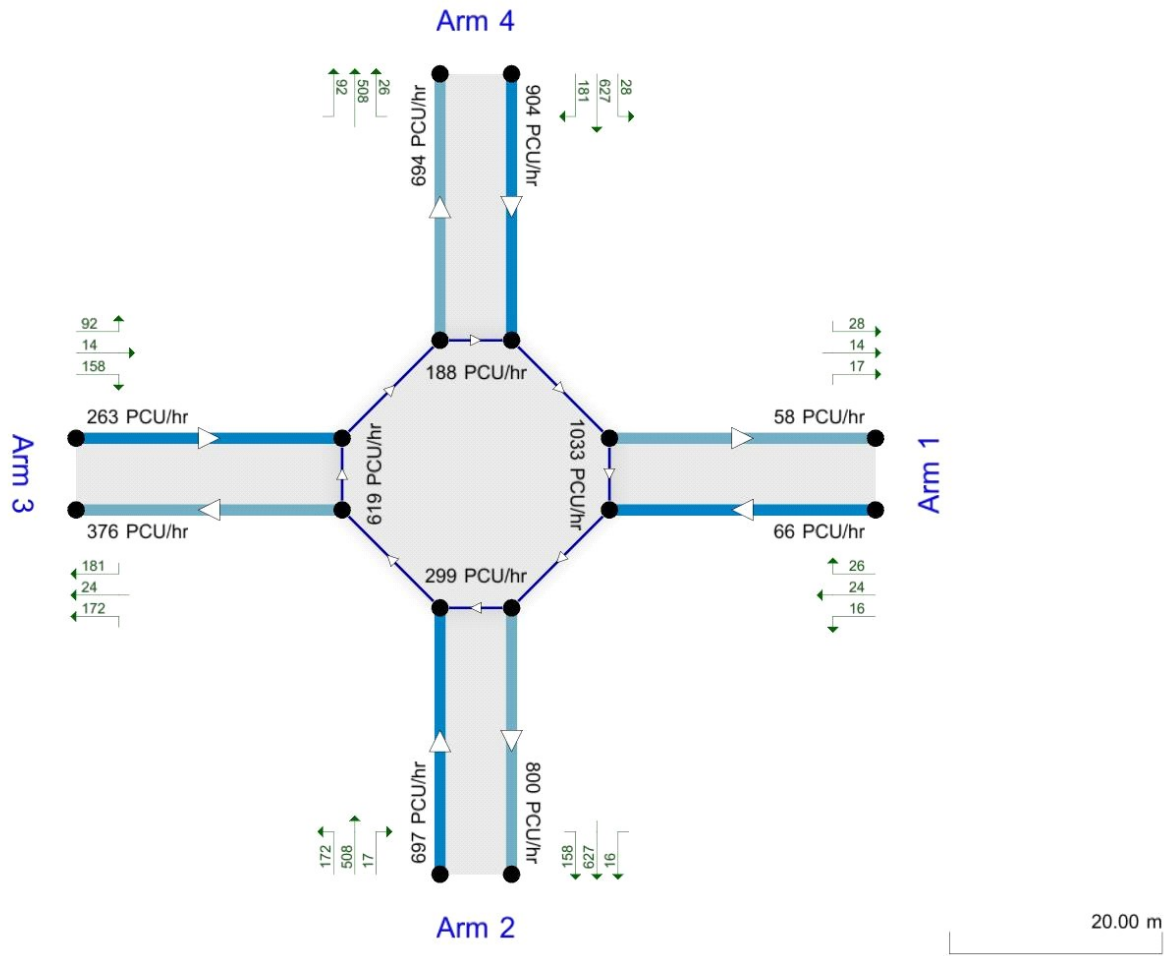
Title	(untitled)
Location	
Site Number	
Date	30/10/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Office
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

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	PCU	PCU	perHour	s	-Min	perMin



Showing modelled flow through junction (PCU/hr).
 Time Segment: (16:00-16:15)
 Showing Analysis Set "A1"; Demand Set "D1 - Base, PM"

The junction diagram reflects the last run of ARCADY.

(Default Analysis Set) - Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Base, RM	Base	RM	Base Flows	ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	A518 / Brookside Rd	Roundabout	1,2,3,4				7.68	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Brookside Road	
2	2	A518 S Bridge St	
3	3	Bridge Street	
4	4	A518 N Town Meadows Way	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

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	5.70	8.90	8.50	43.00	71.00	
2	3.30	7.80	25.00	41.00	43.00	25.00	
3	3.50	8.00	20.00	20.00	43.00	51.00	
4	4.00	6.40	33.00	50.00	43.00	25.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.454	1100.486
2		(calculated)	(calculated)	0.695	1944.137
3		(calculated)	(calculated)	0.616	1718.188
4		(calculated)	(calculated)	0.685	1886.043

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	88.00	100.000
2	ONE HOUR	✓	929.00	100.000
3	ONE HOUR	✓	350.00	100.000
4	ONE HOUR	✓	1206.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:00-16:15	1	66.25	66.25		
16:00-16:15	2	699.40	699.40		
16:00-16:15	3	263.50	263.50		
16:00-16:15	4	907.94	907.94		
16:15-16:30	1	79.11	79.11		
16:15-16:30	2	835.15	835.15		
16:15-16:30	3	314.64	314.64		
16:15-16:30	4	1084.17	1084.17		
16:30-16:45	1	96.89	96.89		
16:30-16:45	2	1022.85	1022.85		
16:30-16:45	3	385.36	385.36		
16:30-16:45	4	1327.83	1327.83		
16:45-17:00	1	96.89	96.89		
16:45-17:00	2	1022.85	1022.85		
16:45-17:00	3	385.36	385.36		
16:45-17:00	4	1327.83	1327.83		
17:00-17:15	1	79.11	79.11		
17:00-17:15	2	835.15	835.15		
17:00-17:15	3	314.64	314.64		
17:00-17:15	4	1084.17	1084.17		
17:15-17:30	1	66.25	66.25		
17:15-17:30	2	699.40	699.40		
17:15-17:30	3	263.50	263.50		
17:15-17:30	4	907.94	907.94		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	21.000	32.000	35.000
	2	22.000	0.000	229.000	678.000
	3	18.000	210.000	0.000	122.000
	4	37.000	837.000	241.000	91.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.24	0.36	0.40
	2	0.02	0.00	0.25	0.73
	3	0.05	0.60	0.00	0.35
	4	0.03	0.69	0.20	0.08

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.000	1.000
	3	1.000	1.000	1.000	1.000
	4	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.24	11.42	0.30	B	80.75	121.13	17.58	8.71	0.20	17.58	8.71
2	0.62	5.84	1.65	A	852.47	1278.70	97.53	4.58	1.08	97.54	4.58
3	0.33	4.66	0.50	A	321.17	481.75	32.03	3.99	0.36	32.04	3.99
4	0.78	9.70	3.51	A	1106.65	1659.97	182.16	6.58	2.02	182.18	6.59

Main Results for each time segment

Main results: (16:00-16:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	66.25	16.56	65.79	57.73	1033.49	0.00	631.75	215.59	0.105	0.00	0.12	6.355	A
2	699.40	174.85	696.72	800.41	298.87	0.00	1736.46	1549.04	0.403	0.00	0.67	3.454	A
3	263.50	65.87	262.52	376.26	619.33	0.00	1336.77	878.27	0.197	0.00	0.24	3.348	A
4	907.94	226.99	903.71	694.34	187.51	0.00	1757.65	1469.19	0.517	0.00	1.06	4.195	A

Main results: (16:15-16:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	79.11	19.78	78.89	69.10	1237.21	0.00	539.36	215.59	0.147	0.12	0.17	7.815	A
2	835.15	208.79	833.98	958.22	357.88	0.00	1695.46	1549.04	0.493	0.67	0.96	4.172	A
3	314.64	78.66	314.30	450.45	741.41	0.00	1261.58	878.27	0.249	0.24	0.33	3.800	A
4	1084.17	271.04	1081.82	831.22	224.49	0.00	1732.33	1469.19	0.626	1.06	1.65	5.514	A

Main results: (16:30-16:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	96.89	24.22	96.37	84.46	1511.01	0.00	415.18	215.59	0.233	0.17	0.30	11.274	B
2	1022.85	255.71	1020.18	1170.43	436.95	0.00	1640.52	1549.04	0.623	0.96	1.63	5.777	A
3	385.36	96.34	384.70	550.44	906.69	0.00	1159.79	878.27	0.332	0.33	0.49	4.640	A
4	1327.83	331.96	1320.71	1016.63	274.77	0.00	1697.91	1469.19	0.782	1.65	3.43	9.369	A

Main results: (16:45-17:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	96.89	24.22	96.87	84.77	1518.00	0.00	412.01	215.59	0.235	0.30	0.30	11.423	B
2	1022.85	255.71	1022.78	1175.66	439.21	0.00	1638.95	1549.04	0.624	1.63	1.65	5.840	A
3	385.36	96.34	385.35	552.63	909.36	0.00	1158.15	878.27	0.333	0.49	0.50	4.658	A
4	1327.83	331.96	1327.52	1019.46	275.25	0.00	1697.58	1469.19	0.782	3.43	3.51	9.705	A

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	79.11	19.78	79.63	69.54	1247.08	0.00	534.89	215.59	0.148	0.30	0.18	7.916	A
2	835.15	208.79	837.80	965.63	361.07	0.00	1693.24	1549.04	0.493	1.65	0.98	4.222	A
3	314.64	78.66	315.29	453.57	745.31	0.00	1259.18	878.27	0.250	0.50	0.33	3.818	A
4	1084.17	271.04	1091.39	835.37	225.23	0.00	1731.83	1469.19	0.626	3.51	1.70	5.684	A

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	66.25	16.56	66.48	58.09	1040.80	0.00	628.44	215.59	0.105	0.18	0.12	6.407	A
2	699.40	174.85	700.61	806.04	301.24	0.00	1734.81	1549.04	0.403	0.98	0.68	3.484	A
3	263.50	65.87	263.85	378.81	623.04	0.00	1334.48	878.27	0.197	0.33	0.25	3.362	A
4	907.94	226.99	910.43	698.42	188.47	0.00	1757.00	1469.19	0.517	1.70	1.08	4.266	A

Queueing Delay Results for each time segment
Queueing Delay results: (16:00-16:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.69	0.11	6.355	A	A
2	9.80	0.65	3.454	A	A
3	3.59	0.24	3.348	A	A
4	15.34	1.02	4.195	A	A

Queueing Delay results: (16:15-16:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.49	0.17	7.815	A	A
2	14.09	0.94	4.172	A	A
3	4.88	0.33	3.800	A	A
4	23.80	1.59	5.514	A	A

Queueing Delay results: (16:30-16:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	4.32	0.29	11.274	B	B
2	23.48	1.57	5.777	A	A
3	7.25	0.48	4.640	A	A
4	47.46	3.16	9.369	A	A

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	4.54	0.30	11.423	B	B
2	24.58	1.64	5.840	A	A
3	7.43	0.50	4.658	A	A
4	52.13	3.48	9.705	A	A

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.72	0.18	7.916	A	A
2	15.17	1.01	4.222	A	A
3	5.12	0.34	3.818	A	A
4	26.75	1.78	5.684	A	A

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.83	0.12	6.407	A	A
2	10.41	0.69	3.484	A	A
3	3.77	0.25	3.362	A	A
4	16.67	1.11	4.266	A	A

(Default Analysis Set) - Base, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Base, Sat	Base	Sat	Base Flows	ONE HOUR	11:00	12:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	A518 / Brookside Rd	Roundabout	1,2,3,4				5.12	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Brookside Road	
2	2	A518 S Bridge St	
3	3	Bridge Street	
4	4	A518 N Town Meadows Way	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

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	5.70	8.90	8.50	43.00	71.00	
2	3.30	7.80	25.00	41.00	43.00	25.00	
3	3.50	8.00	20.00	20.00	43.00	51.00	
4	4.00	6.40	33.00	50.00	43.00	25.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.454	1100.486
2		(calculated)	(calculated)	0.695	1944.137
3		(calculated)	(calculated)	0.616	1718.188
4		(calculated)	(calculated)	0.685	1886.043

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	68.00	100.000
2	ONE HOUR	✓	803.00	100.000
3	ONE HOUR	✓	402.00	100.000
4	ONE HOUR	✓	952.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
11:00-11:15	1	51.19	51.19		
11:00-11:15	2	604.54	604.54		
11:00-11:15	3	302.65	302.65		
11:00-11:15	4	716.72	716.72		
11:15-11:30	1	61.13	61.13		
11:15-11:30	2	721.88	721.88		
11:15-11:30	3	361.39	361.39		
11:15-11:30	4	855.83	855.83		
11:30-11:45	1	74.87	74.87		
11:30-11:45	2	884.12	884.12		
11:30-11:45	3	442.61	442.61		
11:30-11:45	4	1048.17	1048.17		
11:45-12:00	1	74.87	74.87		
11:45-12:00	2	884.12	884.12		
11:45-12:00	3	442.61	442.61		
11:45-12:00	4	1048.17	1048.17		
12:00-12:15	1	61.13	61.13		
12:00-12:15	2	721.88	721.88		
12:00-12:15	3	361.39	361.39		
12:00-12:15	4	855.83	855.83		
12:15-12:30	1	51.19	51.19		
12:15-12:30	2	604.54	604.54		
12:15-12:30	3	302.65	302.65		
12:15-12:30	4	716.72	716.72		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	31.000	21.000	16.000
	2	15.000	0.000	189.000	599.000
	3	5.000	208.000	0.000	189.000
	4	37.000	551.000	241.000	123.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.46	0.31	0.24
	2	0.02	0.00	0.24	0.75
	3	0.01	0.52	0.00	0.47
	4	0.04	0.58	0.25	0.13

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.000	1.000
	3	1.000	1.000	1.000	1.000
	4	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.14	7.74	0.16	A	62.40	93.60	10.18	6.53	0.11	10.18	6.53
2	0.54	4.78	1.17	A	736.85	1105.27	72.70	3.95	0.81	72.71	3.95
3	0.37	4.70	0.58	A	368.88	553.32	37.08	4.02	0.41	37.08	4.02
4	0.61	5.40	1.56	A	873.57	1310.36	95.11	4.35	1.06	95.12	4.36

Main Results for each time segment

Main results: (11:00-11:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	51.19	12.80	50.89	42.75	842.27	0.00	718.48	219.04	0.071	0.00	0.08	5.390	A
2	604.54	151.14	602.41	592.46	300.69	0.00	1735.20	1450.02	0.348	0.00	0.53	3.173	A
3	302.65	75.66	301.52	338.26	564.85	0.00	1370.32	880.44	0.221	0.00	0.28	3.365	A
4	716.72	179.18	714.01	695.36	171.01	0.00	1768.95	1548.09	0.405	0.00	0.68	3.404	A

Main results: (11:15-11:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	61.13	15.28	61.02	51.18	1008.28	0.00	643.19	219.04	0.095	0.08	0.10	6.184	A
2	721.88	180.47	721.06	709.30	360.01	0.00	1693.98	1450.02	0.426	0.53	0.74	3.696	A
3	361.39	90.35	360.99	404.93	676.13	0.00	1301.78	880.44	0.278	0.28	0.38	3.824	A
4	855.83	213.96	854.72	832.38	204.74	0.00	1745.86	1548.09	0.490	0.68	0.95	4.035	A

Main results: (11:30-11:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	74.87	18.72	74.65	62.62	1233.76	0.00	540.93	219.04	0.138	0.10	0.16	7.718	A
2	884.12	221.03	882.43	867.93	440.48	0.00	1638.07	1450.02	0.540	0.74	1.16	4.753	A
3	442.61	110.65	441.85	495.49	827.42	0.00	1208.61	880.44	0.366	0.38	0.57	4.690	A
4	1048.17	262.04	1045.79	1018.67	250.60	0.00	1714.46	1548.09	0.611	0.95	1.55	5.364	A

Main results: (11:45-12:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	74.87	18.72	74.87	62.76	1236.39	0.00	539.73	219.04	0.139	0.16	0.16	7.743	A
2	884.12	221.03	884.09	869.77	441.49	0.00	1637.36	1450.02	0.540	1.16	1.17	4.778	A
3	442.61	110.65	442.60	496.54	829.04	0.00	1207.62	880.44	0.367	0.57	0.58	4.705	A
4	1048.17	262.04	1048.12	1020.61	251.03	0.00	1714.17	1548.09	0.611	1.55	1.56	5.404	A

Main results: (12:00-12:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	61.13	15.28	61.35	51.37	1012.22	0.00	641.40	219.04	0.095	0.16	0.11	6.207	A
2	721.88	180.47	723.55	712.05	361.51	0.00	1692.94	1450.02	0.426	1.17	0.75	3.722	A
3	361.39	90.35	362.15	406.50	678.57	0.00	1300.29	880.44	0.278	0.58	0.39	3.841	A
4	855.83	213.96	858.19	835.31	205.40	0.00	1745.41	1548.09	0.490	1.56	0.97	4.069	A

Main results: (12:15-12:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	51.19	12.80	51.31	42.98	846.76	0.00	716.45	219.04	0.071	0.11	0.08	5.412	A
2	604.54	151.14	605.38	595.68	302.39	0.00	1734.02	1450.02	0.349	0.75	0.54	3.191	A
3	302.65	75.66	303.05	340.06	567.72	0.00	1368.55	880.44	0.221	0.39	0.29	3.381	A
4	716.72	179.18	717.85	698.89	171.88	0.00	1768.36	1548.09	0.405	0.97	0.69	3.429	A

Queueing Delay Results for each time segment
Queueing Delay results: (11:00-11:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.11	0.07	5.390	A	A
2	7.80	0.52	3.173	A	A
3	4.14	0.28	3.365	A	A
4	9.90	0.66	3.404	A	A

Queueing Delay results: (11:15-11:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.53	0.10	6.184	A	A
2	10.84	0.72	3.696	A	A
3	5.63	0.38	3.824	A	A
4	13.98	0.93	4.035	A	A

Queueing Delay results: (11:30-11:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.32	0.15	7.718	A	A
2	16.89	1.13	4.753	A	A
3	8.40	0.56	4.690	A	A
4	22.42	1.49	5.364	A	A

Queueing Delay results: (11:45-12:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.40	0.16	7.743	A	A
2	17.46	1.16	4.778	A	A
3	8.62	0.57	4.705	A	A
4	23.36	1.56	5.404	A	A

Queueing Delay results: (12:00-12:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.63	0.11	6.207	A	A
2	11.50	0.77	3.722	A	A
3	5.92	0.39	3.841	A	A
4	14.96	1.00	4.069	A	A

Queueing Delay results: (12:15-12:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.18	0.08	5.412	A	A
2	8.22	0.55	3.191	A	A
3	4.35	0.29	3.381	A	A
4	10.50	0.70	3.429	A	A

(Default Analysis Set) - Base + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Base + Dev, FM	Base + Dev	FM	Base Flows	ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	A518 / Brookside Rd	Roundabout	1,2,3,4				9.49	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Brookside Road	
2	2	A518 S Bridge St	
3	3	Bridge Street	
4	4	A518 N Town Meadows Way	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

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	5.70	8.90	8.50	43.00	71.00	
2	3.30	7.80	25.00	41.00	43.00	25.00	
3	3.50	8.00	20.00	20.00	43.00	51.00	
4	4.00	6.40	33.00	50.00	43.00	25.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.454	1100.486
2		(calculated)	(calculated)	0.695	1944.137
3		(calculated)	(calculated)	0.616	1718.188
4		(calculated)	(calculated)	0.685	1886.043

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	199.00	100.000
2	ONE HOUR	✓	951.00	100.000
3	ONE HOUR	✓	357.00	100.000
4	ONE HOUR	✓	1230.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:00-16:15	1	149.82	149.82		
16:00-16:15	2	715.96	715.96		
16:00-16:15	3	268.77	268.77		
16:00-16:15	4	926.01	926.01		
16:15-16:30	1	178.90	178.90		
16:15-16:30	2	854.93	854.93		
16:15-16:30	3	320.94	320.94		
16:15-16:30	4	1105.74	1105.74		
16:30-16:45	1	219.10	219.10		
16:30-16:45	2	1047.07	1047.07		
16:30-16:45	3	393.06	393.06		
16:30-16:45	4	1354.26	1354.26		
16:45-17:00	1	219.10	219.10		
16:45-17:00	2	1047.07	1047.07		
16:45-17:00	3	393.06	393.06		
16:45-17:00	4	1354.26	1354.26		
17:00-17:15	1	178.90	178.90		
17:00-17:15	2	854.93	854.93		
17:00-17:15	3	320.94	320.94		
17:00-17:15	4	1105.74	1105.74		
17:15-17:30	1	149.82	149.82		
17:15-17:30	2	715.96	715.96		
17:15-17:30	3	268.77	268.77		
17:15-17:30	4	926.01	926.01		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	71.000	55.000	73.000
	2	65.000	0.000	224.000	662.000
	3	34.000	205.000	0.000	118.000
	4	88.000	816.000	235.000	91.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.36	0.28	0.37
	2	0.07	0.00	0.24	0.70
	3	0.10	0.57	0.00	0.33
	4	0.07	0.66	0.19	0.07

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.000	1.000
	3	1.000	1.000	1.000	1.000
	4	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.51	17.19	1.02	C	182.61	273.91	52.80	11.57	0.59	52.80	11.57
2	0.66	6.54	1.88	A	872.65	1308.98	108.35	4.97	1.20	108.36	4.97
3	0.35	4.99	0.54	A	327.59	491.38	34.45	4.21	0.38	34.45	4.21
4	0.82	11.82	4.32	B	1128.67	1693.00	211.98	7.51	2.36	212.00	7.51

Main Results for each time segment

Main results: (16:00-16:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	149.82	37.45	148.61	140.16	1009.27	0.00	642.74	279.21	0.233	0.00	0.30	7.268	A
2	715.96	178.99	713.10	818.07	339.81	0.00	1708.01	1557.77	0.419	0.00	0.72	3.608	A
3	268.77	67.19	267.74	385.09	667.82	0.00	1306.90	857.00	0.206	0.00	0.26	3.461	A
4	926.01	231.50	921.45	707.58	227.98	0.00	1729.95	1420.31	0.535	0.00	1.14	4.428	A

Main results: (16:15-16:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	178.90	44.72	178.21	167.78	1208.15	0.00	552.54	279.21	0.324	0.30	0.47	9.600	A
2	854.93	213.73	853.60	979.39	406.97	0.00	1661.35	1557.77	0.515	0.72	1.05	4.449	A
3	320.94	80.23	320.56	461.05	799.52	0.00	1225.80	857.00	0.262	0.26	0.35	3.975	A
4	1105.74	276.44	1102.99	847.13	272.94	0.00	1699.16	1420.31	0.651	1.14	1.83	6.011	A

Main results: (16:30-16:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	219.10	54.78	217.02	204.92	1473.89	0.00	432.02	279.24	0.507	0.47	0.99	16.585	C
2	1047.07	261.77	1043.84	1194.88	496.02	0.00	1599.47	1557.78	0.655	1.05	1.86	6.442	A
3	393.06	98.27	392.32	562.78	977.08	0.00	1116.45	856.99	0.352	0.35	0.54	4.966	A
4	1354.26	338.56	1344.82	1035.40	333.99	0.00	1657.36	1420.32	0.817	1.83	4.19	11.192	B

Main results: (16:45-17:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	219.10	54.78	218.97	205.84	1482.57	0.00	428.08	279.24	0.512	0.99	1.02	17.192	C
2	1047.07	261.77	1046.97	1201.90	499.64	0.00	1596.96	1557.78	0.656	1.86	1.88	6.543	A
3	393.06	98.27	393.05	565.76	980.85	0.00	1114.12	856.99	0.353	0.54	0.54	4.992	A
4	1354.26	338.56	1353.72	1039.20	334.69	0.00	1656.88	1420.32	0.817	4.19	4.32	11.818	B

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	178.90	44.72	181.02	169.09	1220.34	0.00	547.01	279.21	0.327	1.02	0.49	9.893	A
2	854.93	213.73	858.16	989.29	412.07	0.00	1657.81	1557.77	0.516	1.88	1.08	4.521	A
3	320.94	80.23	321.67	465.27	804.95	0.00	1222.45	857.00	0.263	0.54	0.36	3.999	A
4	1105.74	276.44	1115.43	852.62	274.00	0.00	1698.43	1420.31	0.651	4.32	1.90	6.275	A

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	149.82	37.45	150.56	141.13	1017.05	0.00	639.21	279.21	0.234	0.49	0.31	7.380	A
2	715.96	178.99	717.35	824.55	343.05	0.00	1705.77	1557.77	0.420	1.08	0.73	3.649	A
3	268.77	67.19	269.16	388.06	672.34	0.00	1304.12	857.00	0.206	0.36	0.26	3.481	A
4	926.01	231.50	928.95	712.28	229.22	0.00	1729.10	1420.31	0.536	1.90	1.17	4.517	A

Queueing Delay Results for each time segment
Queueing Delay results: (16:00-16:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	4.34	0.29	7.268	A	A
2	10.47	0.70	3.608	A	A
3	3.78	0.25	3.461	A	A
4	16.48	1.10	4.428	A	A

Queueing Delay results: (16:15-16:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	6.82	0.45	9.600	A	A
2	15.34	1.02	4.449	A	A
3	5.20	0.35	3.975	A	A
4	26.33	1.76	6.011	A	A

Queueing Delay results: (16:30-16:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	13.87	0.92	16.585	C	B
2	26.62	1.77	6.442	A	A
3	7.89	0.53	4.966	A	A
4	56.84	3.79	11.192	B	B

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	15.20	1.01	17.192	C	B
2	28.10	1.87	6.543	A	A
3	8.12	0.54	4.992	A	A
4	64.05	4.27	11.818	B	B

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	7.77	0.52	9.893	A	A
2	16.66	1.11	4.521	A	A
3	5.48	0.37	3.999	A	A
4	30.24	2.02	6.275	A	A

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	4.79	0.32	7.380	A	A
2	11.17	0.74	3.649	A	A
3	3.98	0.27	3.481	A	A
4	18.04	1.20	4.517	A	A

(Default Analysis Set) - Base + Dev, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Base + Dev, Sat	Base + Dev	Sat	Base Flows	ONE HOUR	11:00	12:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	A518 / Brookside Rd	Roundabout	1,2,3,4				6.25	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Brookside Road	
2	2	A518 S Bridge St	
3	3	Bridge Street	
4	4	A518 N Town Meadows Way	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

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	5.70	8.90	8.50	43.00	71.00	
2	3.30	7.80	25.00	41.00	43.00	25.00	
3	3.50	8.00	20.00	20.00	43.00	51.00	
4	4.00	6.40	33.00	50.00	43.00	25.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.454	1100.486
2		(calculated)	(calculated)	0.695	1944.137
3		(calculated)	(calculated)	0.616	1718.188
4		(calculated)	(calculated)	0.685	1886.043

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	199.00	100.000
2	ONE HOUR	✓	841.00	100.000
3	ONE HOUR	✓	421.00	100.000
4	ONE HOUR	✓	989.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
11:00-11:15	1	149.82	149.82		
11:00-11:15	2	633.15	633.15		
11:00-11:15	3	316.95	316.95		
11:00-11:15	4	744.57	744.57		
11:15-11:30	1	178.90	178.90		
11:15-11:30	2	756.04	756.04		
11:15-11:30	3	378.47	378.47		
11:15-11:30	4	889.09	889.09		
11:30-11:45	1	219.10	219.10		
11:30-11:45	2	925.96	925.96		
11:30-11:45	3	463.53	463.53		
11:30-11:45	4	1088.91	1088.91		
11:45-12:00	1	219.10	219.10		
11:45-12:00	2	925.96	925.96		
11:45-12:00	3	463.53	463.53		
11:45-12:00	4	1088.91	1088.91		
12:00-12:15	1	178.90	178.90		
12:00-12:15	2	756.04	756.04		
12:00-12:15	3	378.47	378.47		
12:00-12:15	4	889.09	889.09		
12:15-12:30	1	149.82	149.82		
12:15-12:30	2	633.15	633.15		
12:15-12:30	3	316.95	316.95		
12:15-12:30	4	744.57	744.57		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	81.000	50.000	68.000
	2	74.000	0.000	184.000	583.000
	3	35.000	202.000	0.000	184.000
	4	97.000	535.000	234.000	123.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.41	0.25	0.34
	2	0.09	0.00	0.22	0.69
	3	0.08	0.48	0.00	0.44
	4	0.10	0.54	0.24	0.12

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.000	1.000
	3	1.000	1.000	1.000	1.000
	4	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.40	10.74	0.65	B	182.61	273.91	37.93	8.31	0.42	37.94	8.31
2	0.59	5.50	1.40	A	771.72	1157.57	84.49	4.38	0.94	84.50	4.38
3	0.41	5.30	0.68	A	386.32	579.48	42.48	4.40	0.47	42.49	4.40
4	0.66	6.39	1.92	A	907.52	1361.29	111.74	4.93	1.24	111.75	4.93

Main Results for each time segment

Main results: (11:00-11:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	149.82	37.45	148.79	154.48	820.30	0.00	728.44	314.01	0.206	0.00	0.26	6.201	A
2	633.15	158.29	630.78	613.19	355.91	0.00	1696.83	1445.12	0.373	0.00	0.59	3.370	A
3	316.95	79.24	315.70	350.85	635.84	0.00	1326.60	843.96	0.239	0.00	0.31	3.556	A
4	744.57	186.14	741.56	718.32	233.23	0.00	1726.36	1473.68	0.431	0.00	0.75	3.645	A

Main results: (11:15-11:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	178.90	44.72	178.44	184.93	982.03	0.00	655.10	314.01	0.273	0.26	0.37	7.547	A
2	756.04	189.01	755.05	734.21	426.25	0.00	1647.95	1445.12	0.459	0.59	0.84	4.028	A
3	378.47	94.62	377.99	420.07	761.23	0.00	1249.38	843.96	0.303	0.31	0.43	4.130	A
4	889.09	222.27	887.73	860.00	279.23	0.00	1694.86	1473.68	0.525	0.75	1.09	4.453	A

Main results: (11:30-11:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	219.10	54.78	218.03	226.22	1201.15	0.00	555.71	314.01	0.394	0.37	0.64	10.627	B
2	925.96	231.49	923.76	898.00	521.19	0.00	1581.98	1445.13	0.585	0.84	1.39	5.450	A
3	463.53	115.88	462.56	513.77	931.18	0.00	1144.71	843.96	0.405	0.43	0.67	5.269	A
4	1088.91	272.23	1085.70	1052.06	341.68	0.00	1652.10	1473.68	0.659	1.09	1.90	6.319	A

Main results: (11:45-12:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	219.10	54.78	219.07	226.80	1204.44	0.00	554.23	314.01	0.395	0.64	0.65	10.739	B
2	925.96	231.49	925.91	900.57	522.94	0.00	1580.77	1445.13	0.586	1.39	1.40	5.497	A
3	463.53	115.88	463.51	515.24	933.61	0.00	1143.22	843.96	0.405	0.67	0.68	5.296	A
4	1088.91	272.23	1088.83	1054.72	342.40	0.00	1651.60	1473.68	0.659	1.90	1.92	6.394	A

Main results: (12:00-12:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	178.90	44.72	179.96	185.78	986.83	0.00	652.92	314.01	0.274	0.65	0.38	7.630	A
2	756.04	189.01	758.23	737.99	428.80	0.00	1646.18	1445.12	0.459	1.40	0.86	4.063	A
3	378.47	94.62	379.43	422.22	764.80	0.00	1247.18	843.96	0.303	0.68	0.44	4.152	A
4	889.09	222.27	892.29	863.92	280.32	0.00	1694.11	1473.68	0.525	1.92	1.12	4.508	A

Main results: (12:15-12:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	149.82	37.45	150.30	155.36	825.12	0.00	726.26	314.01	0.206	0.38	0.26	6.254	A
2	633.15	158.29	634.18	617.02	358.40	0.00	1695.10	1445.12	0.374	0.86	0.60	3.395	A
3	316.95	79.24	317.44	353.01	639.56	0.00	1324.31	843.96	0.239	0.44	0.32	3.576	A
4	744.57	186.14	745.98	722.50	234.50	0.00	1725.48	1473.68	0.432	1.12	0.76	3.679	A

Queueing Delay Results for each time segment
Queueing Delay results: (11:00-11:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	3.73	0.25	6.201	A	A
2	8.66	0.58	3.370	A	A
3	4.58	0.31	3.556	A	A
4	10.99	0.73	3.645	A	A

Queueing Delay results: (11:15-11:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	5.42	0.36	7.547	A	A
2	12.34	0.82	4.028	A	A
3	6.36	0.42	4.130	A	A
4	15.96	1.06	4.453	A	A

Queueing Delay results: (11:30-11:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	9.17	0.61	10.627	B	B
2	20.14	1.34	5.450	A	A
3	9.84	0.66	5.269	A	A
4	27.17	1.81	6.319	A	A

Queueing Delay results: (11:45-12:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	9.66	0.64	10.739	B	B
2	20.98	1.40	5.497	A	A
3	10.15	0.68	5.296	A	A
4	28.61	1.91	6.394	A	A

Queueing Delay results: (12:00-12:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	5.93	0.40	7.630	A	A
2	13.19	0.88	4.063	A	A
3	6.73	0.45	4.152	A	A
4	17.28	1.15	4.508	A	A

Queueing Delay results: (12:15-12:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	4.03	0.27	6.254	A	A
2	9.17	0.61	3.395	A	A
3	4.83	0.32	3.576	A	A
4	11.72	0.78	3.679	A	A

APPENDIX C

A518/ Dove Bank JUNCTIONS Modelling Outputs

Junctions 8
ARCADY 8 - Roundabout Module
Version: 8.0.6.541 [19821,26/11/2015] © Copyright TRL Limited, 2018
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Filename: North Rbt - A518 Dove Bank v3.arc8
Path: N:\Vectos Job Data\2017\VN70855 Lidl Uttoxeter\Arcady
Report generation date: 19/09/2018 14:24:31

- » (Default Analysis Set) - Base, PM
- » (Default Analysis Set) - Base, Sat
- » (Default Analysis Set) - Base + Dev, PM
- » (Default Analysis Set) - Base + Dev, Sat

Summary of junction performance

	PM				Sat			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
A1 - Base								
Arm 1	4.40	47.70	0.84	E	1.34	13.16	0.58	B
Arm 2	3.29	12.11	0.77	B	2.67	9.67	0.73	A
Arm 3	2.02	14.68	0.68	B	2.41	16.52	0.71	C
Arm 4	5.04	12.81	0.84	B	1.89	6.35	0.66	A
A1 - Base + Dev								
Arm 1	5.30	57.66	0.87	F	1.46	14.39	0.60	B
Arm 2	3.57	12.92	0.79	B	3.05	10.71	0.76	B
Arm 3	2.20	15.79	0.69	C	2.89	19.43	0.75	C
Arm 4	5.57	14.04	0.85	B	2.07	6.79	0.68	A

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

"D1 - Base, PM" model duration: 16:00 - 17:30
 "D2 - Base, Sat" model duration: 11:00 - 12:30
 "D3 - Base + Dev, PM" model duration: 16:00 - 17:30
 "D4 - Base + Dev, Sat" model duration: 11:00 - 12:30

Run using Junctions 8.0.6.541 at 19/09/2018 14:24:27

File summary

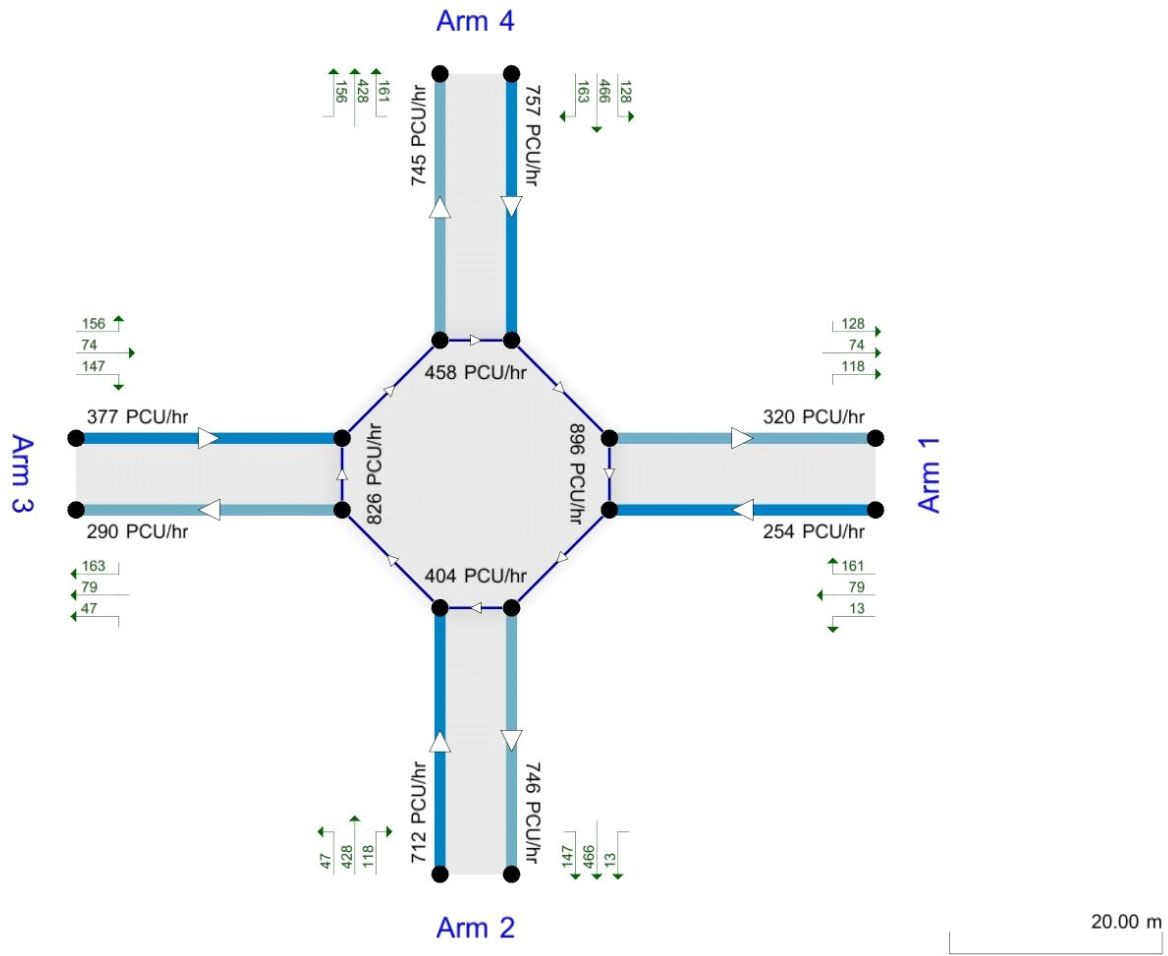
Title	(untitled)
Location	
Site Number	
Date	30/10/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Office
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

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	PCU	PCU	perHour	s	-Min	perMin



Showing modelled flow through junction (PCU/hr).
 Time Segment: (16:00-16:15)
 Showing Analysis Set "A1", Demand Set "D1 - Base, PM"

The junction diagram reflects the last run of ARCADY.

(Default Analysis Set) - Base, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Base, RM	Base	RM	Base Flows	ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	A518 / Dove Bank	Roundabout	1,2,3,4				16.62	C

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Retail Access	
2	2	A518 S Town Meadows Way	
3	3	Dove Bank	
4	4	A518 North	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

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	3.60	5.20	8.00	22.00	40.00	32.00	
2	3.50	7.50	25.00	26.00	40.00	49.00	
3	3.20	5.50	13.00	34.00	40.00	22.00	
4	7.50	8.00	2.00	16.00	40.00	57.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.578	1382.951
2		(calculated)	(calculated)	0.637	1760.333
3		(calculated)	(calculated)	0.613	1482.327
4		(calculated)	(calculated)	0.691	2107.060

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	324.00	100.000
2	ONE HOUR	✓	912.00	100.000
3	ONE HOUR	✓	462.00	100.000
4	ONE HOUR	✓	1329.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:00-16:15	1	243.92	243.92		
16:00-16:15	2	686.60	686.60		
16:00-16:15	3	347.82	347.82		
16:00-16:15	4	1000.54	1000.54		
16:15-16:30	1	291.27	291.27		
16:15-16:30	2	819.87	819.87		
16:15-16:30	3	415.33	415.33		
16:15-16:30	4	1194.74	1194.74		
16:30-16:45	1	356.73	356.73		
16:30-16:45	2	1004.13	1004.13		
16:30-16:45	3	508.67	508.67		
16:30-16:45	4	1463.26	1463.26		
16:45-17:00	1	356.73	356.73		
16:45-17:00	2	1004.13	1004.13		
16:45-17:00	3	508.67	508.67		
16:45-17:00	4	1463.26	1463.26		
17:00-17:15	1	291.27	291.27		
17:00-17:15	2	819.87	819.87		
17:00-17:15	3	415.33	415.33		
17:00-17:15	4	1194.74	1194.74		
17:15-17:30	1	243.92	243.92		
17:15-17:30	2	686.60	686.60		
17:15-17:30	3	347.82	347.82		
17:15-17:30	4	1000.54	1000.54		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	7.000	105.000	212.000
	2	133.000	134.000	41.000	604.000
	3	52.000	162.000	0.000	248.000
	4	119.000	868.000	342.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.02	0.32	0.65
	2	0.15	0.15	0.04	0.66
	3	0.11	0.35	0.00	0.54
	4	0.09	0.65	0.26	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
From		1	2	3	4
	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.000	1.000
	3	1.000	1.000	1.000	1.000
	4	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
From		1	2	3	4
	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.84	47.70	4.40	E	297.31	445.96	154.00	20.72	1.71	154.01	20.72
2	0.77	12.11	3.29	B	836.87	1255.30	163.45	7.81	1.82	163.47	7.81
3	0.68	14.68	2.02	B	423.94	635.91	100.02	9.44	1.11	100.03	9.44
4	0.84	12.81	5.04	B	1219.51	1829.27	233.32	7.65	2.59	233.35	7.65

Main Results for each time segment

Main results: (16:00-16:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	243.92	60.98	241.95	227.69	1128.31	0.00	730.96	282.20	0.334	0.00	0.49	7.332	A
2	686.60	171.65	683.02	877.25	493.00	0.00	1446.08	1313.84	0.475	0.00	0.90	4.697	A
3	347.82	86.95	345.66	365.40	810.62	0.00	985.47	600.06	0.353	0.00	0.54	5.607	A
4	1000.54	250.14	995.92	796.21	360.07	0.00	1858.20	1649.12	0.538	0.00	1.15	4.152	A

Main results: (16:15-16:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	291.27	72.82	289.59	272.56	1350.34	0.00	602.65	282.20	0.483	0.49	0.91	11.438	B
2	819.87	204.97	817.74	1049.93	590.01	0.00	1384.25	1313.83	0.592	0.90	1.43	6.330	A
3	415.33	103.83	414.02	437.29	970.46	0.00	887.50	600.06	0.468	0.54	0.87	7.581	A
4	1194.74	298.69	1191.73	953.31	431.18	0.00	1809.05	1649.12	0.660	1.15	1.91	5.802	A

Main results: (16:30-16:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	356.73	89.18	345.26	332.18	1645.01	0.00	432.38	282.20	0.825	0.91	3.78	37.395	E
2	1004.13	251.03	997.25	1278.92	711.35	0.00	1306.91	1313.83	0.768	1.43	3.15	11.378	B
3	508.67	127.17	504.40	530.27	1178.33	0.00	760.09	600.06	0.669	0.87	1.93	13.853	B
4	1463.26	365.81	1451.60	1157.13	525.60	0.00	1743.80	1649.12	0.839	1.91	4.82	11.871	B

Main results: (16:45-17:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	356.73	89.18	354.25	334.51	1657.16	0.00	425.36	282.20	0.839	3.78	4.40	47.704	E
2	1004.13	251.03	1003.57	1288.49	722.92	0.00	1299.53	1313.83	0.773	3.15	3.29	12.114	B
3	508.67	127.17	508.32	536.25	1190.25	0.00	752.79	600.06	0.676	1.93	2.02	14.682	B
4	1463.26	365.81	1462.41	1169.30	529.27	0.00	1741.26	1649.12	0.840	4.82	5.04	12.811	B

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	291.27	72.82	304.91	275.91	1367.54	0.00	592.72	282.20	0.491	4.40	0.99	13.069	B
2	819.87	204.97	826.98	1063.54	608.91	0.00	1372.20	1313.83	0.597	3.29	1.51	6.688	A
3	415.33	103.83	419.75	446.57	989.31	0.00	875.95	600.06	0.474	2.02	0.92	7.966	A
4	1194.74	298.69	1206.91	972.52	436.54	0.00	1805.35	1649.12	0.662	5.04	1.99	6.135	A

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	243.92	60.98	245.84	229.67	1137.61	0.00	725.58	282.20	0.336	0.99	0.51	7.535	A
2	686.60	171.65	688.97	884.61	498.84	0.00	1442.36	1313.84	0.476	1.51	0.92	4.792	A
3	347.82	86.95	349.26	368.96	818.86	0.00	980.42	600.06	0.355	0.92	0.56	5.716	A
4	1000.54	250.14	1003.79	804.64	363.49	0.00	1855.84	1649.12	0.539	1.99	1.18	4.242	A

Queueing Delay Results for each time segment
Queueing Delay results: (16:00-16:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	7.12	0.47	7.332	A	A
2	12.97	0.86	4.697	A	A
3	7.83	0.52	5.607	A	A
4	16.73	1.12	4.152	A	A

Queueing Delay results: (16:15-16:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	13.00	0.87	11.438	B	B
2	20.62	1.37	6.330	A	A
3	12.52	0.83	7.581	A	A
4	27.47	1.83	5.802	A	A

Queueing Delay results: (16:30-16:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	46.10	3.07	37.395	E	D
2	43.24	2.88	11.378	B	B
3	26.75	1.78	13.853	B	B
4	64.59	4.31	11.871	B	B

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	62.31	4.15	47.704	E	D
2	48.54	3.24	12.114	B	B
3	29.86	1.99	14.682	B	B
4	74.29	4.95	12.811	B	B

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	17.48	1.17	13.069	B	B
2	23.90	1.59	6.688	A	A
3	14.47	0.96	7.966	A	A
4	31.96	2.13	6.135	A	A

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	8.00	0.53	7.535	A	A
2	14.19	0.95	4.792	A	A
3	8.58	0.57	5.716	A	A
4	18.28	1.22	4.242	A	A

(Default Analysis Set) - Base, Sat

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Base, Sat	Base	Sat	Base Flows	ONE HOUR	11:00	12:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	A518 / Dove Bank	Roundabout	1,2,3,4				10.14	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Retail Access	
2	2	A518 S Town Meadows Way	
3	3	Dove Bank	
4	4	A518 North	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

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	3.60	5.20	8.00	22.00	40.00	32.00	
2	3.50	7.50	25.00	26.00	40.00	49.00	
3	3.20	5.50	13.00	34.00	40.00	22.00	
4	7.50	8.00	2.00	16.00	40.00	57.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.578	1382.951
2		(calculated)	(calculated)	0.637	1760.333
3		(calculated)	(calculated)	0.613	1482.327
4		(calculated)	(calculated)	0.691	2107.060

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	339.00	100.000
2	ONE HOUR	✓	918.00	100.000
3	ONE HOUR	✓	492.00	100.000
4	ONE HOUR	✓	985.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
11:00-11:15	1	255.22	255.22		
11:00-11:15	2	691.12	691.12		
11:00-11:15	3	370.40	370.40		
11:00-11:15	4	741.56	741.56		
11:15-11:30	1	304.75	304.75		
11:15-11:30	2	825.26	825.26		
11:15-11:30	3	442.30	442.30		
11:15-11:30	4	885.49	885.49		
11:30-11:45	1	373.25	373.25		
11:30-11:45	2	1010.74	1010.74		
11:30-11:45	3	541.70	541.70		
11:30-11:45	4	1084.51	1084.51		
11:45-12:00	1	373.25	373.25		
11:45-12:00	2	1010.74	1010.74		
11:45-12:00	3	541.70	541.70		
11:45-12:00	4	1084.51	1084.51		
12:00-12:15	1	304.75	304.75		
12:00-12:15	2	825.26	825.26		
12:00-12:15	3	442.30	442.30		
12:00-12:15	4	885.49	885.49		
12:15-12:30	1	255.22	255.22		
12:15-12:30	2	691.12	691.12		
12:15-12:30	3	370.40	370.40		
12:15-12:30	4	741.56	741.56		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	18.000	106.000	215.000
	2	157.000	159.000	60.000	542.000
	3	99.000	185.000	0.000	208.000
	4	171.000	596.000	218.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.05	0.31	0.63
	2	0.17	0.17	0.07	0.59
	3	0.20	0.38	0.00	0.42
	4	0.17	0.61	0.22	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.000	1.000
	3	1.000	1.000	1.000	1.000
	4	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.58	13.16	1.34	B	311.07	466.61	69.90	8.99	0.78	69.91	8.99
2	0.73	9.67	2.67	A	842.37	1263.56	141.47	6.72	1.57	141.49	6.72
3	0.71	16.52	2.41	C	451.47	677.20	115.31	10.22	1.28	115.32	10.22
4	0.66	6.35	1.89	A	903.85	1355.78	107.57	4.76	1.20	107.58	4.76

Main Results for each time segment

Main results: (11:00-11:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	255.22	63.80	253.60	319.93	868.02	0.00	881.37	378.86	0.290	0.00	0.40	5.719	A
2	691.12	172.78	687.74	717.98	403.64	0.00	1503.05	1311.28	0.460	0.00	0.84	4.398	A
3	370.40	92.60	368.04	287.75	803.63	0.00	989.76	583.86	0.374	0.00	0.59	5.768	A
4	741.56	185.39	738.77	722.48	449.18	0.00	1796.61	1562.16	0.413	0.00	0.70	3.395	A

Main results: (11:15-11:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	304.75	76.19	303.85	383.02	1039.04	0.00	782.54	378.86	0.389	0.40	0.63	7.507	A
2	825.26	206.32	823.45	859.49	483.40	0.00	1452.20	1311.28	0.568	0.84	1.30	5.710	A
3	442.30	110.57	440.80	344.51	962.34	0.00	892.48	583.86	0.496	0.59	0.97	7.943	A
4	885.49	221.37	884.16	865.24	537.90	0.00	1735.30	1562.16	0.510	0.70	1.03	4.222	A

Main results: (11:30-11:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	373.25	93.31	370.53	467.57	1269.28	0.00	649.50	378.86	0.575	0.63	1.31	12.781	B
2	1010.74	252.68	1005.50	1049.67	590.14	0.00	1384.17	1311.28	0.730	1.30	2.61	9.378	A
3	541.70	135.43	536.29	420.86	1174.77	0.00	762.27	583.86	0.711	0.97	2.32	15.570	C
4	1084.51	271.13	1081.16	1055.38	655.68	0.00	1653.89	1562.16	0.656	1.03	1.87	6.250	A

Main results: (11:45-12:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	373.25	93.31	373.12	470.00	1274.71	0.00	646.36	378.86	0.577	1.31	1.34	13.159	B
2	1010.74	252.68	1010.51	1054.52	593.30	0.00	1382.15	1311.28	0.731	2.61	2.67	9.671	A
3	541.70	135.43	541.32	422.71	1181.10	0.00	758.40	583.86	0.714	2.32	2.41	16.515	C
4	1084.51	271.13	1084.40	1062.11	660.31	0.00	1650.69	1562.16	0.657	1.87	1.89	6.355	A

Main results: (12:00-12:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	304.75	76.19	307.51	386.48	1046.81	0.00	778.05	378.86	0.392	1.34	0.65	7.695	A
2	825.26	206.32	830.56	866.42	487.90	0.00	1449.34	1311.28	0.569	2.67	1.34	5.868	A
3	442.30	110.57	447.91	347.15	971.30	0.00	886.99	583.86	0.499	2.41	1.01	8.301	A
4	885.49	221.37	888.84	874.76	544.45	0.00	1730.77	1562.16	0.512	1.89	1.06	4.292	A

Main results: (12:15-12:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	255.22	63.80	256.17	322.36	873.90	0.00	877.97	378.86	0.291	0.65	0.41	5.800	A
2	691.12	172.78	693.04	723.07	407.00	0.00	1500.90	1311.28	0.460	1.34	0.86	4.468	A
3	370.40	92.60	372.02	289.83	810.21	0.00	985.72	583.86	0.376	1.01	0.61	5.882	A
4	741.56	185.39	742.95	728.93	453.31	0.00	1793.76	1562.16	0.413	1.06	0.71	3.432	A

Queueing Delay Results for each time segment
Queueing Delay results: (11:00-11:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	5.86	0.39	5.719	A	A
2	12.25	0.82	4.398	A	A
3	8.56	0.57	5.768	A	A
4	10.21	0.68	3.395	A	A

Queueing Delay results: (11:15-11:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	9.13	0.61	7.507	A	A
2	18.81	1.25	5.710	A	A
3	13.93	0.93	7.943	A	A
4	15.10	1.01	4.222	A	A

Queueing Delay results: (11:30-11:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	18.37	1.22	12.781	B	B
2	36.47	2.43	9.378	A	A
3	31.62	2.11	15.570	C	B
4	26.77	1.78	6.250	A	A

Queueing Delay results: (11:45-12:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	19.93	1.33	13.159	B	B
2	39.66	2.64	9.671	A	A
3	35.68	2.38	16.515	C	B
4	28.26	1.88	6.355	A	A

Queueing Delay results: (12:00-12:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	10.22	0.68	7.695	A	A
2	21.01	1.40	5.868	A	A
3	16.10	1.07	8.301	A	A
4	16.36	1.09	4.292	A	A

Queueing Delay results: (12:15-12:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	6.38	0.43	5.800	A	A
2	13.28	0.89	4.468	A	A
3	9.42	0.63	5.882	A	A
4	10.87	0.72	3.432	A	A

(Default Analysis Set) - Base + Dev, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Base + Dev, FM	Base + Dev	FM	Development Flows	ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	A518 / Dove Bank	Roundabout	1,2,3,4				18.57	C

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Retail Access	
2	2	A518 S Town Meadows Way	
3	3	Dove Bank	
4	4	A518 North	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

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	3.60	5.20	8.00	22.00	40.00	32.00	
2	3.50	7.50	25.00	26.00	40.00	49.00	
3	3.20	5.50	13.00	34.00	40.00	22.00	
4	7.50	8.00	2.00	16.00	40.00	57.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.578	1382.951
2		(calculated)	(calculated)	0.637	1760.333
3		(calculated)	(calculated)	0.613	1482.327
4		(calculated)	(calculated)	0.691	2107.060

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	324.00	100.000
2	ONE HOUR	✓	930.00	100.000
3	ONE HOUR	✓	468.00	100.000
4	ONE HOUR	✓	1348.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:00-16:15	1	243.92	243.92		
16:00-16:15	2	700.15	700.15		
16:00-16:15	3	352.33	352.33		
16:00-16:15	4	1014.85	1014.85		
16:15-16:30	1	291.27	291.27		
16:15-16:30	2	836.05	836.05		
16:15-16:30	3	420.72	420.72		
16:15-16:30	4	1211.82	1211.82		
16:30-16:45	1	356.73	356.73		
16:30-16:45	2	1023.95	1023.95		
16:30-16:45	3	515.28	515.28		
16:30-16:45	4	1484.18	1484.18		
16:45-17:00	1	356.73	356.73		
16:45-17:00	2	1023.95	1023.95		
16:45-17:00	3	515.28	515.28		
16:45-17:00	4	1484.18	1484.18		
17:00-17:15	1	291.27	291.27		
17:00-17:15	2	836.05	836.05		
17:00-17:15	3	420.72	420.72		
17:00-17:15	4	1211.82	1211.82		
17:15-17:30	1	243.92	243.92		
17:15-17:30	2	700.15	700.15		
17:15-17:30	3	352.33	352.33		
17:15-17:30	4	1014.85	1014.85		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	7.000	105.000	212.000
	2	133.000	134.000	42.000	621.000
	3	52.000	168.000	0.000	248.000
	4	119.000	887.000	342.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.02	0.32	0.65
	2	0.14	0.14	0.05	0.67
	3	0.11	0.36	0.00	0.53
	4	0.09	0.66	0.25	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.000	1.000
	3	1.000	1.000	1.000	1.000
	4	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.87	57.66	5.30	F	297.31	445.96	173.71	23.37	1.93	173.72	23.37
2	0.79	12.92	3.57	B	853.38	1280.08	173.98	8.16	1.93	174.00	8.16
3	0.69	15.79	2.20	C	429.44	644.17	106.36	9.91	1.18	106.37	9.91
4	0.85	14.04	5.57	B	1236.95	1855.42	251.05	8.12	2.79	251.07	8.12

Main Results for each time segment

Main results: (16:00-16:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	243.92	60.98	241.90	227.67	1146.92	0.00	720.20	279.24	0.339	0.00	0.51	7.495	A
2	700.15	175.04	696.44	895.89	492.94	0.00	1446.12	1319.20	0.484	0.00	0.93	4.778	A
3	352.33	88.08	350.10	366.11	823.27	0.00	977.72	598.28	0.360	0.00	0.56	5.717	A
4	1014.85	253.71	1010.06	808.85	364.52	0.00	1855.12	1650.92	0.547	0.00	1.20	4.237	A

Main results: (16:15-16:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	291.27	72.82	289.49	272.53	1372.57	0.00	589.81	279.24	0.494	0.51	0.95	11.916	B
2	836.05	209.01	833.77	1072.19	589.87	0.00	1384.34	1319.20	0.604	0.93	1.50	6.511	A
3	420.72	105.18	419.33	438.10	985.54	0.00	878.26	598.28	0.479	0.56	0.90	7.820	A
4	1211.82	302.96	1208.60	968.38	436.50	0.00	1805.38	1650.92	0.671	1.20	2.00	6.000	A

Main results: (16:30-16:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	356.73	89.18	343.07	331.93	1670.84	0.00	417.46	279.24	0.855	0.95	4.37	42.554	E
2	1023.95	255.99	1016.37	1305.05	708.85	0.00	1308.50	1319.20	0.783	1.50	3.39	12.020	B
3	515.28	128.82	510.54	530.28	1194.94	0.00	749.91	598.27	0.687	0.90	2.09	14.754	B
4	1484.18	371.04	1470.98	1173.69	531.79	0.00	1739.52	1650.92	0.853	2.00	5.30	12.817	B

Main results: (16:45-17:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	356.73	89.18	353.00	334.47	1684.41	0.00	409.61	279.24	0.871	4.37	5.30	57.665	F
2	1023.95	255.99	1023.26	1315.77	721.65	0.00	1300.34	1319.20	0.787	3.39	3.57	12.922	B
3	515.28	128.82	514.84	536.88	1208.03	0.00	741.89	598.27	0.695	2.09	2.20	15.794	C
4	1484.18	371.04	1483.09	1187.08	535.80	0.00	1736.75	1650.92	0.855	5.30	5.57	14.043	B

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	291.27	72.82	308.30	276.19	1391.92	0.00	578.63	279.24	0.503	5.30	1.04	14.110	B
2	836.05	209.01	843.93	1087.60	612.61	0.00	1369.84	1319.20	0.610	3.57	1.60	6.946	A
3	420.72	105.18	425.66	449.00	1007.54	0.00	864.77	598.28	0.487	2.20	0.96	8.288	A
4	1211.82	302.96	1225.73	990.81	442.38	0.00	1801.31	1650.92	0.673	5.57	2.10	6.401	A

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	243.92	60.98	246.00	229.72	1156.73	0.00	714.53	279.24	0.341	1.04	0.52	7.717	A
2	700.15	175.04	702.72	903.69	499.04	0.00	1442.23	1319.20	0.485	1.60	0.95	4.884	A
3	352.33	88.08	353.89	369.82	831.95	0.00	972.40	598.28	0.362	0.96	0.57	5.834	A
4	1014.85	253.71	1018.34	817.73	368.11	0.00	1852.64	1650.92	0.548	2.10	1.22	4.334	A

Queueing Delay Results for each time segment
Queueing Delay results: (16:00-16:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	7.27	0.48	7.495	A	A
2	13.44	0.90	4.778	A	A
3	8.08	0.54	5.717	A	A
4	17.30	1.15	4.237	A	A

Queueing Delay results: (16:15-16:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	13.51	0.90	11.916	B	B
2	21.58	1.44	6.511	A	A
3	13.06	0.87	7.820	A	A
4	28.74	1.92	6.000	A	A

Queueing Delay results: (16:30-16:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	51.73	3.45	42.554	E	D
2	46.31	3.09	12.020	B	B
3	28.69	1.91	14.754	B	B
4	70.16	4.68	12.817	B	B

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	73.73	4.92	57.665	F	E
2	52.54	3.50	12.922	B	B
3	32.38	2.16	15.794	C	B
4	82.00	5.47	14.043	B	B

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	19.27	1.28	14.110	B	B
2	25.35	1.69	6.946	A	A
3	15.28	1.02	8.288	A	A
4	33.88	2.26	6.401	A	A

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	8.20	0.55	7.717	A	A
2	14.76	0.98	4.884	A	A
3	8.88	0.59	5.834	A	A
4	18.96	1.26	4.334	A	A

(Default Analysis Set) - Base + Dev, Sat

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Base + Dev, Sat	Base + Dev	Sat	Development Flows	ONE HOUR	11:00	12:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	A518 / Dove Bank	Roundabout	1,2,3,4				11.31	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Retail Access	
2	2	A518 S Town Meadows Way	
3	3	Dove Bank	
4	4	A518 North	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

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	3.60	5.20	8.00	22.00	40.00	32.00	
2	3.50	7.50	25.00	26.00	40.00	49.00	
3	3.20	5.50	13.00	34.00	40.00	22.00	
4	7.50	8.00	2.00	16.00	40.00	57.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.578	1382.951
2		(calculated)	(calculated)	0.637	1760.333
3		(calculated)	(calculated)	0.613	1482.327
4		(calculated)	(calculated)	0.691	2107.060

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	339.00	100.000
2	ONE HOUR	✓	951.00	100.000
3	ONE HOUR	✓	504.00	100.000
4	ONE HOUR	✓	1010.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
11:00-11:15	1	255.22	255.22		
11:00-11:15	2	715.96	715.96		
11:00-11:15	3	379.44	379.44		
11:00-11:15	4	760.38	760.38		
11:15-11:30	1	304.75	304.75		
11:15-11:30	2	854.93	854.93		
11:15-11:30	3	453.09	453.09		
11:15-11:30	4	907.97	907.97		
11:30-11:45	1	373.25	373.25		
11:30-11:45	2	1047.07	1047.07		
11:30-11:45	3	554.91	554.91		
11:30-11:45	4	1112.03	1112.03		
11:45-12:00	1	373.25	373.25		
11:45-12:00	2	1047.07	1047.07		
11:45-12:00	3	554.91	554.91		
11:45-12:00	4	1112.03	1112.03		
12:00-12:15	1	304.75	304.75		
12:00-12:15	2	854.93	854.93		
12:00-12:15	3	453.09	453.09		
12:00-12:15	4	907.97	907.97		
12:15-12:30	1	255.22	255.22		
12:15-12:30	2	715.96	715.96		
12:15-12:30	3	379.44	379.44		
12:15-12:30	4	760.38	760.38		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	18.000	106.000	215.000
	2	157.000	159.000	63.000	572.000
	3	99.000	197.000	0.000	208.000
	4	171.000	621.000	218.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.05	0.31	0.63
	2	0.17	0.17	0.07	0.60
	3	0.20	0.39	0.00	0.41
	4	0.17	0.61	0.22	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.000	1.000
	3	1.000	1.000	1.000	1.000
	4	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.60	14.39	1.46	B	311.07	466.61	74.29	9.55	0.83	74.30	9.55
2	0.76	10.71	3.05	B	872.65	1308.98	157.02	7.20	1.74	157.03	7.20
3	0.75	19.43	2.89	C	462.48	693.72	131.29	11.36	1.46	131.30	11.36
4	0.68	6.79	2.07	A	926.79	1390.19	115.61	4.99	1.28	115.62	4.99

Main Results for each time segment

Main results: (11:00-11:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	255.22	63.80	253.56	319.88	895.64	0.00	865.41	371.46	0.295	0.00	0.41	5.869	A
2	715.96	178.99	712.36	745.61	403.58	0.00	1503.08	1320.48	0.476	0.00	0.90	4.532	A
3	379.44	94.86	376.92	289.96	825.98	0.00	976.06	582.19	0.389	0.00	0.63	5.983	A
4	760.38	190.10	757.45	744.83	458.07	0.00	1790.47	1567.49	0.425	0.00	0.73	3.474	A

Main results: (11:15-11:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	304.75	76.19	303.79	382.95	1072.07	0.00	763.45	371.46	0.399	0.41	0.66	7.815	A
2	854.93	213.73	852.90	892.54	483.32	0.00	1452.25	1320.47	0.589	0.90	1.41	5.986	A
3	453.09	113.27	451.40	347.16	989.07	0.00	876.10	582.19	0.517	0.63	1.05	8.443	A
4	907.97	226.99	906.52	891.95	548.51	0.00	1727.96	1567.49	0.525	0.73	1.10	4.374	A

Main results: (11:30-11:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	373.25	93.31	370.19	467.14	1308.90	0.00	626.60	371.46	0.596	0.66	1.42	13.865	B
2	1047.07	261.77	1040.84	1089.35	589.74	0.00	1384.42	1320.47	0.756	1.41	2.97	10.293	B
3	554.91	138.73	548.15	423.91	1206.66	0.00	742.73	582.19	0.747	1.05	2.74	17.913	C
4	1112.03	278.01	1108.26	1087.04	667.78	0.00	1645.53	1567.49	0.676	1.10	2.04	6.654	A

Main results: (11:45-12:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	373.25	93.31	373.08	469.94	1315.32	0.00	622.89	371.46	0.599	1.42	1.46	14.388	B
2	1047.07	261.77	1046.75	1095.14	593.26	0.00	1382.18	1320.47	0.758	2.97	3.05	10.706	B
3	554.91	138.73	554.32	425.99	1214.02	0.00	738.22	582.19	0.752	2.74	2.89	19.434	C
4	1112.03	278.01	1111.90	1094.97	673.37	0.00	1641.67	1567.49	0.677	2.04	2.07	6.790	A

Main results: (12:00-12:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	304.75	76.19	307.87	386.95	1081.27	0.00	758.14	371.46	0.402	1.46	0.68	8.050	A
2	854.93	213.73	861.27	900.82	488.32	0.00	1449.07	1320.47	0.590	3.05	1.46	6.190	A
3	453.09	113.27	460.21	350.12	999.47	0.00	869.72	582.19	0.521	2.89	1.11	8.937	A
4	907.97	226.99	911.75	903.22	556.47	0.00	1722.46	1567.49	0.527	2.07	1.13	4.462	A

Main results: (12:15-12:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	255.22	63.80	256.25	322.45	902.01	0.00	861.73	371.46	0.296	0.68	0.42	5.955	A
2	715.96	178.99	718.13	751.16	407.09	0.00	1500.85	1320.48	0.477	1.46	0.92	4.611	A
3	379.44	94.86	381.28	292.15	833.07	0.00	971.71	582.19	0.390	1.11	0.65	6.117	A
4	760.38	190.10	761.90	751.80	462.55	0.00	1787.37	1567.49	0.425	1.13	0.75	3.514	A

Queueing Delay Results for each time segment
Queueing Delay results: (11:00-11:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	6.01	0.40	5.869	A	A
2	13.06	0.87	4.532	A	A
3	9.09	0.61	5.983	A	A
4	10.71	0.71	3.474	A	A

Queueing Delay results: (11:15-11:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	9.49	0.63	7.815	A	A
2	20.37	1.36	5.986	A	A
3	15.11	1.01	8.443	A	A
4	16.01	1.07	4.374	A	A

Queueing Delay results: (11:30-11:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	19.82	1.32	13.865	B	B
2	41.10	2.74	10.293	B	B
3	36.72	2.45	17.913	C	B
4	29.10	1.94	6.654	A	A

Queueing Delay results: (11:45-12:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	21.70	1.45	14.388	B	B
2	45.25	3.02	10.706	B	B
3	42.50	2.83	19.434	C	B
4	30.90	2.06	6.790	A	A

Queueing Delay results: (12:00-12:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	10.72	0.71	8.050	A	A
2	23.01	1.53	6.190	A	A
3	17.83	1.19	8.937	A	A
4	17.46	1.16	4.462	A	A

Queueing Delay results: (12:15-12:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	6.56	0.44	5.955	A	A
2	14.22	0.95	4.611	A	A
3	10.05	0.67	6.117	A	A
4	11.43	0.76	3.514	A	A