Appendix 8: Brookbanks NW Harpenden Local Plan Transportation Study June 2016)

Land at Luton Road
North West Harpenden

Local Plan Transportation Study

Brookbanks

Document Control Sheet

Document Title: Local Plan Transportation Study

Document Ref: 10338TS01

Project Name: Land at Luton Road, North West Harpenden

Project Number: 10338

Client: CEG and Legal & General Property (L&G)

Document Status

Rev	Issue Status	Prepared / Date	Checked / Date	Approved / Date
0	Draft	M Moss 01/06/16	P Boileau 01/06/16	P Boileau 01/06/16
1	Final	M Moss 06/06/16	P Boileau 06/06/16	P Boileau 06/06/16
2	Final	M Moss 06/06/16	P Boileau 06/06/16	P Boileau 06/06/16

Issue Record

Name / Date & Revision	01/06/16	06/06/16	06/06/16			
J Allen (CEG)	0	1	2			
J Lidgate (L&G)	0	1	2			

Contents

	Executive Summary	
1	Introduction	1
2	Allocation Description	1
3	Highway Capacity	5
4	Accessibility	11
5	Walking and Cycling	12
6	Public Transport	14
7	Accident Review	16

Appendix

Appendix A – TRICS Outputs

Appendix B – Modelling Output Data

Appendix C – Assessment Outputs

Appendix D – Highway Improvements

Appendix E – Access Drawings

Executive Summary

Brookbanks Consulting Engineers (BCL) has been instructed by CEG who are working in collaboration with Legal & General Property (L&G) to prepare a transport study to assist St. Albans District Council (SACDC) in supporting the allocation of land North West of Harpenden for residential development. The land to the south of Cooters End Lane is controlled by CEG and the land to the north of the site is controlled by L&G. The site is referred to as Broad Location 5 (BL5) and is identified by an allocation under Policy SLP13c of the Publication Draft Strategic Local Plan 2011-2031 (SLP).

Two vehicular accesses are proposed onto the existing highway network, the primary being a traffic signal-controlled junction on Luton Road and the secondary being a priority junction at Cooters End Lane to the north of the site.

Improvements to public transport provision are also included within this report as well as new and enhanced footways with improvements to cycle routes in the area, which will reduce the need to travel by private car. Pedestrian and cycle connections to the neighbouring Harpenden and the public transport network are proposed to be enhanced for which improved bus services will connect the proposed allocation to the town centre.

The potential impact of the proposals for North West Harpenden has been fully appraised. This assessment indicates that the delivery of these proposals will not significantly increase the flows through the town or impede access to the local highway network for existing residents. This is in relation to the policy basis for traffic testing which is outlined in further detail within the report.

Where highway impacts dictate, strategies for delivery mitigations are proposed.

In summary, the proposals demonstrate that a well-considered approach to developing transport and highways proposals for the proposed allocation at North West Harpenden is able to ensure the proposals meet national, regional and local policy and guidance while delivering the identified aspirations of the growth area.

1 Introduction

1.1 (BCL has been instructed by CEG to prepare a transport study to assist SACDC in supporting the allocation of land North West of Harpenden for residential development. The land is controlled by CEG who are working in collaboration with L&G. The site, referred to as Broad Location 5 (BL5) and identified by an allocation under Policy SLP13c of the SLP, is identified with capacity for approximately 500 residential units (to provide a mix of unit sizes and tenures). The SLP was most recently consulted in January 2016, and it is anticipated that the SLP will be submitted to the Secretary of State in July 2016 for Examination in autumn 2016.

1.2 This report has been prepared following discussions with officer at SACDC and Hertfordshire County Council (HCC) and provides additional evidence on transport matters related to residential development at BL5. It provides additional technical assessment to demonstrate the deliverability of SLP13c, and the associated highway works in particular, with a focus on those matters identified in the policy and the Council's Site Assessment Matrix. It also responds to comments on highway matters raised during the consultation process. This study has regard to relevant paragraphs of the Planning Practice Guidance (PPG) but does not consider strategic or district-wide highway matters as BCL understand these matters are addressed in other local plan evidence base documents.

1.3 This study outlines the existing highway situation including capacity/accident statistics and context in detail and explains the proposed allocation before considering wider accessibility matters including sustainable location/access to services, and identifying areas requiring mitigation. The study then sets out opportunities for accessibility improvements and considers in detail the highway mitigation measures which would be secured though Policy SLP13c as currently drafted. The study concludes with some overall observations on the transport and accessibility matters arising from residential development in BL5. The study is supported by information from a range of nationally recognised sources and modelling outputs from work undertaken by HCC in so far as these are available at this time, and this information is provided in the technical appendices found at the end of this document.

1.4 CEG who are controlling the land to the south of Cooters End Lane and L&G who are controlling the land to the north of Cooters End Lane, consider the development of this site to represent an appropriate and available location for a proposed allocation.

1.5 SACDC has published the emerging SLP for consultation to seek comments from key stakeholders. Following which the SLP will be reviewed by a Government appointed inspector through a formal Examination in Public to determine if the SLP is 'sound'.

1.6 The objective of the study is to provide an evidence base to suggest that the proposed allocation is acceptable from a transportation and highways viewpoint. In addition, the transport effects will be assessed to demonstrate the scale of impacts of the proposed allocation in accordance with the National Planning Policy Framework (NPPF) and PPG.

2 Allocation Description

Location

2.1 The proposed allocation lies to the north west of the town of Harpenden. The town of Harpenden, in Hertfordshire, is located centrally between Luton, Hemel Hempstead, St Albans, Hatfield and Stevenage. The location of Harpenden in relation to the wider hinterland is shown overleaf.

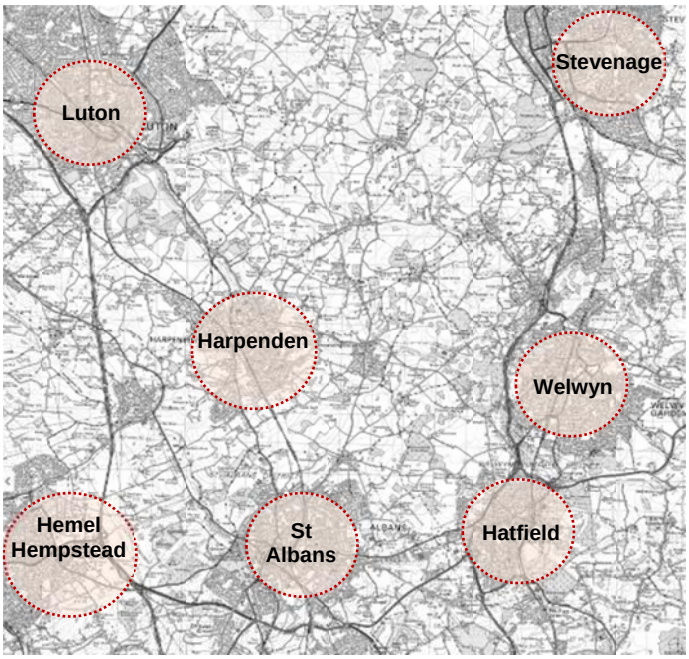


Figure 2a: Strategic location

2.2 The site is bound by Luton Road to the west with Ambrose Lane to the east, open farmland to the north of the site and Bloomfield Road located to the south. Cooters End Lane in turn bisects the proposed allocation to the north and south which is under the control of L&G and CEG respectively.

2.3 The land is currently undeveloped and it is not thought to have been historically constructed on. The site location and boundary is shown indicatively on Figure 2a, below.

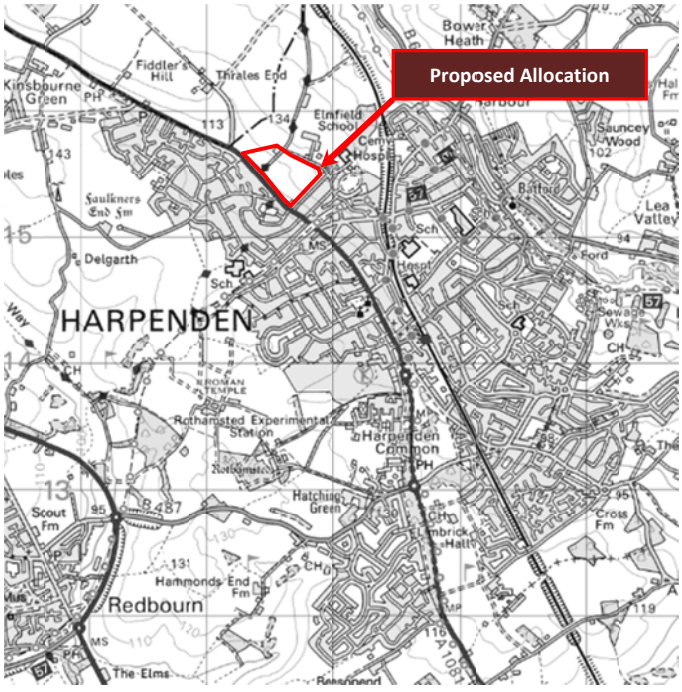


Figure 2b: Site Location

Proposed Allocation Description

2.4 The proposed allocation is to comprise circa 500 dwellings. The proposed allocation will deliver a mix of housing types and tenure to respond to the emerging demand of Harpenden.

2.5 The site will also likely provide a new two form entry primary school on a site to the north of Ambrose Lane to respond to the educational demand from both the proposed allocation and existing North West Harpenden hinterland.

Local Planning Policy Context

2.6 The following sections represent a comprehensive review of the proposed allocation and how it contributes towards fulfilling SACDC's policies SLP 25 and SLP 13c proposals which are part of the wider SADC Draft Strategic Local Plan Consultation (2014). It also refers to the relevance of the draft Harpenden Urban Transport Plan (2011).

Policy SLP25 – Transport Strategy

2.7 As required, the proposed allocation is in an accessible location which will reduce the need to travel over distance, encourage walking and cycling as well as using public transport services which run past this site and are therefore available to residents. As part of the proposed highway access and off-site mitigation measures such as junction improvements, the existing transport infrastructure and hierarchy will be maintained and improved. It has also been identified that road improvements are required, to secure environmental and transportation benefits, particularly at key junctions on the main roads in Harpenden Town Centre.

2.8 With respect to public transport, any proposed improvement or additional routes to bus services offered in conjunction with the proposed allocation will also improve accessibility improvements to and at Harpenden railway station

2.9 A fully comprehensive Travel Plan will be provided as is required for all residential and non-residential developments. Such plans will set out measures to encourage people to use alternative modes of travel to the single occupancy car. Detailed guidance included in the SLP will also be followed throughout this.

Policy SLP 13c – North West Harpenden

2.10 CEG and L&G consider that the proposed allocation provides an urban extension primarily for housing in a sustainable location close to existing communities and facilities in Harpenden, as is required in this policy.

2.11 The existing strategic road network and residential road network has been fully considered in producing this report and it has been demonstrated that both an appropriate highway access strategy as well as suitable off-site mitigation can be achieved. It has also been demonstrated that a two-form entry primary school can be delivered as part of the proposals with improved local public transport. This will be discussed at the detailed planning stage.

Harpenden Urban Transport Plan 2011

2.12 CEG and L&G consider that the proposed allocation will contribute towards fulfilling the following objectives:

- This report outlines improved cycle routes towards the station from the proposed allocation;
- In with the above, this report includes improvements to the cycle network and promotion of cycling;
- The proposed allocation can potentially improve sustainable transport, for which the Travel Plan will outline smarter choices, encouraging greater uptake of Safe Routes to Schools and active promotion of sustainable travel modes;
- The proposed allocation will include pedestrian crossings in the access strategy.

Access proposals

2.13 An allocation delivering this scale preferably requires two points of access. The southern access will be designed with capacity to serve the majority of the southern part of the site under the control of CEG. The northern access will be

designed to serve the northern part of the site under the control of L&G and provide a secondary access to the southern part of the site. The characteristics of the site are such that suitable access solutions are available.

2.14 The A1081 bounds the site to the west, which is a single carriageway road. The A1081 provides access to individual properties as well as forming a junction with Roundwood Lane. To minimise the number of junctions along the A1081, it is considered that the main point of access into the site should consider upgrading the existing A1081 junction with Roundwood Lane, which is presently signal controlled. It is considered that a forth arm could be provided, maintaining the current level of control. Alternatively, the junction could be converted into a roundabout.

2.15 It is further considered appropriate to utilise the junction with Cooters End Lane located to the north of the allocation to provide the secondary point of access. This access will be used to serve the developable area both north and south of Cooters End Lane.

2.16 The potential access solutions are presented below and contained in the Appendix E.

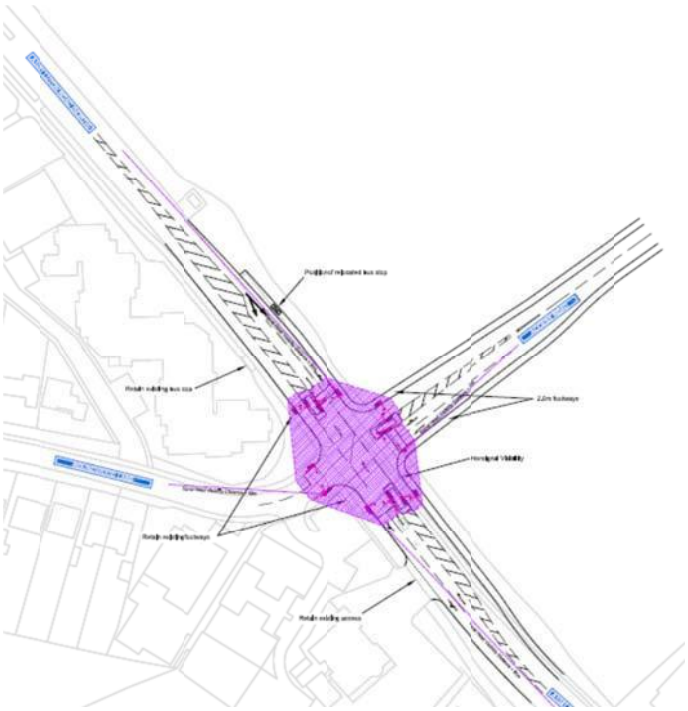


Figure 2c: Potential signalised access junction at A1081 / Roundwood Lane

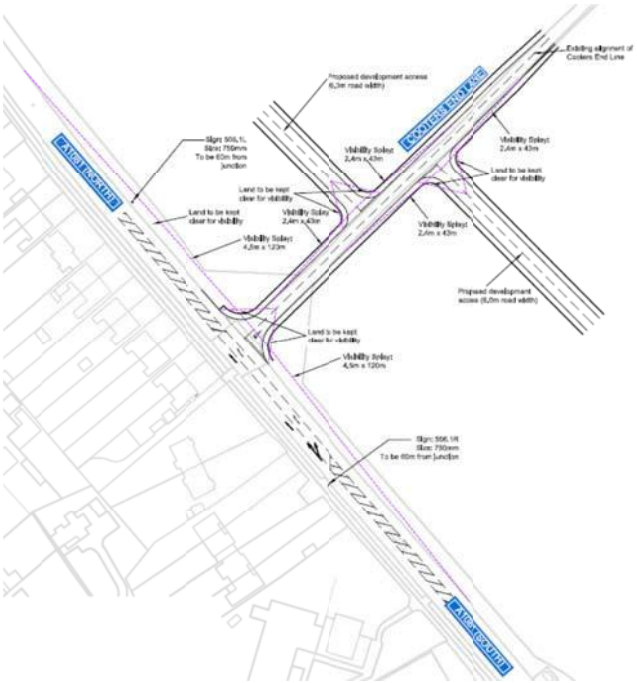


Figure 2d: Potential access junction at Cooters End Lane

Internal Site Hierarchy

2.17 Within the site, the masterplan proposes a street network having a clear hierarchy as described below:

Primary route: The design speed for the internal street is based on a speed limit of 30mph, although the aspiration of the proposed allocation is to achieve lower speeds with design of the streetscape. A main link through the site will be delivered.

Secondary Routes: Secondary routes are designed to penetrate the individual allocated blocks and cater for vehicles at the reduced speeds, which will be reflected in the design and appearance of these roads.

Tertiary Routes: These will be designed to penetrate individual housing clusters and will be designed to encourage lower vehicle speeds and could incorporate shared spaces between motor vehicles, pedestrians and cyclists.

2.18 Additional details for the SLP and council master planning process will be provided at a later stage.

3 Highway Capacity

Introduction

3.1 The operation of the existing road network could potentially be affected by the proposed allocation. A review of highway capacity has therefore been completed, including link and junction capacity assessments. The methodology used has been discussed with the Highway Authority, in this case HCC.

3.2 The methodology employs traffic counts on the existing highways together with an estimation of proposed allocation traffic flows generated using trip rates from TRICS being distributed by 2011 Census travel to work statistics. In addition to this, the locations of potential impacts of the proposed allocation have been identified through the use of the formal COMET traffic model operated by HCC. Highway network capacity has been appraised using nationally accepted capacity modelling tools.

3.3 However, the formal COMET traffic model has not currently been provided to BCL by HCC. Therefore a traditional modelling methodology has been hereby adopted to deduce the impact of the proposed allocation on the local highway network and the subsequent highway mitigation measures that will be required.

3.4 The final highway mitigation measures may be subject to change should the formal COMET traffic model be provided to BCL.

Background Data

3.5 **Traffic Surveys:** To form the basis of the assessment, classified turning counts together with queue length surveys have taken place at agreed locations, these being the junctions considered most likely to be affected by the proposed allocation. The junctions are as follows:

- Location 1 – A5183 / B487 Redbourn Lane roundabout
- Location 2 – A1081 St. Albans Road / B487 roundabout
- Location 3 – A1081 High Street / B652 mini roundabout
- Location 4 – A1081 Luton Road / The Common mini roundabout
- Location 5 – A1081 Luton Road / Roundwood Lane traffic signals

3.6 It is proposed that the assessment of the proposed allocation impacts will follow a manual method which will include the following steps:

- Calculation of base traffic levels based on recently commissioned surveys
- Base traffic to be growthed to 2016 (application submission date) and 2031 (future year) using Tempro/NTM.
- There are no committed developments that should be taken into account
- Proposed allocation generated trips based on TRICS.
- Proposed allocation trips assigned to the network based on Census OD data.

3.7 **Assessment Year:** The proposed allocation has been assessed in 2031. This is to reflect the penultimate year cited within the long-term strategies outlined in the Publication Draft Strategic Local Plan 2011-2031 (SLP).

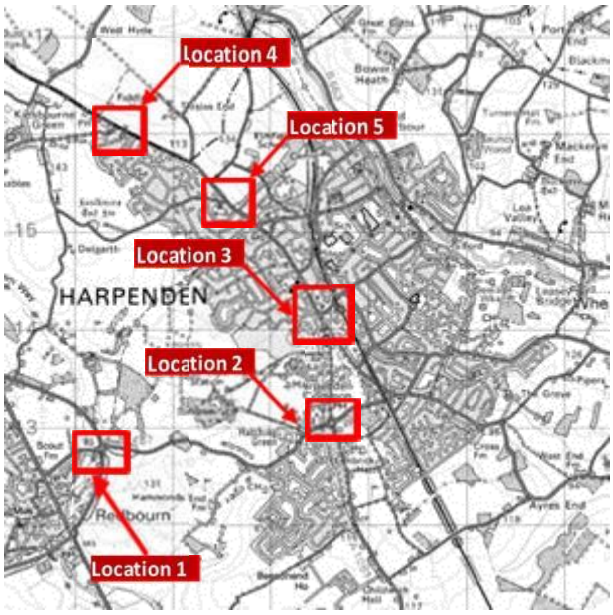


Figure 3a: Traffic count locations

3.8 **Traffic Generation:** Residential trip rates for the proposed allocation have been informed by the nationally accepted trip rate database TRICS, as attached in Appendix A. The TRICS output is attached in Appendix A. TRICS makes selections

from similarly sized development sites across the United Kingdom which are considered to exhibit similar traffic behaviours on completion and subsequent occupation. It is deemed from this that the selected sites are representative of the proposed allocation.

3.9 A proposed allocation of this size will deliver affordable housing. The final mix of affordable housing will be agreed during formal planning application discussions. The context of the policy within the core strategy states that developers will seek to provide 40% of affordable housing within allocated sites for the wider St. Albans and Harpenden area.

3.10 However, the trip rates for affordable housing are lower than for open market housing. Therefore, for the purposes of completing a robust assessment and to represent a worst case scenario, it has been assumed that 20% of the dwellings will be assumed to be of an affordable tenure, resulting in the following trip rates. The figures below identify the total number of vehicle trips generated by the proposed allocation, based on a total of 420 primary school places provided.

Trips	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
Housing – 500 units	74	182	256	158	104	262
Primary School – 420 places	122	85	207	87	101	188

Figure 3b: Total Vehicle trips

3.11 **Internalisation:** The proposed allocation is likely to deliver a complimentary mix of land uses that will reduce the number of trips exiting the proposed allocation. To determine the likely demand for school places created by the proposed allocation, Census statistics have been reviewed for the Harpenden North ward. This indicates that 150 primary school age children will be generated by the proposed allocation. The figure below quantifies the external trips.

Trips	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
Housing – 500 units	74	182	256	158	104	262
School external trips – 270 places	78	55	133	7	11	18

Figure 3c: External Vehicle trips

3.12 **Trip Distribution:** To distribute and assign the proposed allocation trips identified above, 2011 Census O-D travel to work statistics has been employed.

3.13 With respect to the primary school's location on the local network, it has been assumed that all traffic accessing the primary school from the A1081 Luton Road will do so via the proposed site access junction with the A1081 Luton Road and Roundwood Lane, as opposed to Ambrose Lane which is a very constrained road to the north of the site. This is due to the master plan options given so far, together with modelling for a worst case scenario within the design of the junction.

3.14 To discourage motorists from using Ambrose Lane as a "rat-run", it is envisaged that the access road through the site will also serve as the designated access to the primary school, with priority over the existing Ambrose lane alignment. However, this will be discussed at the detailed planning stage.

3.15 **COMET Modelling:** The HCC strategic network model, COMET, has been employed to model the impacts of the proposed allocation. Using the traffic model, HCC has undertaken a review of the model outputs to identify potential areas of stress on the highway network. This indicates that the following locations, together with those identified in Clause 3.5, could experience detrimental operation in the future:

- Thrales End Lane / Luton Road
- Luton Road / Park Hill junctions

3.16 The junctions included in Clause 3.5 have been assessed in this report, while the aforementioned junctions in the COMET model will be considered on receiving further information concerning the COMET model from HCC.

Link Capacity

3.17 The predicted traffic flows in the Future Year Scenario has been assessed along several key highway links. The increases in two way flow due to the proposed allocation have been screened using the following criteria.

Rating	Score
Negligible increase of up to 5%	
Minor increase between 5% and 10%	
Moderate Increase greater than 10%	

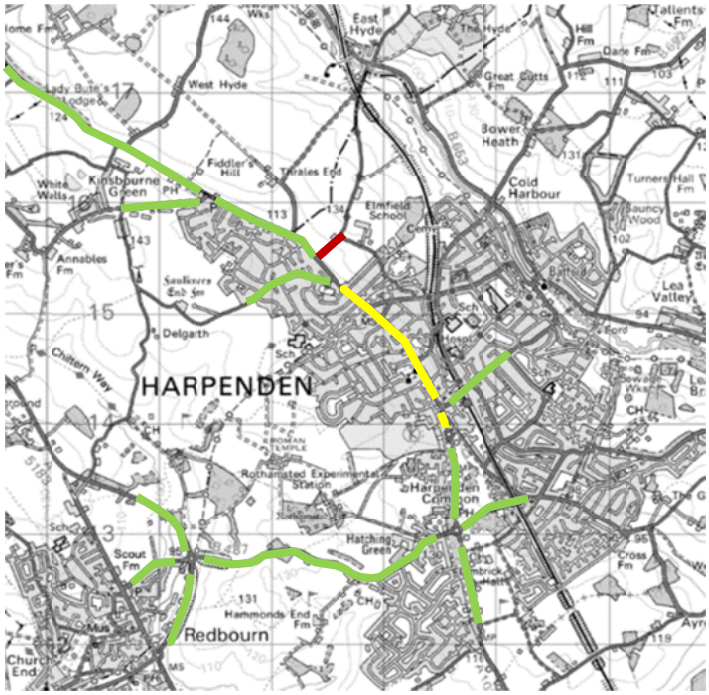


Figure 3d: Link assessment

3.18 This exercise demonstrates that the proposed allocation will increase traffic in excess of 5% on Cooters End Lane and along Luton Road south of the proposed allocation. This is not unexpected, as these links will be on the key traffic routes for traffic accessing the proposed allocation, especially Luton Road. The link show red, being Cooters End Lane is greater than 10% due to the existing low levels of traffic.

3.19 To determine the likely operation of these links, the link capacity has been assessed against the theoretical capacity as identified in the Advice Notes and TA 46/97: Traffic Flow Ranges for the Assessment of New Rural Roads in the case of Cooters End Lane; and TA 79/99: Traffic Capacity of Urban Roads for all other roads. The result of this assessment is shown overleaf:

Link		Link Type	Two Way Theoretical Capacity	Peak vehicle flow	Percentage Capacity	Peak vehicle flow (with proposed allocation traffic)	Percentage Capacity
1	A1081 north of The Common	UAP1	3350	1712	51.1%	1783	53.2%
2	The Common	UAP2	1700	560	32.9%	568	33.4%
3	A1081 south of The Common	UAP1	4250	2099	49.4%	2178	51.2%
4	Cooters End lane	SC (2 lane)	335	206	61.5%	263	78.5%
5	A1081 south of Cooters End lane	UAP1	4250	2257	53.1%	2356	55.4%
6	A1081 north of Roundwood Lane	UAP1	3350	1722	51.4%	1835	54.8%
7	Roundwood Lane	UAP3	1500	388	25.9%	400	26.7%
8	A1081 south of Roundwood Lane	UAP2	2583	1907	73.8%	2063	79.9%
9	A1081 north of Station Road	UAP2	2583	1909	73.9%	2115	81.9%
10	Station Road	UAP3	2167	1115	51.5%	1148	53.0%
11	A1081 south of Station Road	UAP2	2583	2117	81.9%	2291	88.7%
12	A1081 north of Walkers Road	UAP1	4250	2155	50.7%	2211	52.0%
13	Walkers Road	UAP2	2583	1124	43.5%	1131	43.8%
14	A1081 south of Walkers Road	UAP1	3350	1622	48.4%	1659	49.5%
15	B487 Redbourn Lane	UAP1	3350	2245	67.0%	2259	67.4%
16	A5183 north of B487 Redbourn Lane	UAP1	3350	2815	84.0%	2816	84.1%
17	A1081 south of B487 Redbourn Lane	UAP1	4667	2719	58.3%	2731	58.5%
18	Harpenden Lane west of A5183	UAP2	2450	501	20.4%	502	20.5%

Figure 3e: Link Capacity check

3.20 The above indicates that the predicted traffic flow for the links in the Future Year Scenario with and without the proposed allocation does not exceed highway capacity.

Junction Capacity

3.21 Link flow can also be constrained by junction capacity and the key junctions identified above have also been assessed.

3.22 Industry accepted capacity assessment methods have been used to appraise the highway network capacity. The junctions have been assessed in the Base Year Scenario, together with the Future Year Scenario. The assessment outputs are attached in Appendix C.

3.23 Worst case results in the peak periods are summarised below, showing the junctions that operate above the normally accepted thresholds of capacity. Additional information is included in the Appendix regarding the individual junction assessments.

Junction	Future year without proposed allocation	Future year with proposed allocation
A5183 with Redbourn Lane	RFC = 1.270	RFC = 1.273
A1081 St. Albans Road / B487	RFC = 1.299	RFC = 1.315
A1081 with Station Road	RFC = 1.094	RFC = 1.289
A1081 with The Common	RFC = 1.001	RFC = 1.015
A1081 with Roundwood Lane	✓	✓
A1081 with Cooters End Lane	✓	✓

Figure 3f: Junction Capacity check

3.24 This indicates that the thresholds of capacity will be exceeded at the following junctions:

- A5183 / B487 Redbourn Lane roundabout
- A1081 St. Albans Road / B487 roundabout
- A1081 High Street / B652 mini roundabout

- A1081 Luton Road / The Common mini roundabout

3.25 The junctions identified above have been reviewed to determine the extent of mitigation required to deliver nil-detriment improvement solutions. These are contained in Appendix D with the final results presented below.

Junction	Future year without mitigation	Future year with mitigation
A5183 with Redbourn Lane	✗	✓
A1081 St. Albans Road / B487	✗	✓
A1081 with Station Road	✗	✓
A1081 with The Common	✗	✓

Figure 3f: Junction operation

3.26 This demonstrates that through the identified highway interventions, the impact of the proposed allocation can be mitigated.

COMET Highway Stress Points

3.27 While traffic flow data has yet to be made available from the COMET model by the Highway Authority, the junctions have also been reviewed at a high level.

3.28 **Thrales End Lane / Luton Road:** This junction is located to the north of the site and forms a T junction that benefits from a right turn lane. Thrales End Lane provides access to an employment area and Luton Hoo Estate, which together would only generate modest volumes of traffic. The junction currently provides a right turn lane that assists with maintain the northbound flow along Luton Road. Therefore, any impact from the proposed allocation will be associated with the southbound flow, which could affect the ability to turn right into Thrales End Lane or traffic exiting Thrales End Lane. A review of the traffic distribution, indicates that there could be an increase of circa 15 (equivalent to an additional vehicle every four minutes) and 45 (equivalent to an additional vehicle every one minute) southbound movements in the morning and evening peak respectively. This level of increase is unlikely to have a significant impact at this junction. However, should an improvement be justified following a detailed assessment, this junction could be improved by widening the exit from Thrales End Lane. This will benefit the operation of the junction providing space for two vehicles exiting Thrales End Lane to wait side by side.

3.29 **Luton Road / Park Hill junction:** This junction is located to the south of the site and is currently signal controlled T junction. To the immediate south of this junction, the available width of Luton Road is constrained at the underpass to 'The Nickey Line'. However this junction could be improved through the introduction of Microprocessor Optimised Vehicle Actuation (MOVA) traffic control. MOVA is now an established strategy for the control of traffic light signals. For the major part of the day before congestion occurs, MOVA operates to minimise delay to motorists. However, should any approach become overloaded, MOVA then alters the signal timings to reflect the traffic conditions to maximize capacity. It is typically considered that the introduction of MOVA can reduce delays by over 10%.

3.30 The improvement in junction performance through the inclusion of MOVA is reported in the Traffic Advisory Leaflet 3/97. This note evaluated 20 sites where MOVA was introduced and identifies that MOVA reduces delays by an average of 13%. These benefits were further supported by TAL 2/93, that quotes:

"The original advantages claimed for MOVA remain valid; those of decreased delay and increased capacity."

3.31 Therefore, based on the use of MOVA, this junction is likely to operate more efficiently which will reduce the predicted levels of delay and congestion.

Summary

3.32 This section demonstrates that although traffic levels will inevitably increase on the local roads as a result of the proposed allocation, suitable highway mitigation measures can be implemented to achieve Nil Detriment at all affected junctions.

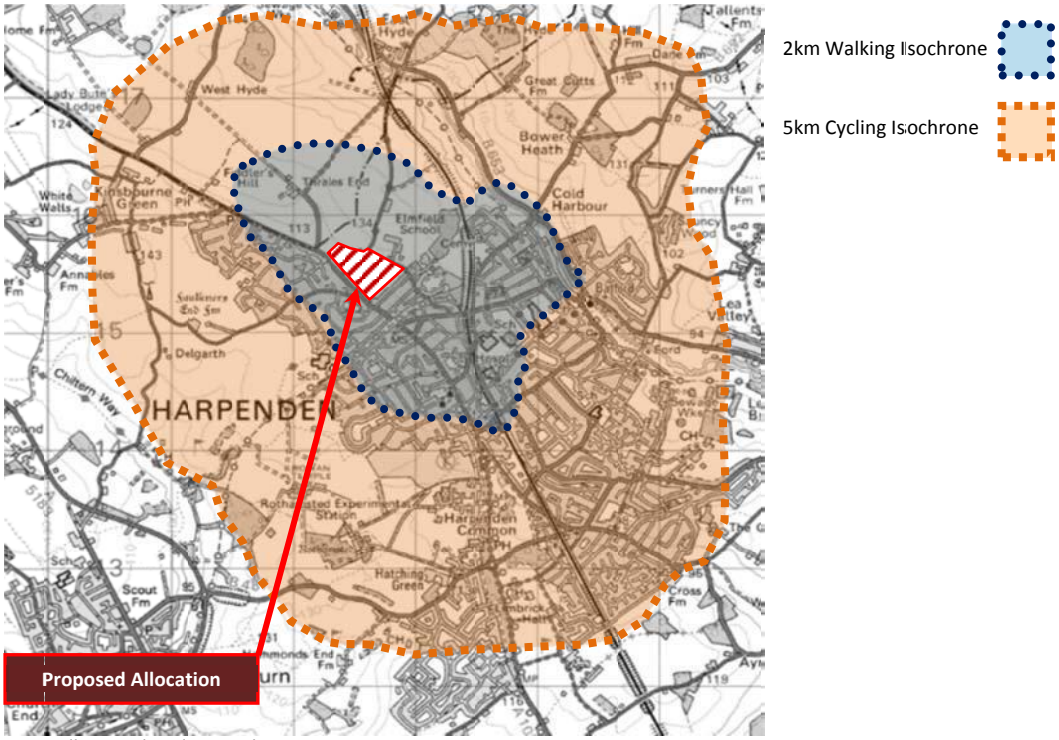
4 Accessibility

4.1 The accessibility of the proposed allocation is achieved through successfully forming transport links from the proposed allocation to the external transport routes, so a permeable layout is delivered. This allows future site occupiers to access local facilities and amenities by different modes of travel. A qualitative review of the accessibility implications of the proposed allocation has been conducted. Harpenden Town Centre is located less than 1km away from the proposed allocation and is therefore within very close proximity.

4.2 In accordance with guidance given in LTN 1/04 – Policy, Planning and Design for Walking and Cycling, journeys of less than 2km should be targeted for the promotion of walking as a suitable and sustainable mode of travel. The equivalent distance quoted for cycling is 5km. These are the accepted standard measures used in a Transport Assessment.

4.3 Harpenden Town Centre offers a large range of restaurants, public houses and both independent and national retailers in a High Street setting as well as local amenities including a sports centre, swimming pool and leisure facilities.

4.4 The locations of the key destinations are indicated below.



4a: Walking and Cycling Isochrones

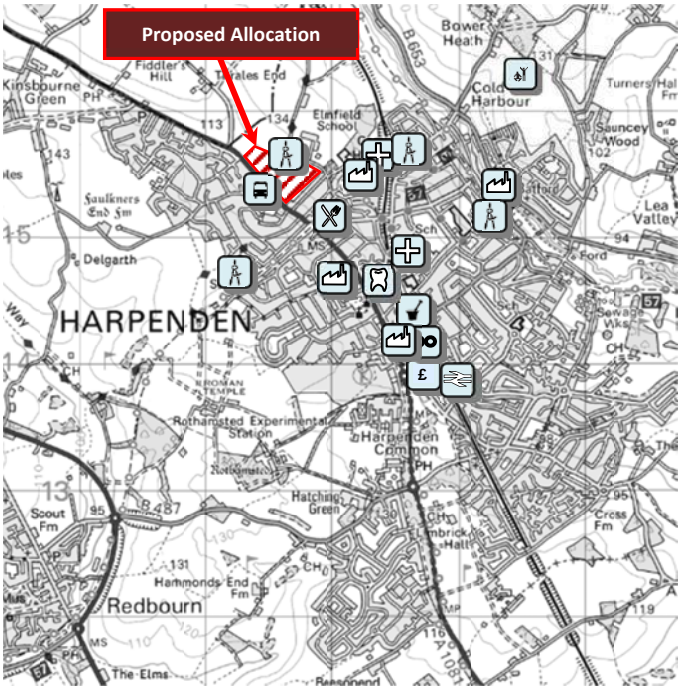


Figure 4b: Key Local Amenities

4.5 This demonstrates that a wide range of local amenities are within walking / cycling range, the site having very good accessibility. Harpenden Town Centre has a compact layout with the railway station nearby, meaning that the amenities are generally located in close proximity of each other. Together with the location of the proposed allocated site, this advocates that it is in a very good location with convenient access to the necessary facilities.

4.6 As indicated, the proposed allocation will deliver a primary school that will serve the proposed allocation as well as the existing residents. This will reduce the need to travel which will reduce the impact on the wider road network.

Summary

4.7 This section demonstrates that the proposed allocation site is well placed and has good walking access with limited dedicated cycling access to Harpenden Town Centre; however it is in close proximity to local facilities and amenities. It is therefore considered that there are alternative choices of transport to the car.

5 Walking and Cycling

5.1 Presently, a number of discontinuous footways are provided alongside Luton Road, A1081. The junction between Roundwood Lane and the A1081 includes pedestrian crossing facilities. The current extent of pedestrian facilities is indicated below.

Figure 5a: Walking and cycling connections

5.2 The masterplan for the site will include a comprehensive network of walking and cycling routes that will connect the housing blocks within the proposed allocation. The network will be inclusive to all potential users on site and cater for all future users. The masterplan for the site will include a new section of footway along the site frontage. The masterplan will include connections into the existing network.

5.3 To offer a further choice of sustainable travel between the proposed site of the allocation and Harpenden Town Centre together with Harpenden Railway Station, improvements to the walking and cycling network will be provided, as illustratively indicated in Figure 5b.

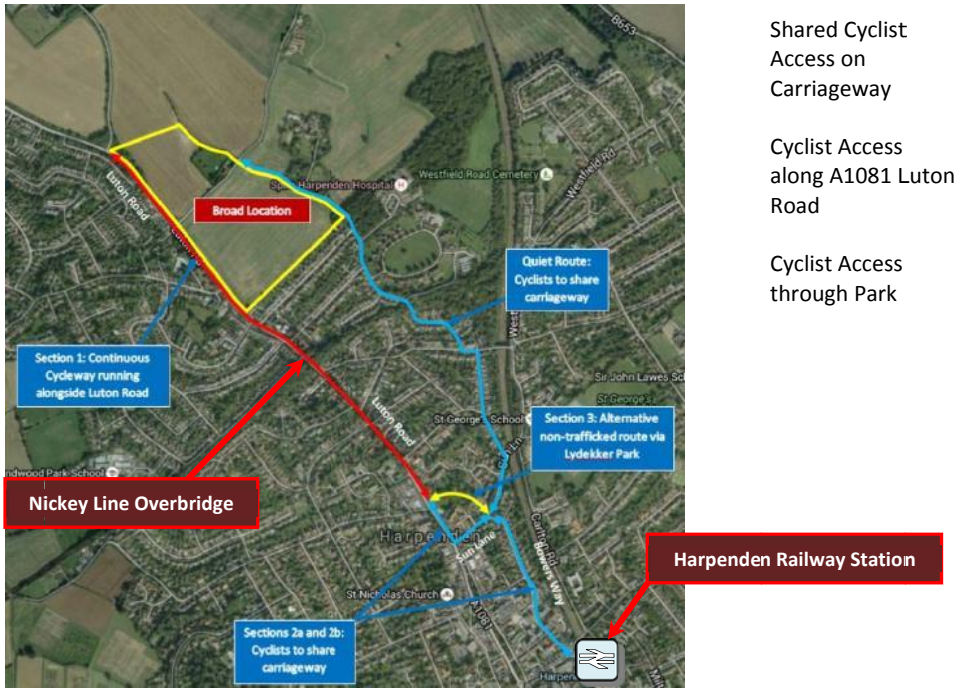


Figure 5b: Potential Cycling Routes from the Proposed Allocation to Harpenden Town Centre

5.4 Figure 5b represents the possible ways to reach Harpenden from the proposed allocation. There are two possible routes to Harpenden Town Centre, these are:

- A combination of a dedicated cycle route and shared carriageway via the A1081 Luton Road; or
- A "quiet" cycle route via a shared carriageway along the lightly trafficked Ambrose Lane.

Summary

5.5 Although the proposed cycle route along the A1081 Luton Road is constrained by the former railway bridge that carries the Nickey Line (now a shared pedestrian/cyclist route) overhead, however, the reach of Luton Road to the north of the bridge offers sufficient width to include a shared cycle route along the carriageway.

5.6 A quiet route to Harpenden Town Centre is available via Ambrose Lane which also gives direct and easy access to Harpenden Railway Station which has secure parking for cycles. This will allow cyclists to avoid the Town Centre should they wish to make the journey from the proposed allocated site to Harpenden Railway Station by cycle.

5.7 This section demonstrates that the proposed allocation has good cycle and pedestrian connections to Harpenden Town Centre as well as Harpenden Railway Station.

6 Public Transport

Road Based Public Transport

6.1 The site is supported by existing public transport that currently operates along Luton Road. The current level of services will offer a sustainable alternative to the motorcar. The services that operate adjacent to the site are highlighted below:

- Route 321 – Luton to St Albans
- Route 366 – Luton to Welwyn / Hatfield
- Route 636 – Luton to St Albans

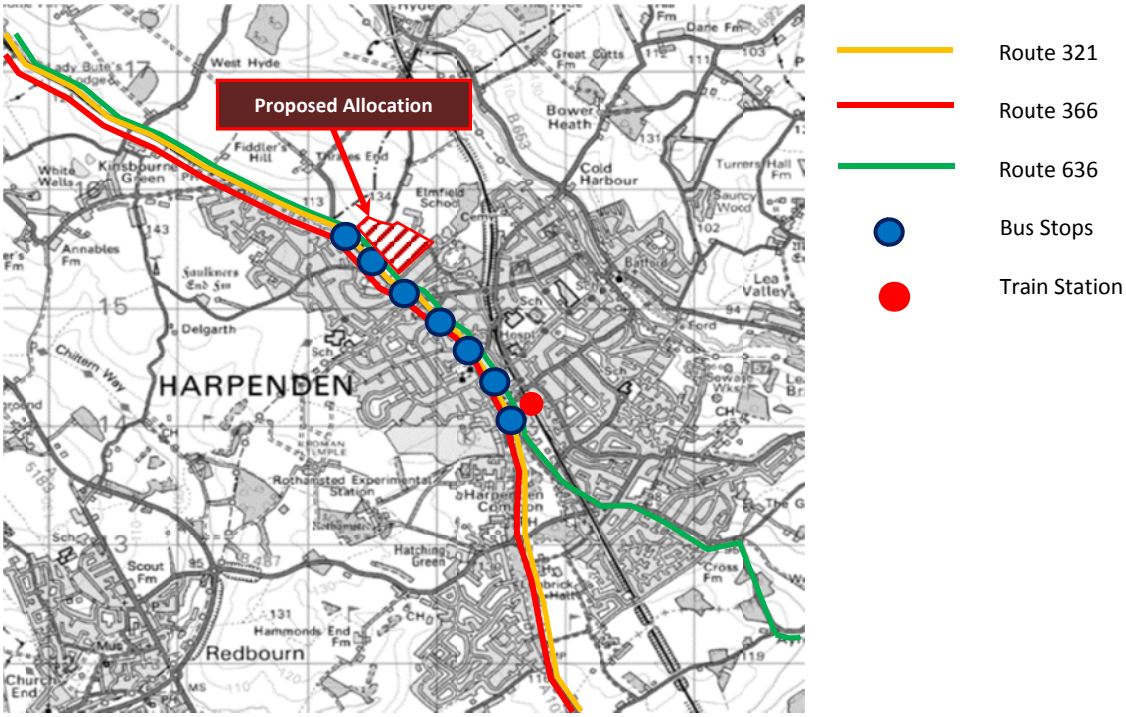


Figure 6a: Public Transport Routes

6.2 The bus stops adjacent to the site provide sheltered waiting areas and are located to the north of Roundwood Lane.

6.3 The road based public transport services provide comprehensive coverage during the day, but limited over the weekend. Therefore, the identified routes that operate adjacent to the site will be improved to deliver regular services over the weekend. The proposed allocation will help support a critical mass to justify the weekend service enhancements while providing additional patronage to the weekday services to ensure the longer term viability of existing routes.

6.4 The existing bus services that operate close to the proposed site are identified in Figure 6b.

Service	Destination	Frequency
321	**Luton to Harpenden to St. Albans to Watford** **Operator: Arriva**	Monday to Saturday: 20 minute frequency Sunday: 60 minute frequency
366	**Luton to Harpenden to Wheathampstead to Welwyn Garden City to Hatfield** **Operator: Centrebus**	Monday to Friday: 60 minute frequency Saturday and Sunday: No Services
636	**Luton to Harpenden to St. Albans to London Colney** **Operator: Uno**	Monday to Friday: 60 minute frequency Saturday and Sunday: No Services

Figure 6b: Bus Routes closest to the site

6.5 Presently, two routes operated by Arriva and Centrebus pass adjacent to the site boundary. It has been discussed that both of the existing routes are suitable for serving the proposed allocation. However, to maximise the opportunities to travel by public transport, it is proposed to improve these current routes that operate in Harpenden.

6.6 Routes 321, 366 and 636 do not currently offer sufficient frequencies of service. Therefore potential improvements could include:

- Route 321 to be improved to give a 15 minute frequency from Monday to Friday;
- Route 366 to be improved to give a 30 minute frequency from Monday to Friday with a 60 minute frequency on Saturdays.

6.7 The long term viability of any public transport routes is critical if it is to serve the community into the future. Therefore discussions with Arriva and Centrebus will establish the likely level of revenue that could be generated by the proposed allocation, which can be offset by the likely costs to understand the viability.

6.8 As a result of this work, financial support is likely to be needed initially, but over time it is expected that patronage levels will be sufficient to safeguard the long term viability of the proposed public transport interventions. This will be discussed in greater detail with the local public transport providers in the transport assessment.

Rail Based Public Transport

6.9 The Harpenden railway station is located within walking and cycling distance to the south east of the proposed site and is located on the electrified Midland Main Line railway that links London with the North of England. The road based public transport routes can also enhance connectivity with the train station. This in turn offers further sustainable transport to the City of London and the wider South East region, as well as the East Midlands and Yorkshire Regions.

6.10 The train station includes numerous facilities, including:

- Sheltered cycle parking (for cyclists wishing to commute to the railway station)
- 209 space car park
- Manned ticket office
- Ticket machines, including collection for pre-purchased tickets
- CCTV
- Pay phones
- Refreshment facilities
- Toilets

- Waiting rooms
- Lifts to platforms

6.11 The train station provides regular connections to:

- Six routes per hour to St Albans with a journey time of circa 6 minutes
- Seven routes per hour to Luton with a journey time of circa 17 minutes
- Eight routes per hour to London St. Pancras with a journey time of circa 26 minutes
- Five routes per hour to Bedford with a journey time of circa 33 minutes
- Four routes per hour to East Croydon with a journey time of circa 68 minutes
- Two routes per hour to Sutton with a journey time of circa 79 minutes
- Four routes per hour to London Gatwick Airport with a journey time of circa 82 minutes
- One route per hour to Sevenoaks with a journey time of circa 83 minutes
- Three routes per hour to Brighton with a journey time of circa 114 minutes

Summary

6.12 This section demonstrates that the proposed allocation site has good access to public transport with choices of sustainable transport available as an alternative to using the private car.

7 Accident Review

7.1 Existing road safety issues can sometimes be exacerbated with an increase in traffic. To determine if the proposed allocation could affect road safety, a review of the historical accidents has been carried out.

7.2 Data have been obtained from HCC relating to all personal injury road accidents (PIAs) reported as occurring during the last five years on the A1081 and B487 through Harpenden, as indicated in Figure 7a below:

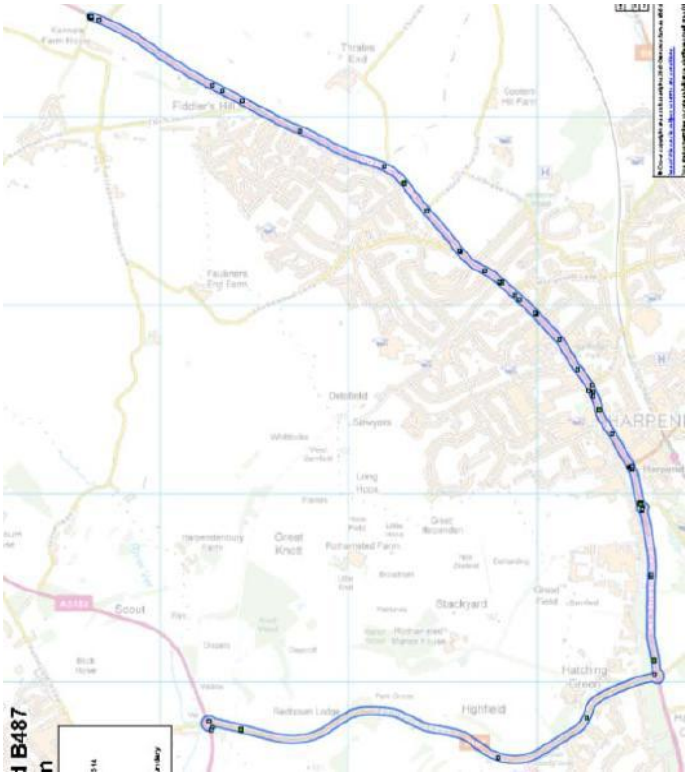


Figure 7a: Distribution of Accidents on the Local Highway Network

7.3 A total of 52 accidents were reported, resulting in 68 casualties. One accident resulted in fatal injury when a light goods vehicle turned right out of Kinsbourne Green Lane into the path of a motorcycle travelling north on the A1081. A further six accidents resulted in serious injury, in two case to a pedestrian, one to a pedal cyclist and the other three to motor cyclists.

	Number of PIAs				Casualties
	Slight	Serious	Fatal	Total	
Year 1	14	1	0	15	21
Year 2	5	0	0	5	5
Year 3	7	2	0	9	10
Year 4	11	2	1	14	18
Year 5	8	1	0	9	14
5 year period total	45	6	1	52	68

Figure 7b: Total number of PIAs by year and severity, with casualties

7.4 The most notable overall feature of the accidents is that 33% of them involved at least one vulnerable road user including four pedestrians and 13 cyclists.

7.5 Other notable common factors are that 11 or 22% of the accidents involved at least one young driver or rider aged 23 years or under and that 22% of the accidents occurred on a wet road surface. A high proportion of accidents resulted from vehicles failing to give way at junctions. There does not appear to be any consistent pattern over time.

	Pedestrian	Pedal cyclist	Total
Year 1	2	3	5
Year 2	0	2	2
Year 3	1	2	3
Year 4	1	2	3
Year 5	0	4	4
5 year period total	4	13	17

Figure 7c: PIAs involving vulnerable road users

7.6 One geographic cluster of accidents has been identified, at the A1081 roundabout junction with Bull Road where nine accidents occurred during the study period, just short of two per year. Two of the accidents resulted in serious injury and six of the nine involved vulnerable road users (one pedestrian; four pedal cyclists and one motor cyclist). Six of the accidents occurred during the hours of darkness and all but the one involving a pedestrian involved vehicles failing to give way to another vehicle using the junction, and in five of these incidents the cause was due to a vehicle travelling north on St Albans Road that was at fault.

7.7 All of the reported accidents involving vulnerable road users have been analysed. The majority of the accidents occurred on the A1081 between the B487 roundabout and just north of the railway line, with six at the Bull Road roundabout itself. There was no specific trend to the accidents.

Summary

7.8 52 personal injury accidents were reported to have occurred within the study area during the most recent 5-year period for which information is available at the time of writing. This included one fatal accident.

7.9 The only significant cluster of accidents is at the A1081 roundabout junction with Bull Road where nine injury accidents were reported, including four pedal cyclists. There was no specific trend to the accidents.

7.10 Whilst the proposed allocation will add traffic to the network, there is no evidence that this will significantly compromise the relatively safe performance of the existing road system. Therefore it is considered from this that the proposed allocation will not affect the road safety on the local highway network.

Appendix A – TRICS Outputs

Calculation Reference: AUDIT-346901-150706-0748

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

02	SOUTH EAST		
	EX	ESSEX	1 days
	WS	WEST SUSSEX	1 days
04	EAST ANGLIA		
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	LN	LINCOLNSHIRE	2 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NE	NORTH EAST LINCOLNSHIRE	2 days
	NY	NORTH YORKSHIRE	1 days
08	NORTH WEST		
	CH	CHESHIRE	2 days

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

Filtering Stage 2 selection:

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

Parameter: Number of dwellings
Actual Range: 108 to 432 (units:)
Range Selected by User: 100 to 2000 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/07 to 11/12/14

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

Selected survey days:

Monday	2 days
Tuesday	5 days
Thursday	3 days
Friday	1 days

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

Selected survey types:

Manual count	11 days
Directional ATC Count	0 days

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

Selected Locations:

Edge of Town Centre	1
Suburban Area (PPS6 Out of Centre)	4
Edge of Town	6

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

Selected Location Sub Categories:

Residential Zone	8
No Sub Category	3

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	11	190	0.077	11	190	0.257	11	190	0.334
08:00 - 09:00	11	190	0.152	11	190	0.391	11	190	0.543
09:00 - 10:00	11	190	0.154	11	190	0.172	11	190	0.326
10:00 - 11:00	11	190	0.141	11	190	0.177	11	190	0.318
11:00 - 12:00	11	190	0.162	11	190	0.155	11	190	0.317
12:00 - 13:00	11	190	0.178	11	190	0.173	11	190	0.351
13:00 - 14:00	11	190	0.163	11	190	0.145	11	190	0.308
14:00 - 15:00	11	190	0.172	11	190	0.185	11	190	0.357
15:00 - 16:00	11	190	0.291	11	190	0.211	11	190	0.502
16:00 - 17:00	11	190	0.288	11	190	0.181	11	190	0.469
17:00 - 18:00	11	190	0.333	11	190	0.216	11	190	0.549
18:00 - 19:00	11	190	0.238	11	190	0.197	11	190	0.435
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.349			2.460			4.809

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

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

Parameter summary

Trip rate parameter range selected:	108 - 432 (units:)
Survey date date range:	01/01/07 - 11/12/14
Number of weekdays (Monday-Friday):	11
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	11	190	0.003	11	190	0.002	11	190	0.005
08:00 - 09:00	11	190	0.002	11	190	0.003	11	190	0.005
09:00 - 10:00	11	190	0.002	11	190	0.002	11	190	0.004
10:00 - 11:00	11	190	0.003	11	190	0.004	11	190	0.007
11:00 - 12:00	11	190	0.001	11	190	0.001	11	190	0.002
12:00 - 13:00	11	190	0.001	11	190	0.001	11	190	0.002
13:00 - 14:00	11	190	0.001	11	190	0.000	11	190	0.001
14:00 - 15:00	11	190	0.003	11	190	0.003	11	190	0.006
15:00 - 16:00	11	190	0.005	11	190	0.005	11	190	0.010
16:00 - 17:00	11	190	0.002	11	190	0.001	11	190	0.003
17:00 - 18:00	11	190	0.002	11	190	0.001	11	190	0.003
18:00 - 19:00	11	190	0.001	11	190	0.001	11	190	0.002
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.026			0.024			0.050

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

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

Parameter summary

Trip rate parameter range selected:	108 - 432 (units:)
Survey date date range:	01/01/07 - 11/12/14
Number of weekdays (Monday-Friday):	11
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

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

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	11	190	0.004	11	190	0.002	11	190	0.006
08:00 - 09:00	11	190	0.001	11	190	0.002	11	190	0.003
09:00 - 10:00	11	190	0.003	11	190	0.001	11	190	0.004
10:00 - 11:00	11	190	0.003	11	190	0.004	11	190	0.007
11:00 - 12:00	11	190	0.002	11	190	0.002	11	190	0.004
12:00 - 13:00	11	190	0.004	11	190	0.003	11	190	0.007
13:00 - 14:00	11	190	0.003	11	190	0.004	11	190	0.007
14:00 - 15:00	11	190	0.002	11	190	0.004	11	190	0.006
15:00 - 16:00	11	190	0.001	11	190	0.001	11	190	0.002
16:00 - 17:00	11	190	0.002	11	190	0.001	11	190	0.003
17:00 - 18:00	11	190	0.000	11	190	0.000	11	190	0.000
18:00 - 19:00	11	190	0.000	11	190	0.000	11	190	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.025			0.024			0.049

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

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

Parameter summary

Trip rate parameter range selected:	108 - 432 (units:)
Survey date date range:	01/01/07 - 11/12/14
Number of weekdays (Monday-Friday):	11
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	11	190	0.000	11	190	0.000	11	190	0.000
08:00 - 09:00	11	190	0.000	11	190	0.000	11	190	0.000
09:00 - 10:00	11	190	0.000	11	190	0.000	11	190	0.000
10:00 - 11:00	11	190	0.000	11	190	0.000	11	190	0.000
11:00 - 12:00	11	190	0.000	11	190	0.000	11	190	0.000
12:00 - 13:00	11	190	0.000	11	190	0.000	11	190	0.000
13:00 - 14:00	11	190	0.000	11	190	0.000	11	190	0.000
14:00 - 15:00	11	190	0.000	11	190	0.000	11	190	0.000
15:00 - 16:00	11	190	0.000	11	190	0.000	11	190	0.000
16:00 - 17:00	11	190	0.000	11	190	0.000	11	190	0.000
17:00 - 18:00	11	190	0.000	11	190	0.000	11	190	0.000
18:00 - 19:00	11	190	0.000	11	190	0.000	11	190	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.000			0.000

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

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

Parameter summary

Trip rate parameter range selected:	108 - 432 (units:)
Survey date date range:	01/01/07 - 11/12/14
Number of weekdays (Monday-Friday):	11
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	11	190	0.008	11	190	0.011	11	190	0.019
08:00 - 09:00	11	190	0.005	11	190	0.017	11	190	0.022
09:00 - 10:00	11	190	0.005	11	190	0.003	11	190	0.008
10:00 - 11:00	11	190	0.003	11	190	0.007	11	190	0.010
11:00 - 12:00	11	190	0.006	11	190	0.004	11	190	0.010
12:00 - 13:00	11	190	0.008	11	190	0.005	11	190	0.013
13:00 - 14:00	11	190	0.004	11	190	0.006	11	190	0.010
14:00 - 15:00	11	190	0.004	11	190	0.005	11	190	0.009
15:00 - 16:00	11	190	0.021	11	190	0.013	11	190	0.034
16:00 - 17:00	11	190	0.011	11	190	0.007	11	190	0.018
17:00 - 18:00	11	190	0.012	11	190	0.013	11	190	0.025
18:00 - 19:00	11	190	0.012	11	190	0.007	11	190	0.019
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.099			0.098			0.197

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

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

Parameter summary

Trip rate parameter range selected:	108 - 432 (units:)
Survey date date range:	01/01/07 - 11/12/14
Number of weekdays (Monday-Friday):	11
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

Calculation Reference: AUDIT-346901-150706-0707

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 04 - EDUCATION
Category : A - PRIMARY
VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	HC	HAMPSHIRE	1 days
	SC	SURREY	1 days
05	EAST MIDLANDS		
	LE	LEICESTERSHIRE	1 days
	LN	LINCOLNSHIRE	1 days
	NR	NORTHAMPTONSHIRE	2 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NE	NORTH EAST LINCOLNSHIRE	1 days
	NY	NORTH YORKSHIRE	1 days
	WY	WEST YORKSHIRE	1 days
08	NORTH WEST		
	MS	MERSEYSIDE	1 days
09	NORTH		
	TW	TYNE & WEAR	1 days

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

Filtering Stage 2 selection:

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

Parameter: Number of pupils
Actual Range: 92 to 414 (units:)
Range Selected by User: 92 to 420 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/07 to 20/05/14

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

Selected survey days:

Monday	1 days
Tuesday	3 days
Wednesday	4 days
Thursday	3 days

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

Selected survey types:

Manual count	11 days
Directional ATC Count	0 days

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

Selected Locations:

Edge of Town Centre	1
Suburban Area (PPS6 Out of Centre)	5
Edge of Town	2
Neighbourhood Centre (PPS6 Local Centre)	3

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

Selected Location Sub Categories:

Industrial Zone	1

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

TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY
VEHICLES
Calculation factor: 1 PUPILS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	312	0.000	1	312	0.000	1	312	0.000
06:00 - 07:00	1	312	0.013	1	312	0.003	1	312	0.016
07:00 - 08:00	11	273	0.043	11	273	0.017	11	273	0.060
08:00 - 09:00	11	273	0.291	11	273	0.202	11	273	0.493
09:00 - 10:00	11	273	0.037	11	273	0.068	11	273	0.105
10:00 - 11:00	11	273	0.014	11	273	0.012	11	273	0.026
11:00 - 12:00	11	273	0.025	11	273	0.021	11	273	0.046
12:00 - 13:00	11	273	0.031	11	273	0.032	11	273	0.063
13:00 - 14:00	11	273	0.019	11	273	0.028	11	273	0.047
14:00 - 15:00	11	273	0.048	11	273	0.023	11	273	0.071
15:00 - 16:00	11	273	0.207	11	273	0.240	11	273	0.447
16:00 - 17:00	11	273	0.051	11	273	0.086	11	273	0.137
17:00 - 18:00	11	273	0.027	11	273	0.040	11	273	0.067
18:00 - 19:00	10	260	0.016	10	260	0.028	10	260	0.044
19:00 - 20:00	1	312	0.000	1	312	0.000	1	312	0.000
20:00 - 21:00	1	312	0.000	1	312	0.032	1	312	0.032
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.822			0.832			1.654

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

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

Parameter summary

Trip rate parameter range selected:	92 - 414 (units:)
Survey date date range:	01/01/07 - 20/05/14
Number of weekdays (Monday-Friday):	11
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY
TAXIS
Calculation factor: 1 PUPILS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	312	0.000	1	312	0.000	1	312	0.000
06:00 - 07:00	1	312	0.000	1	312	0.000	1	312	0.000
07:00 - 08:00	11	273	0.000	11	273	0.000	11	273	0.000
08:00 - 09:00	11	273	0.004	11	273	0.004	11	273	0.008
09:00 - 10:00	11	273	0.001	11	273	0.000	11	273	0.001
10:00 - 11:00	11	273	0.000	11	273	0.000	11	273	0.000
11:00 - 12:00	11	273	0.000	11	273	0.000	11	273	0.000
12:00 - 13:00	11	273	0.000	11	273	0.001	11	273	0.001
13:00 - 14:00	11	273	0.001	11	273	0.001	11	273	0.002
14:00 - 15:00	11	273	0.000	11	273	0.000	11	273	0.000
15:00 - 16:00	11	273	0.004	11	273	0.004	11	273	0.008
16:00 - 17:00	11	273	0.000	11	273	0.000	11	273	0.000
17:00 - 18:00	11	273	0.000	11	273	0.000	11	273	0.000
18:00 - 19:00	10	260	0.000	10	260	0.000	10	260	0.000
19:00 - 20:00	1	312	0.000	1	312	0.000	1	312	0.000
20:00 - 21:00	1	312	0.000	1	312	0.000	1	312	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.010			0.010			0.020

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

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

Parameter summary

Trip rate parameter range selected:	92 - 414 (units:)
Survey date date range:	01/01/07 - 20/05/14
Number of weekdays (Monday-Friday):	11
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY
OGVS
Calculation factor: 1 PUPILS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	312	0.000	1	312	0.000	1	312	0.000
06:00 - 07:00	1	312	0.003	1	312	0.003	1	312	0.006
07:00 - 08:00	11	273	0.000	11	273	0.000	11	273	0.000
08:00 - 09:00	11	273	0.000	11	273	0.000	11	273	0.000
09:00 - 10:00	11	273	0.001	11	273	0.001	11	273	0.002
10:00 - 11:00	11	273	0.001	11	273	0.001	11	273	0.002
11:00 - 12:00	11	273	0.000	11	273	0.001	11	273	0.001
12:00 - 13:00	11	273	0.000	11	273	0.000	11	273	0.000
13:00 - 14:00	11	273	0.000	11	273	0.000	11	273	0.000
14:00 - 15:00	11	273	0.000	11	273	0.000	11	273	0.000
15:00 - 16:00	11	273	0.000	11	273	0.000	11	273	0.000
16:00 - 17:00	11	273	0.000	11	273	0.000	11	273	0.000
17:00 - 18:00	11	273	0.000	11	273	0.000	11	273	0.000
18:00 - 19:00	10	260	0.000	10	260	0.000	10	260	0.000
19:00 - 20:00	1	312	0.000	1	312	0.000	1	312	0.000
20:00 - 21:00	1	312	0.000	1	312	0.000	1	312	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.005			0.006			0.011

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

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

Parameter summary

Trip rate parameter range selected:	92 - 414 (units:)
Survey date date range:	01/01/07 - 20/05/14
Number of weekdays (Monday-Friday):	11
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY
PSVS
Calculation factor: 1 PUPILS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	312	0.000	1	312	0.000	1	312	0.000
06:00 - 07:00	1	312	0.000	1	312	0.000	1	312	0.000
07:00 - 08:00	11	273	0.000	11	273	0.000	11	273	0.000
08:00 - 09:00	11	273	0.000	11	273	0.000	11	273	0.000
09:00 - 10:00	11	273	0.000	11	273	0.000	11	273	0.000
10:00 - 11:00	11	273	0.001	11	273	0.001	11	273	0.002
11:00 - 12:00	11	273	0.000	11	273	0.000	11	273	0.000
12:00 - 13:00	11	273	0.000	11	273	0.000	11	273	0.000
13:00 - 14:00	11	273	0.000	11	273	0.000	11	273	0.000
14:00 - 15:00	11	273	0.000	11	273	0.000	11	273	0.000
15:00 - 16:00	11	273	0.000	11	273	0.000	11	273	0.000
16:00 - 17:00	11	273	0.000	11	273	0.000	11	273	0.000
17:00 - 18:00	11	273	0.000	11	273	0.000	11	273	0.000
18:00 - 19:00	10	260	0.000	10	260	0.000	10	260	0.000
19:00 - 20:00	1	312	0.000	1	312	0.000	1	312	0.000
20:00 - 21:00	1	312	0.000	1	312	0.000	1	312	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.001			0.001			0.002

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

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

Parameter summary

Trip rate parameter range selected:	92 - 414 (units:)
Survey date date range:	01/01/07 - 20/05/14
Number of weekdays (Monday-Friday):	11
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY
CYCLISTS
Calculation factor: 1 PUPILS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	312	0.000	1	312	0.000	1	312	0.000
06:00 - 07:00	1	312	0.000	1	312	0.000	1	312	0.000
07:00 - 08:00	11	273	0.003	11	273	0.000	11	273	0.003
08:00 - 09:00	11	273	0.014	11	273	0.002	11	273	0.016
09:00 - 10:00	11	273	0.002	11	273	0.003	11	273	0.005
10:00 - 11:00	11	273	0.000	11	273	0.000	11	273	0.000
11:00 - 12:00	11	273	0.000	11	273	0.000	11	273	0.000
12:00 - 13:00	11	273	0.000	11	273	0.000	11	273	0.000
13:00 - 14:00	11	273	0.000	11	273	0.001	11	273	0.001
14:00 - 15:00	11	273	0.001	11	273	0.000	11	273	0.001
15:00 - 16:00	11	273	0.006	11	273	0.009	11	273	0.015
16:00 - 17:00	11	273	0.000	11	273	0.008	11	273	0.008
17:00 - 18:00	11	273	0.000	11	273	0.003	11	273	0.003
18:00 - 19:00	10	260	0.000	10	260	0.000	10	260	0.000
19:00 - 20:00	1	312	0.000	1	312	0.000	1	312	0.000
20:00 - 21:00	1	312	0.000	1	312	0.000	1	312	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.026			0.026			0.052

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

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

Parameter summary

Trip rate parameter range selected:	92 - 414 (units:)
Survey date date range:	01/01/07 - 20/05/14
Number of weekdays (Monday-Friday):	11
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

Appendix B – Model Output Data

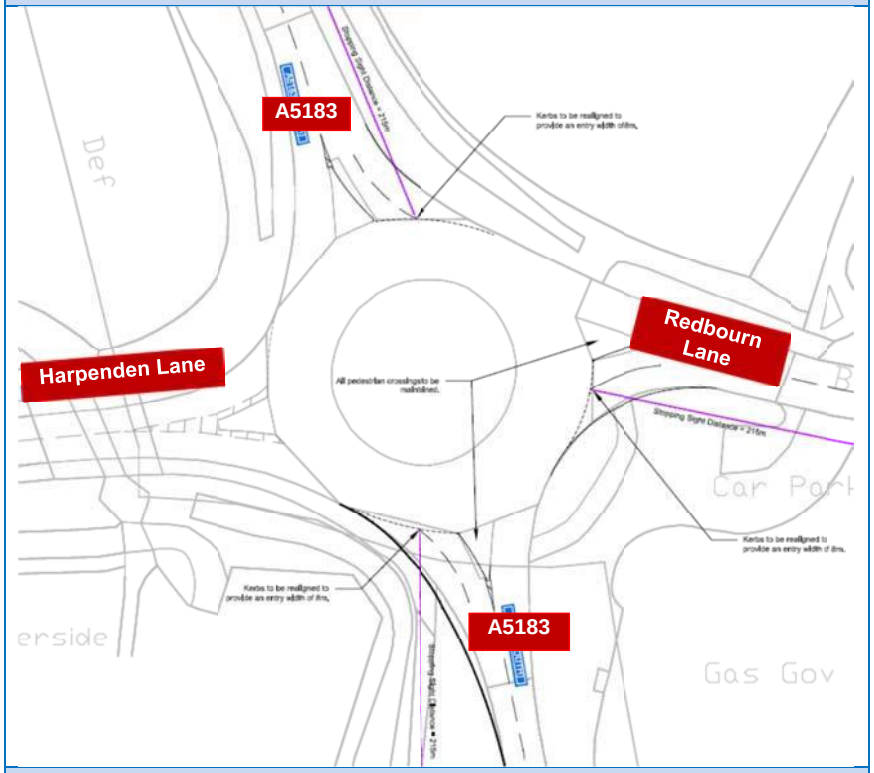
A5183 with Redbourn Lane

EXISTING LAYOUT

JUNCTION RESULTS

Traffic Scenario	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Base Year	**1.007**	**37.6**	**1.006**	**37.2**
Future Year	**1.270**	**305.4**	**1.266**	**308.7**
Future with allocation	**1.271**	**306.7**	**1.273**	**317.1**

IMPROVED LAYOUT



JUNCTION RESULTS -

Traffic Scenario	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Future with allocation	**1.252**	**289.6**	**1.255**	**300.3**

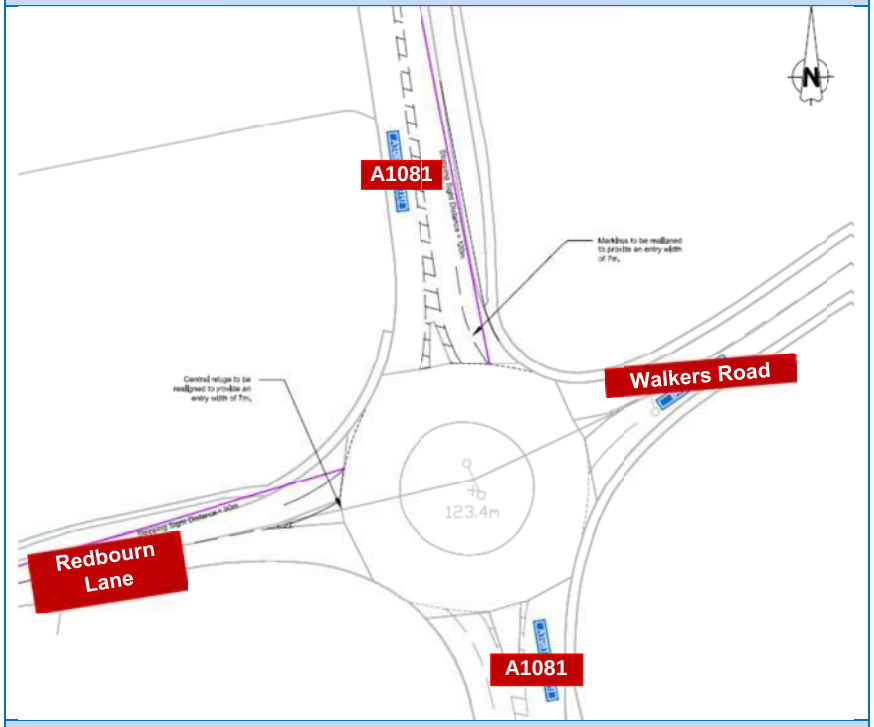
A1081 St. Albans Road / B487

EXISTING LAYOUT

JUNCTION RESULTS

Traffic Scenario	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Base Year	**1.006**	**34.0**	**0.806**	**4.0**
Future Year	**1.299**	**282.2**	**1.049**	**59.9**
Future with allocation	**1.315**	**294.1**	**1.067**	**72.9**

IMPROVED LAYOUT



JUNCTION RESULTS -

Traffic Scenario	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Future with allocation	**1.268**	**259.8**	**1.029**	**46.5**

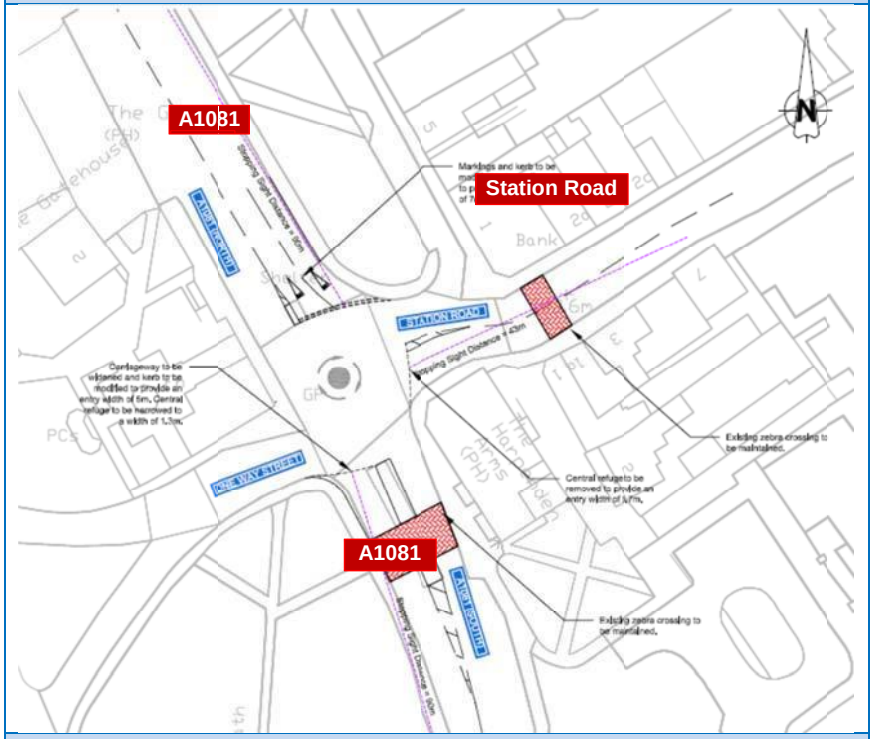
A1081 with Station Road

EXISTING LAYOUT

JUNCTION RESULTS

Traffic Scenario	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Base Year	**0.768**	**3.2**	**0.691**	**2.2**
Future Year	**1.094**	**51.9**	**0.997**	**21.0**
Future with allocation	**1.289**	**117.7**	**1.096**	**53.1**

IMPROVED LAYOUT



JUNCTION RESULTS -

Traffic Scenario	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Future with allocation	**1.094**	**52.4**	**0.936**	**10.7**

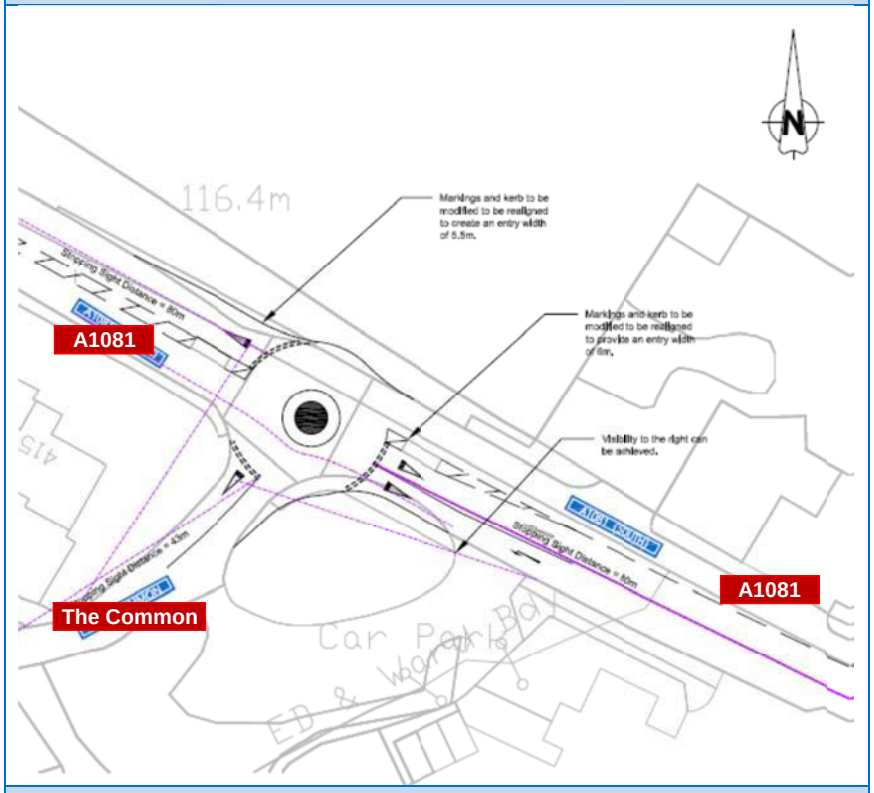
A1081 with The Common

EXISTING LAYOUT

JUNCTION RESULTS

Traffic Scenario	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Base Year	**0.807**	**4.1**	**0.677**	**2.1**
Future Year	**1.001**	**33.2**	**0.823**	**4.5**
Future with allocation	**1.015**	**41.8**	**0.846**	**5.3**

IMPROVED LAYOUT



JUNCTION RESULTS -

Traffic Scenario	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Future with allocation	**0.994**	**29.7**	**0.827**	**4.6**

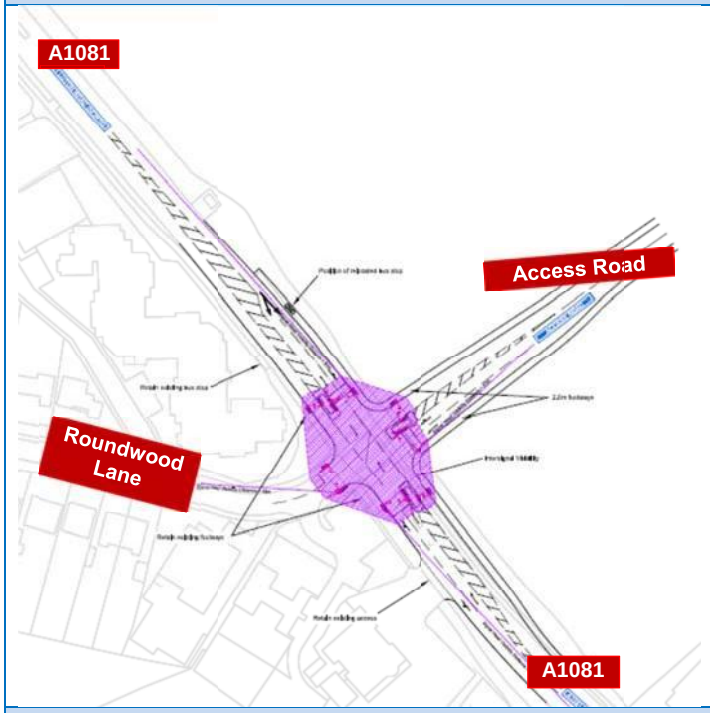
A1081 with Roundwood Lane

EXISTING LAYOUT

JUNCTION RESULTS

Traffic Scenario	AM Peak		PM Peak	
	Degree of Saturation	Queue	Degree of Saturation	Queue
Base Year	N/A	N/A	N/A	N/A
Future Year	N/A	N/A	N/A	N/A
Future with allocation	N/A	N/A	N/A	N/A

PROPOSED LAYOUT



JUNCTION RESULTS -

Traffic Scenario	AM Peak		PM Peak	
	Degree of Saturation	Queue	Degree of Saturation	Queue
Future with allocation	89.5%	31.7	89.6%	29.6

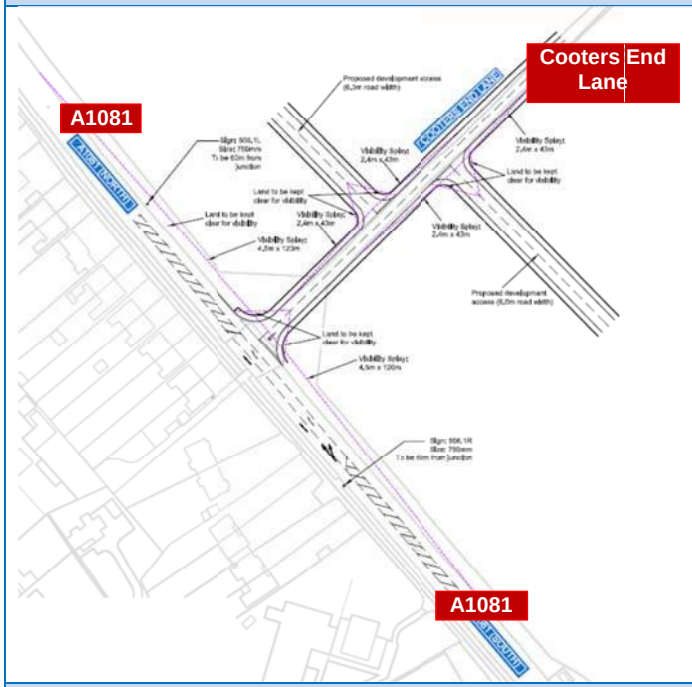
A1081 with Cooters End Lane

PROPOSED LAYOUT

JUNCTION RESULTS

Traffic Scenario	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Base Year	**0.304**	**0.4**	**0.185**	**0.2**
Future Year	**0.484**	**0.9**	**0.243**	**0.3**
Future with allocation	**N/A**	**N/A**	**N/A**	**N/A**

PROPOSED LAYOUT



JUNCTION RESULTS -

Traffic Scenario	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Future with allocation	**0.651**	**1.8**	**0.292**	**0.4**

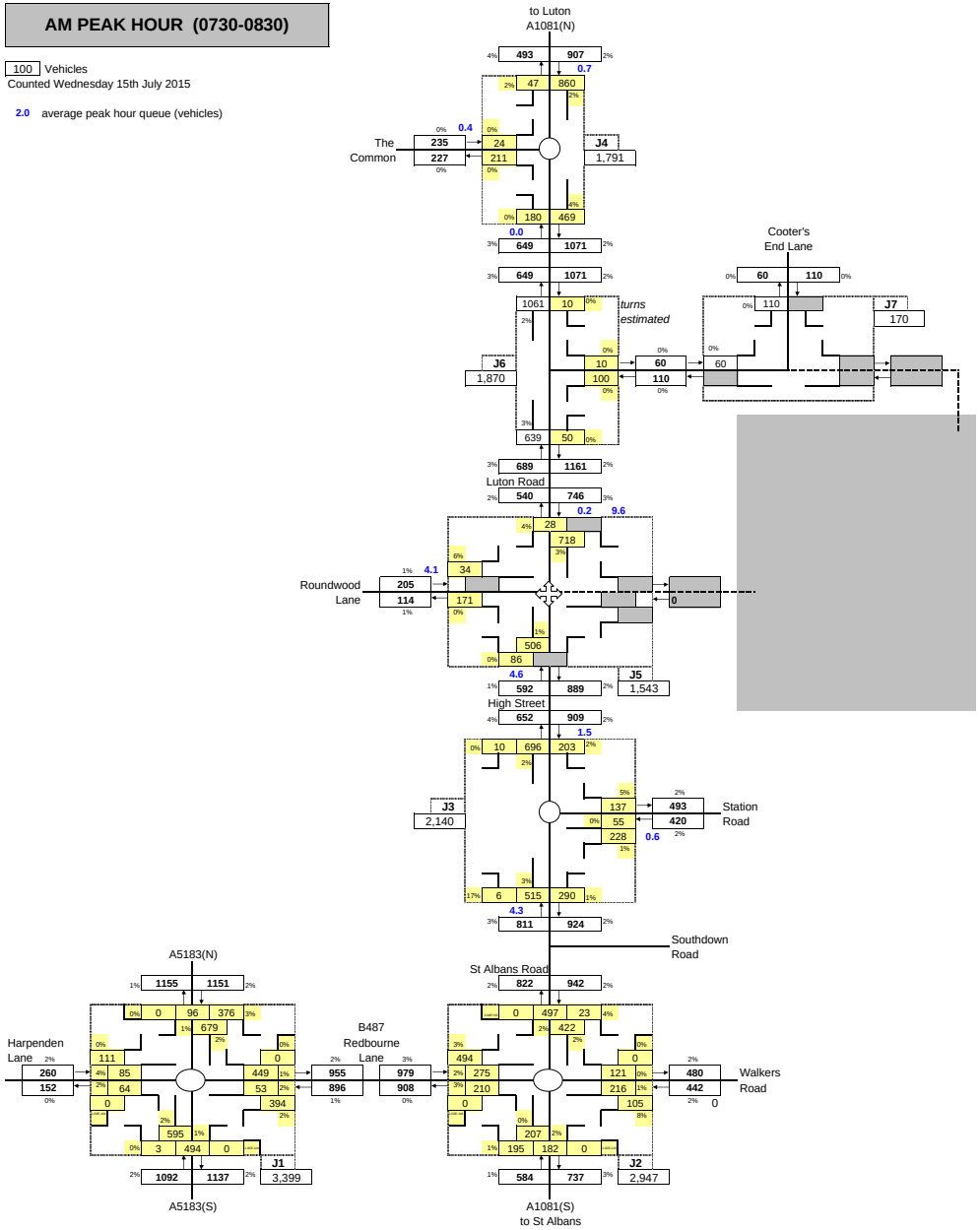
Appendix C – Assessment Outputs

Client:	**Commercial Estates Group**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	**10338 Land at Harpenden**	01/06/2016	
Title:	**2015 Counted Traffic Flows [Vehicles]**	**Figure 1**	

AM PEAK HOUR (0730-0830)

100 Vehicles
Counted Wednesday 15th July 2015

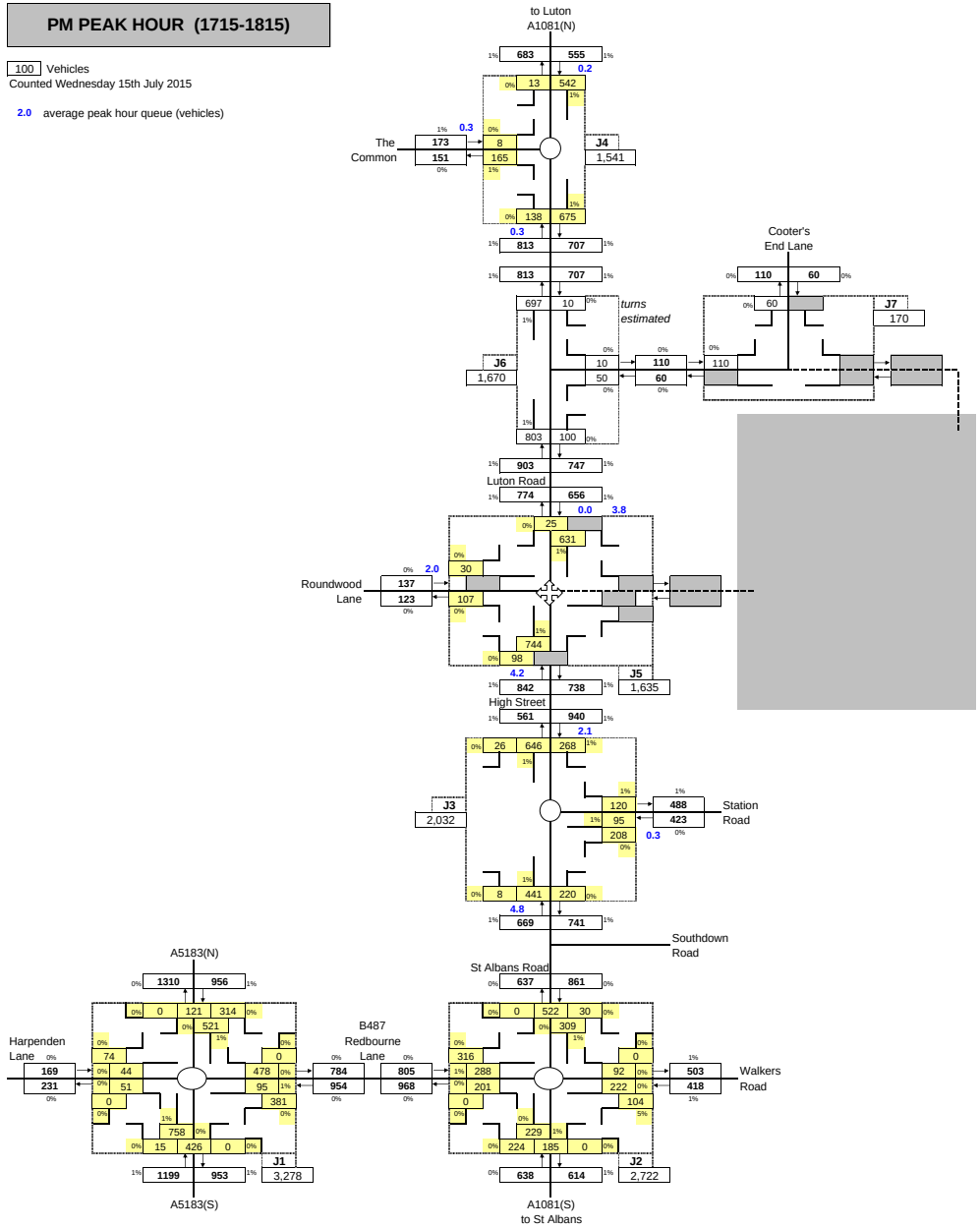
2.0 average peak hour queue (vehicles)



PM PEAK HOUR (1715-1815)

100 Vehicles
Counted Wednesday 15th July 2015

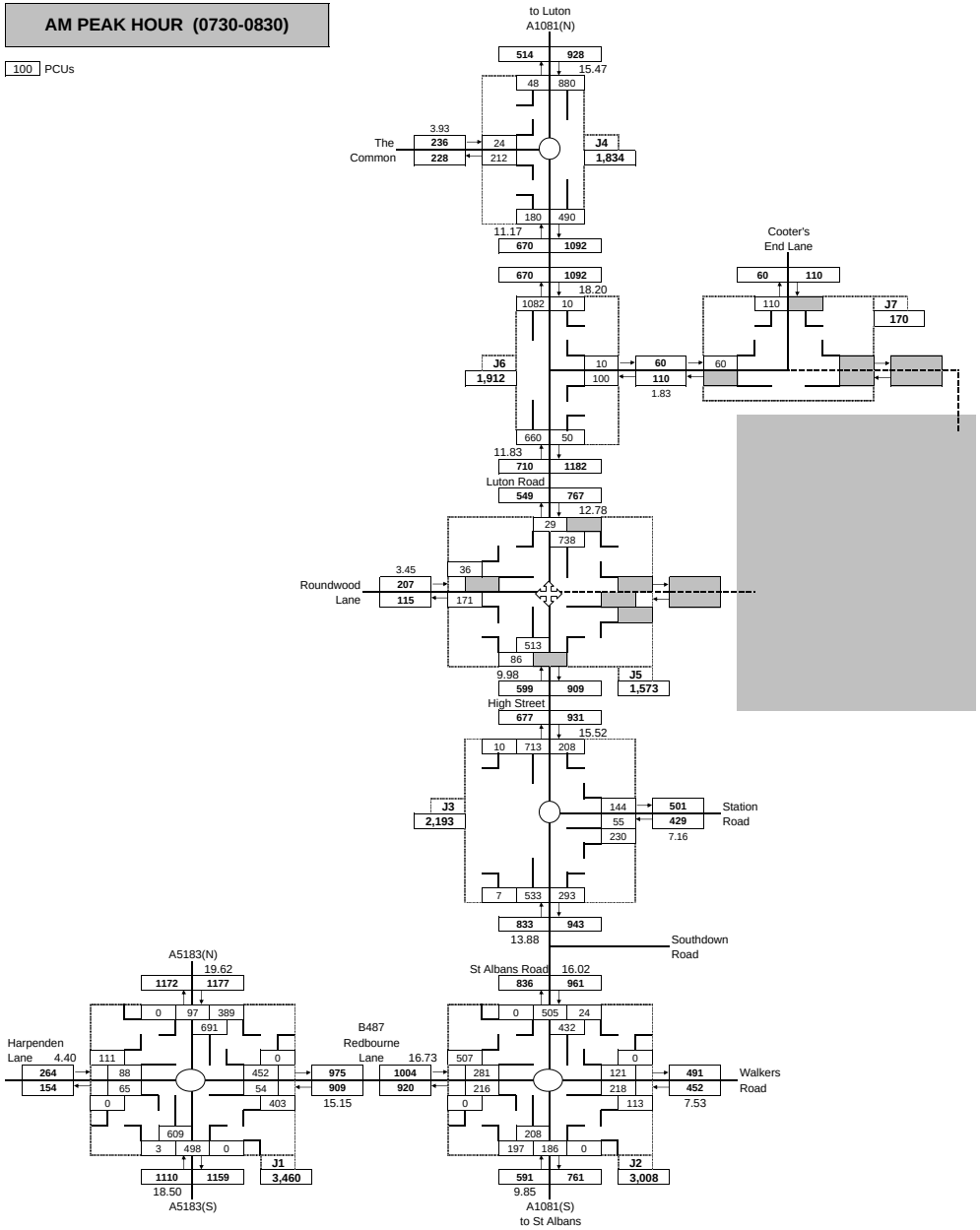
2.0 average peak hour queue (vehicles)



Client:	**Commercial Estates Group**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	**10338 Land at Harpenden**	01/06/2016	
Title:	**2015 Counted Traffic Flows [PCUs]**	**Figure 2**	

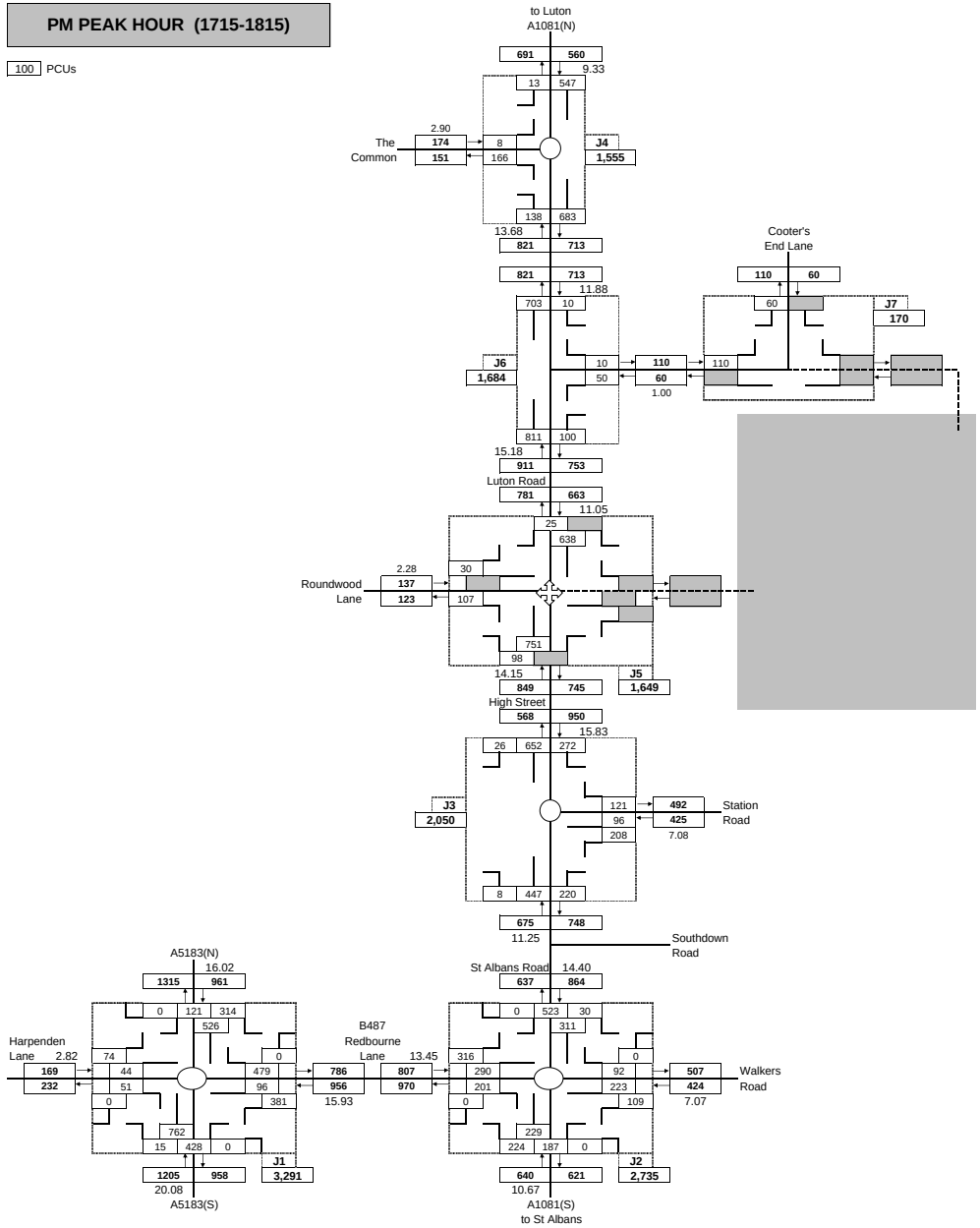
AM PEAK HOUR (0730-0830)

100 PCUs



PM PEAK HOUR (1715-1815)

100 PCUs

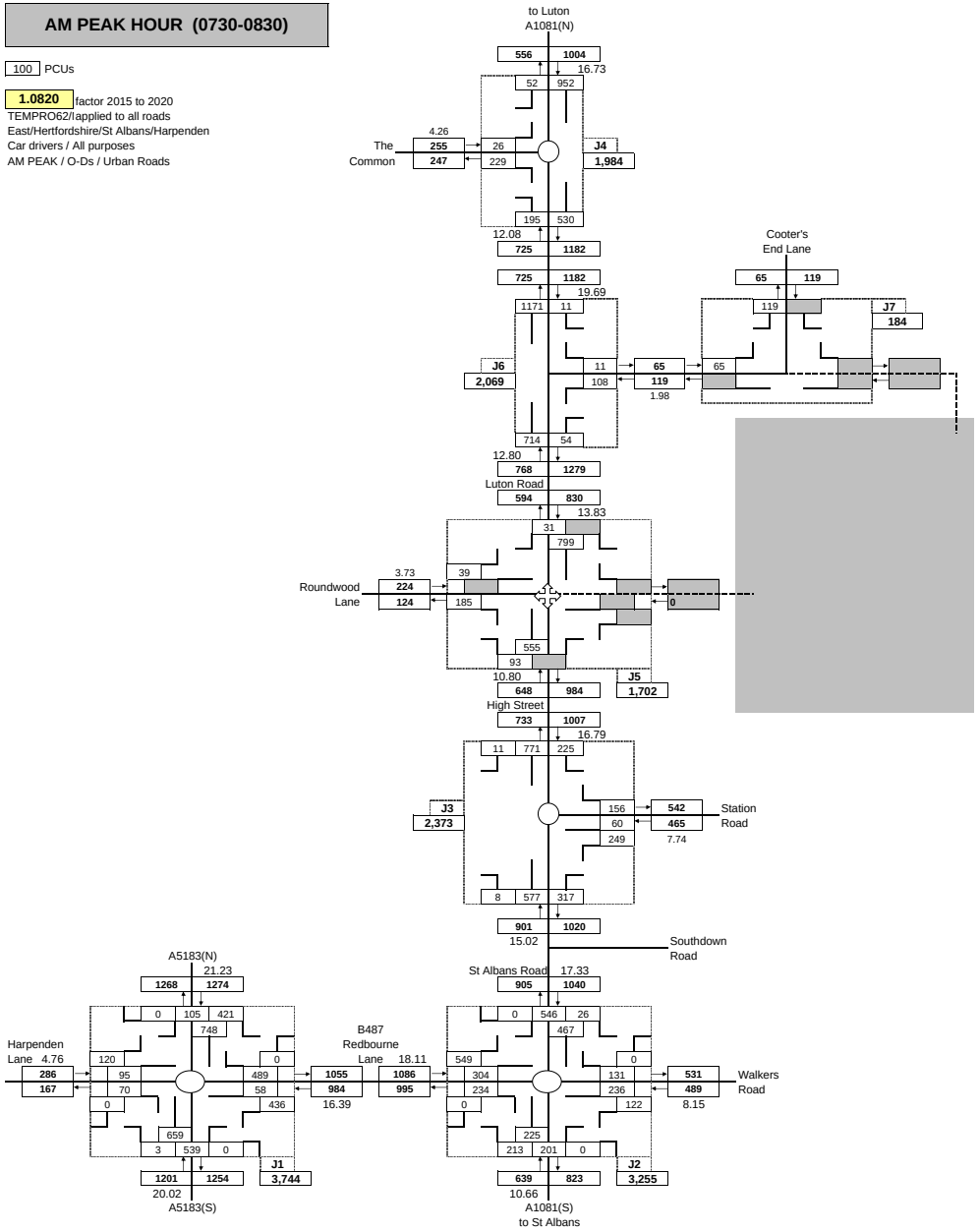


Client:	**Commercial Estates Group**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	**10338 Land at Harpenden**	01/06/2016	
Title:	**2020 Forecast Traffic Flows [PCUs]**	**Figure 3**	

AM PEAK HOUR (0730-0830)

100 PCUs

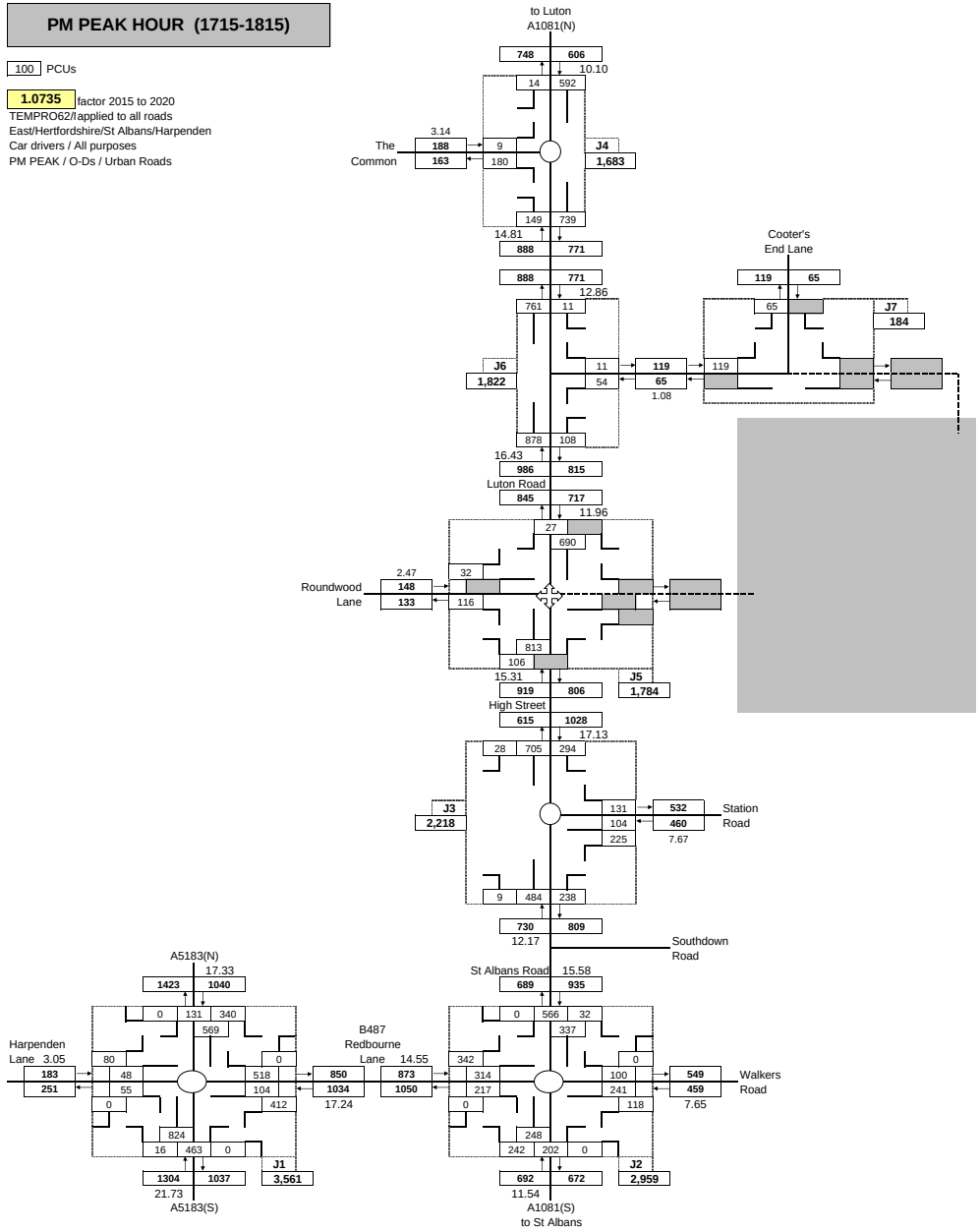
1.0820 factor 2015 to 2020
TEMPRO62/I applied to all roads
East/Hertfordshire/St Albans/Harpenden
Car drivers / All purposes
AM PEAK / O-Ds / Urban Roads



PM PEAK HOUR (1715-1815)

100 PCUs

1.0735 factor 2015 to 2020
TEMPRO62/I applied to all roads
East/Hertfordshire/St Albans/Harpenden
Car drivers / All purposes
PM PEAK / O-Ds / Urban Roads

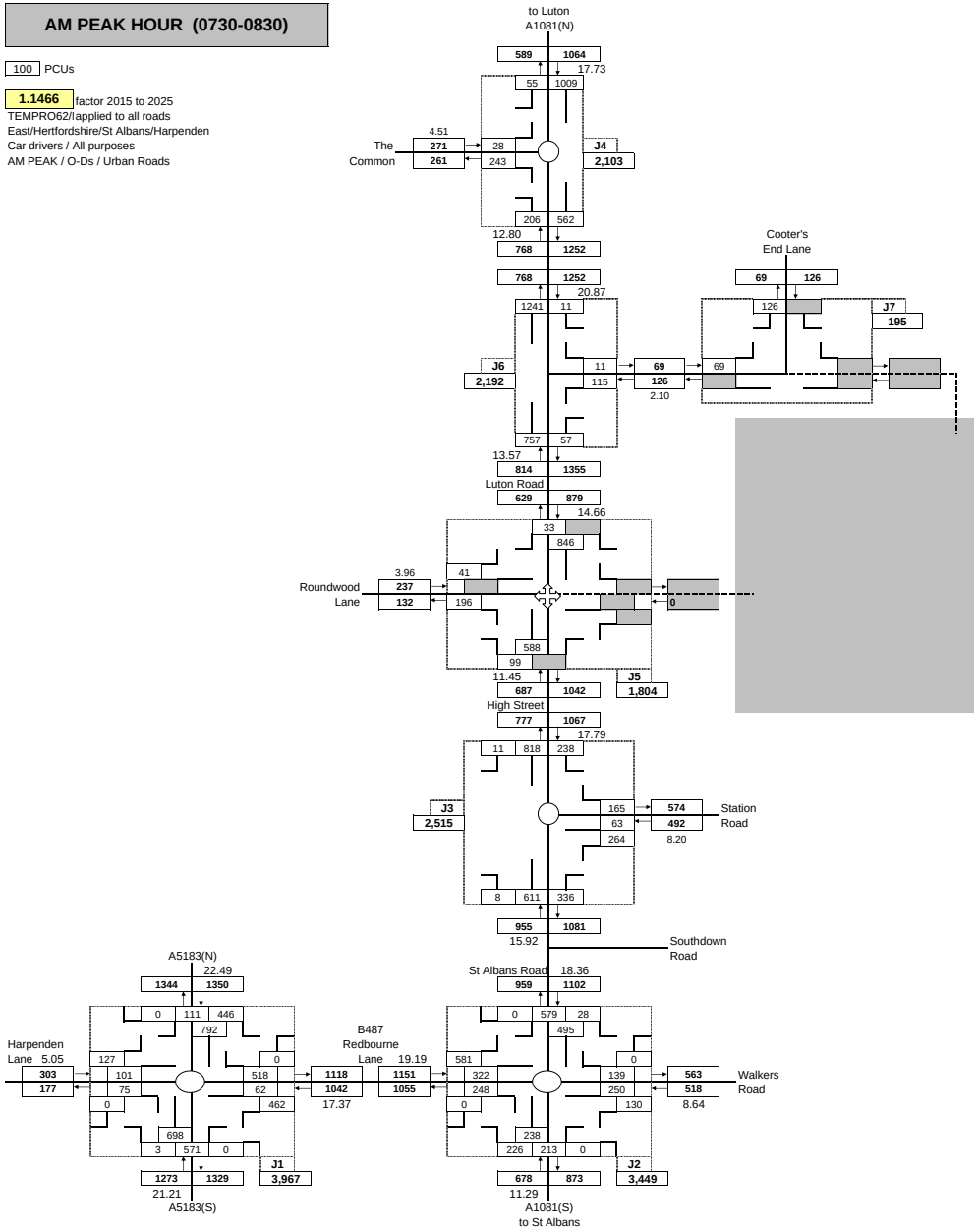


Client:	**Commercial Estates Group**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	**10338 Land at Harpenden**	01/06/2016	
Title:	**2025 Forecast Traffic Flows [PCUs]**	**Figure 4**	

AM PEAK HOUR (0730-0830)

100 PCUs

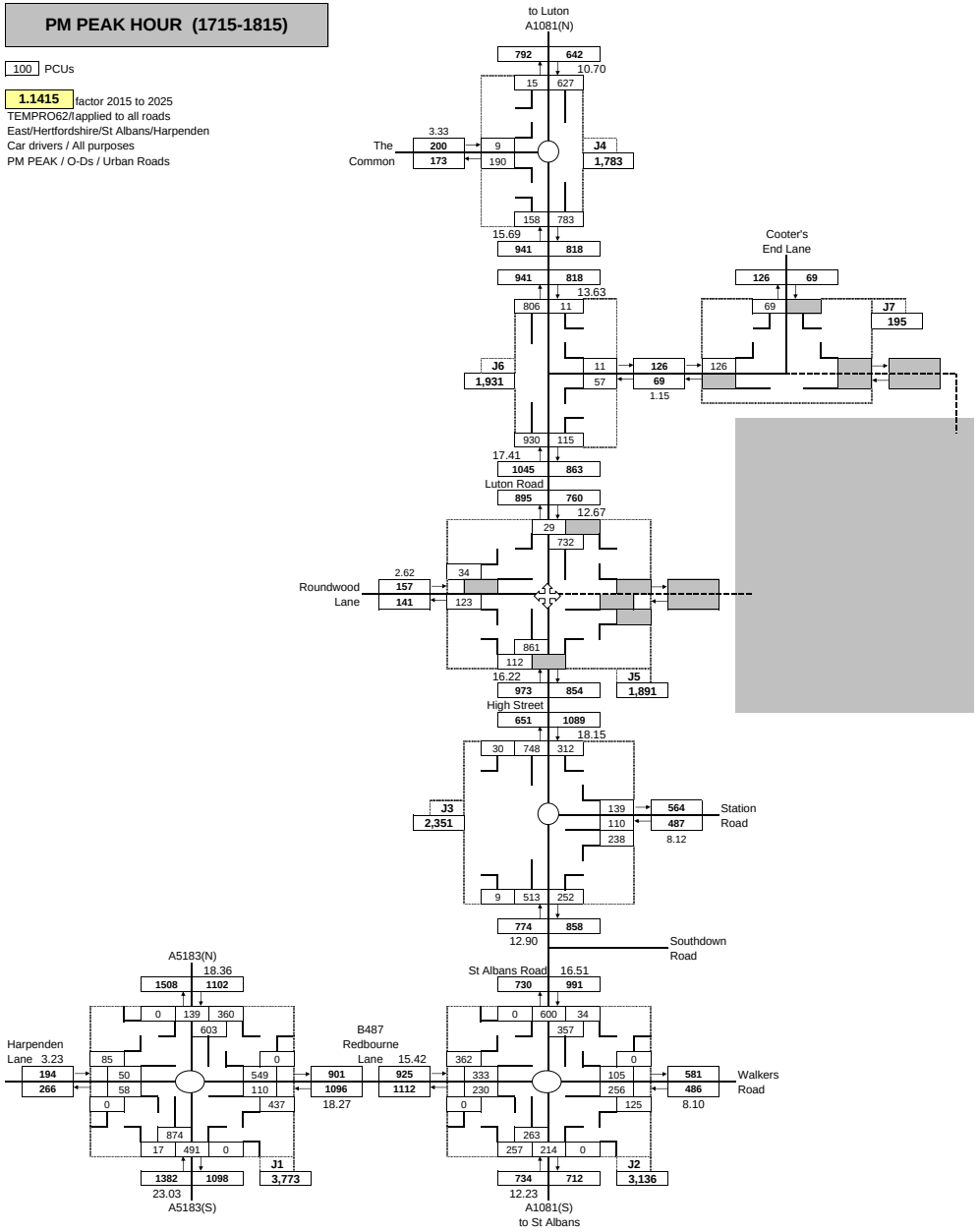
1.1466 factor 2015 to 2025
TEMPRO62/I applied to all roads
East/Hertfordshire/St Albans/Harpenden
Car drivers / All purposes
AM PEAK / O-Ds / Urban Roads



PM PEAK HOUR (1715-1815)

100 PCUs

1.1415 factor 2015 to 2025
TEMPRO62/I applied to all roads
East/Hertfordshire/St Albans/Harpenden
Car drivers / All purposes
PM PEAK / O-Ds / Urban Roads

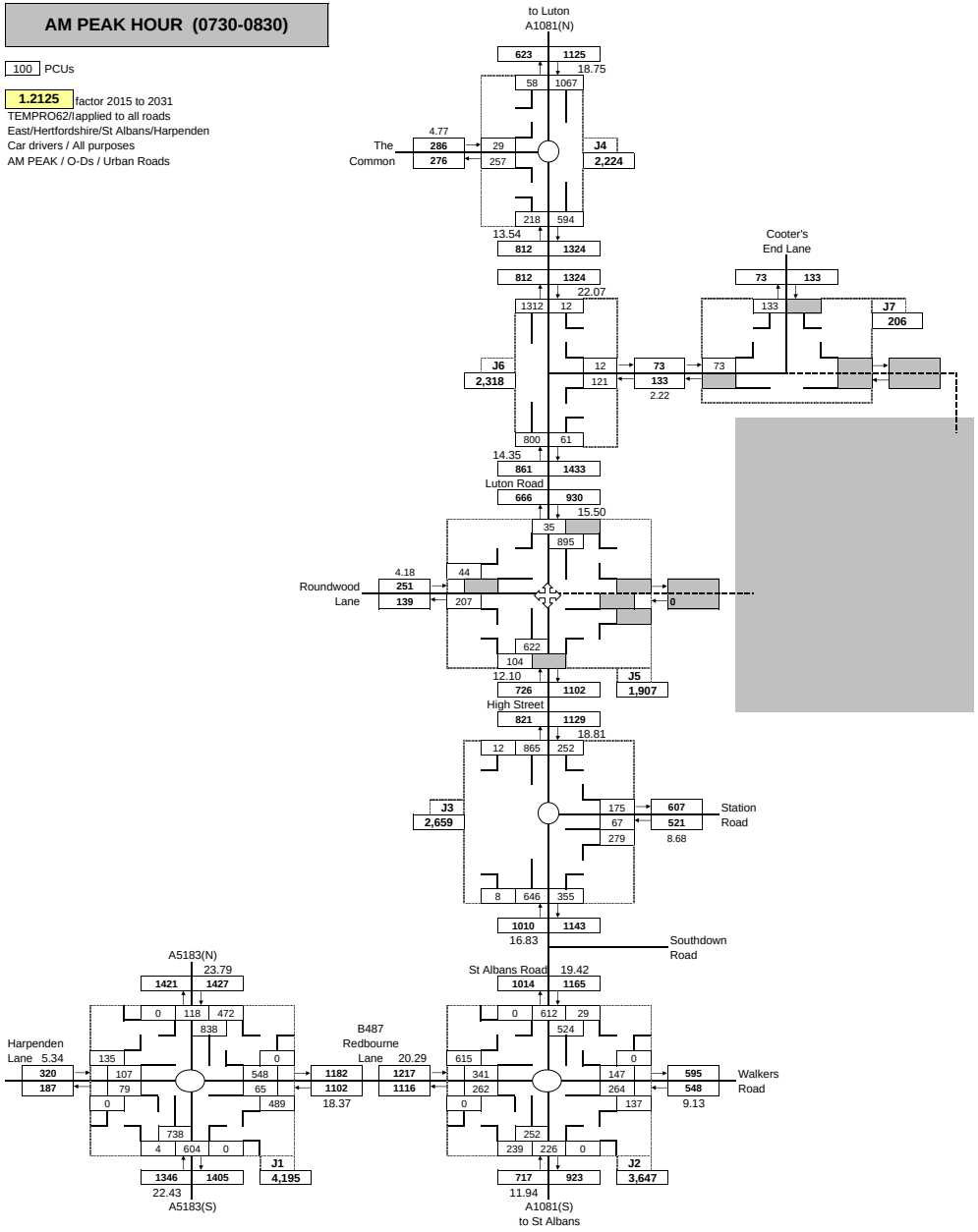


Client:	**Commercial Estates Group**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	**10338 Land at Harpenden**	01/06/2016	
Title:	**2031 Forecast Traffic Flows [PCUs]**	**Figure 5**	

AM PEAK HOUR (0730-0830)

100 PCUs

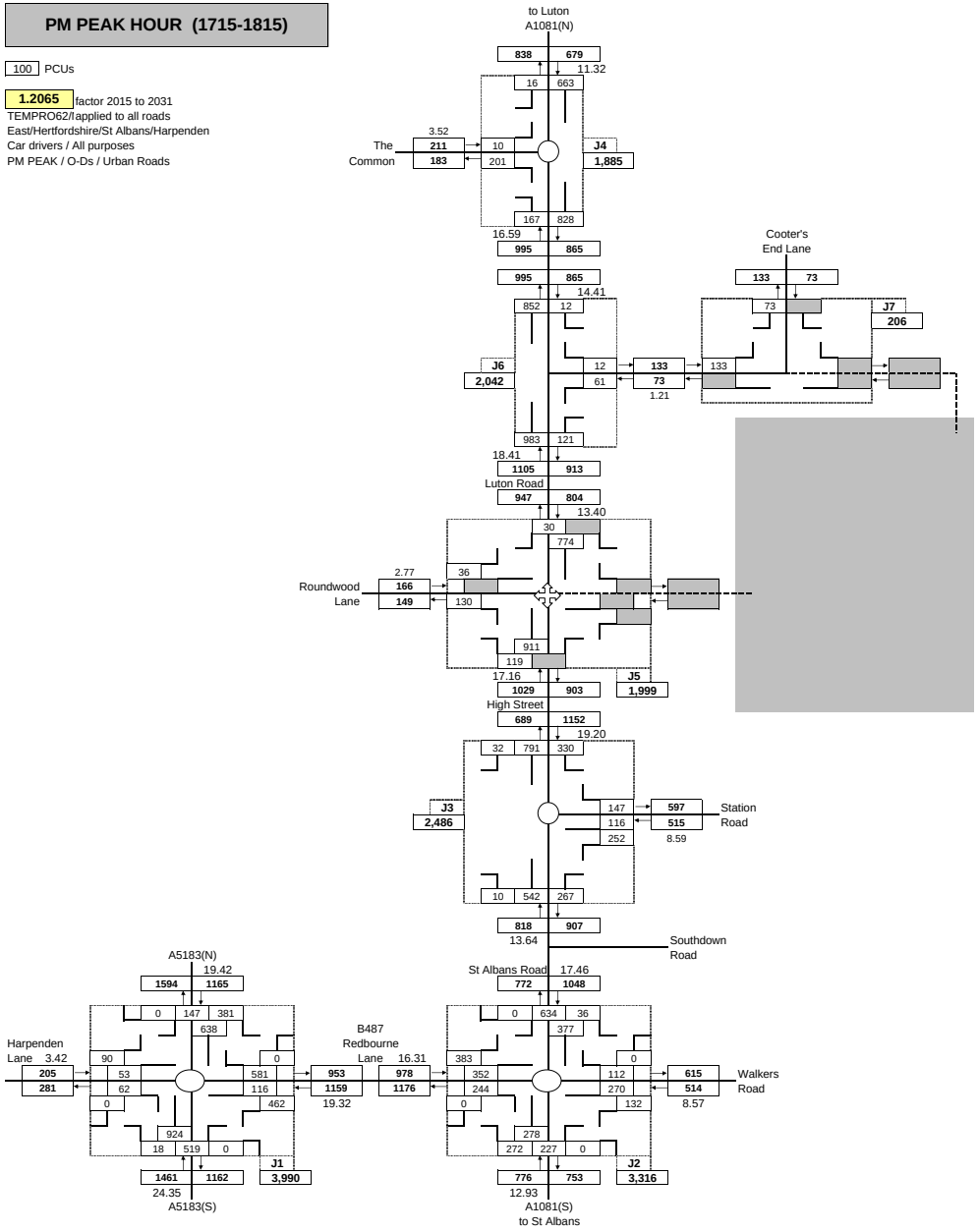
1.2125 factor 2015 to 2031
TEMPRO62/I applied to all roads
East/Hertfordshire/St Albans/Harpenden
Car drivers / All purposes
AM PEAK / O-Ds / Urban Roads



PM PEAK HOUR (1715-1815)

100 PCUs

1.2065 factor 2015 to 2031
TEMPRO62/I applied to all roads
East/Hertfordshire/St Albans/Harpenden
Car drivers / All purposes
PM PEAK / O-Ds / Urban Roads



Client:	**Commercial Estates Group**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	**10338 Land at Harpenden**	01/06/2016	
Title:	**DevelopmentTraffic Flows Rev3 [PCUs]**	**Figure 6**	

AM PEAK HOUR (0730-0830)

100 PCUs

Housing distribution taken from 2011 Travel to Work Census Data
100% Housing
100% Education (predominantly local)

30 Total flow through junction >30 PCUs

HOUSING 8-9AM

500 TOTAL housing units

		private	non-priv	private	non-priv
Housing units	100%	80%	20%	400	100
Apartments	0%	80%	20%	0	0

TRICS Trip Rates (per unit)

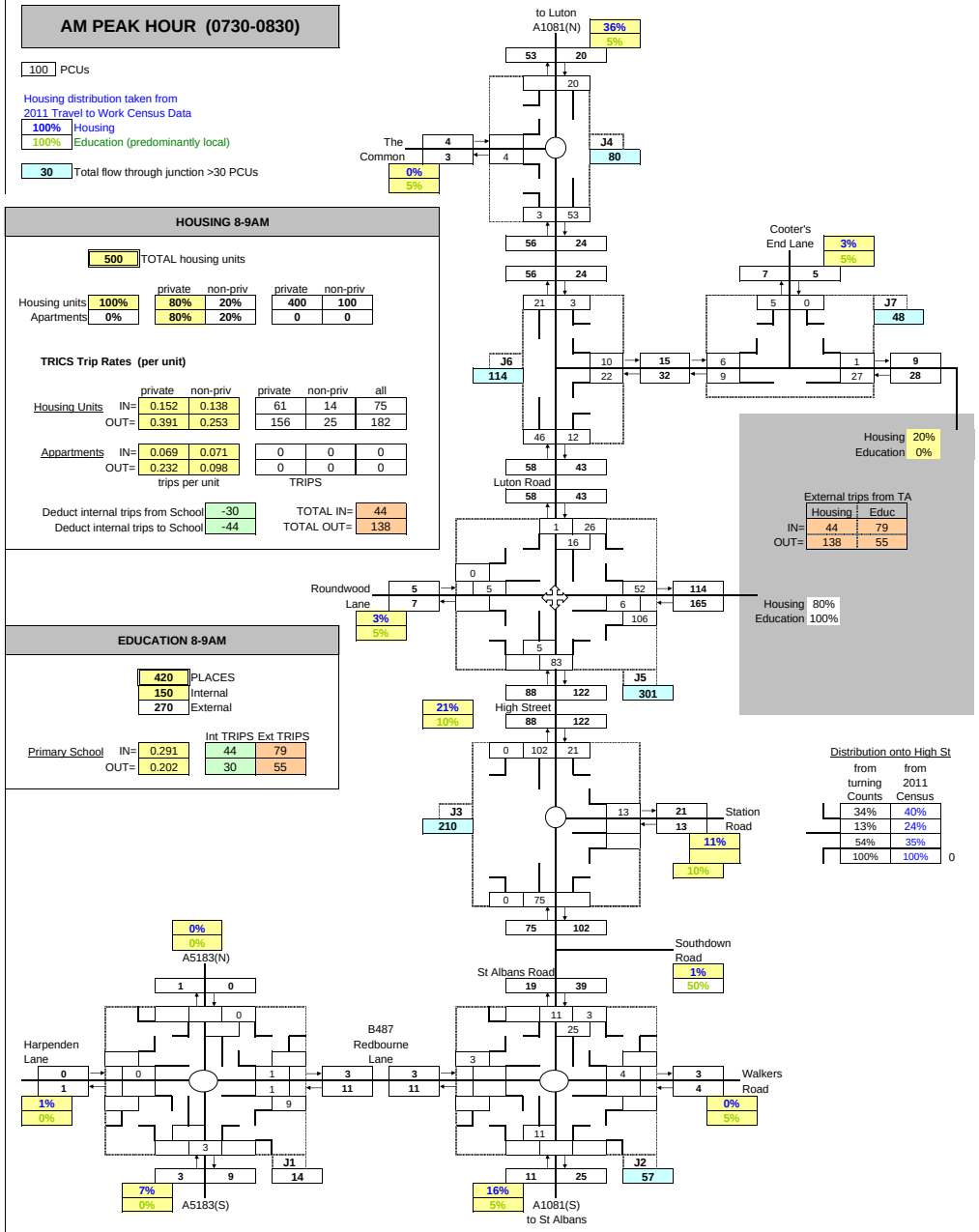
		private	non-priv	private	non-priv	all
Housing Units	IN=	0.152	0.138	61	14	75
	OUT=	0.391	0.253	156	25	182
Appartments	IN=	0.069	0.071	0	0	0
	OUT=	0.232	0.098	0	0	0
		trips per unit		TRIPS		

Deduct internal trips from School -30 TOTAL IN= 44
Deduct internal trips to School -44 TOTAL OUT= 138

EDUCATION 8-9AM

420 PLACES
150 Internal
270 External

		Int TRIPS	Ext TRIPS
Primary School	IN= 0.291	44	79
	OUT= 0.202	30	55



Distribution onto High St

from turning Counts	from 2011 Census
34%	40%
13%	24%
54%	35%
100%	100%

0

PM PEAK HOUR (1715-1815)

100 PCUs

Housing distribution taken from 2011 Travel to Work Census Data
100% Housing
100% Education (predominantly local)

30 Total flow through junction >30 PCUs

HOUSING 5-6PM

500 TOTAL housing units

		private	non-priv	private	non-priv
Housing units	100%	80%	20%	400	100
Apartments	0%	80%	20%	0	0

TRICS Trip Rates (per unit)

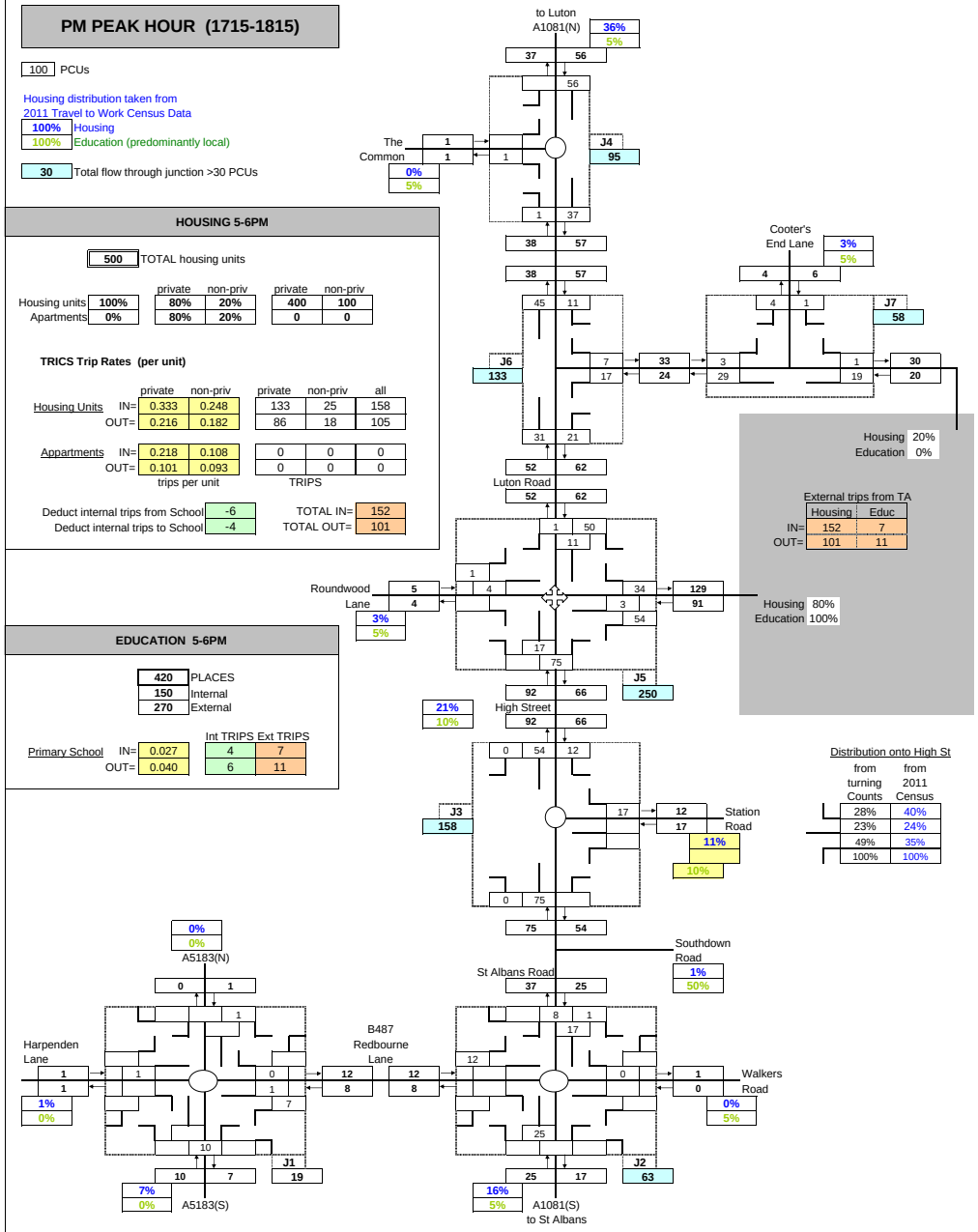
		private	non-priv	private	non-priv	all
Housing Units	IN=	0.333	0.248	133	25	158
	OUT=	0.216	0.182	86	18	105
Appartments	IN=	0.218	0.108	0	0	0
	OUT=	0.101	0.093	0	0	0
		trips per unit		TRIPS		

Deduct internal trips from School -6 TOTAL IN= 152
Deduct internal trips to School -4 TOTAL OUT= 101

EDUCATION 5-6PM

420 PLACES
150 Internal
270 External

		Int TRIPS	Ext TRIPS
Primary School	IN= 0.027	4	7
	OUT= 0.040	6	11

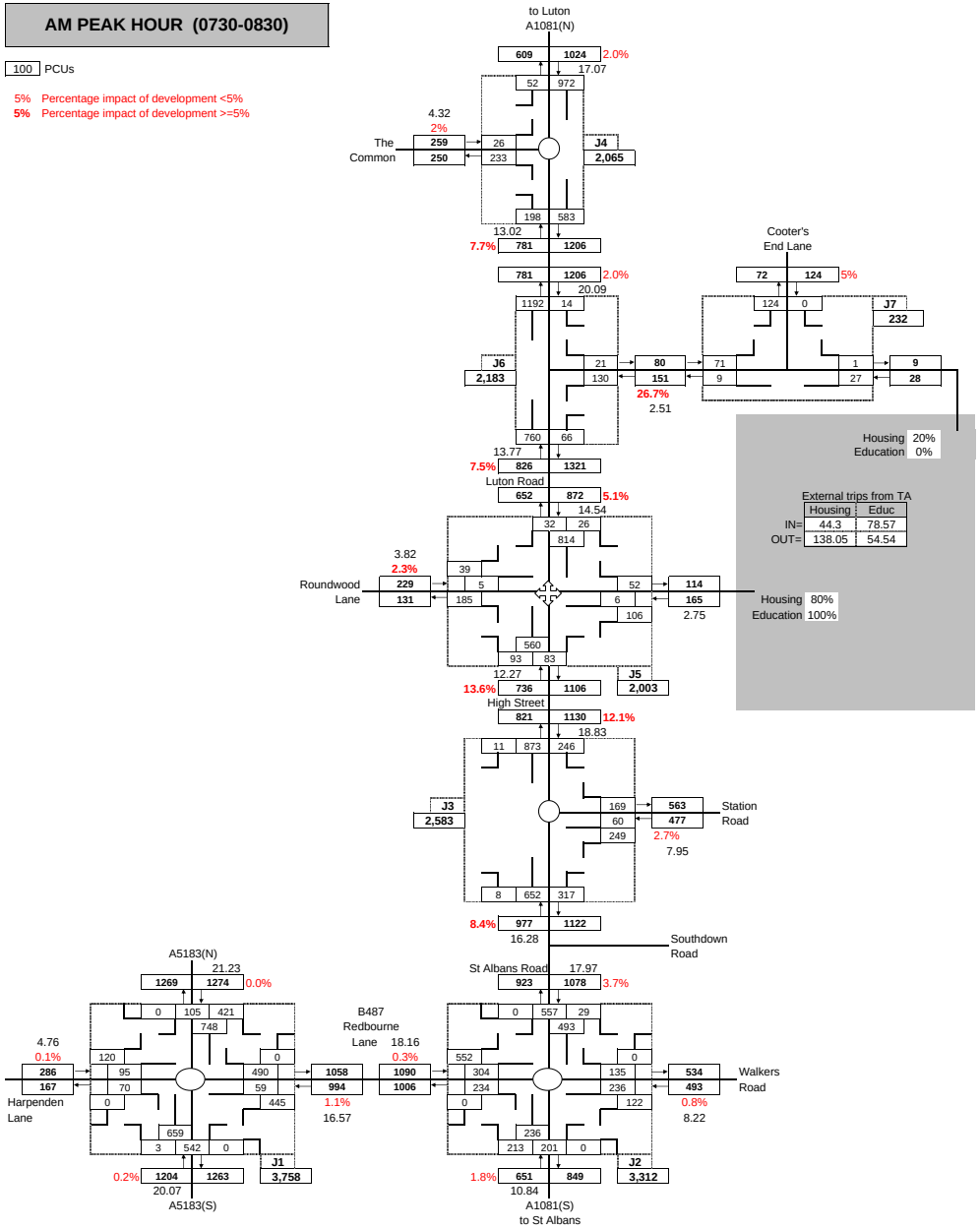


Distribution onto High St

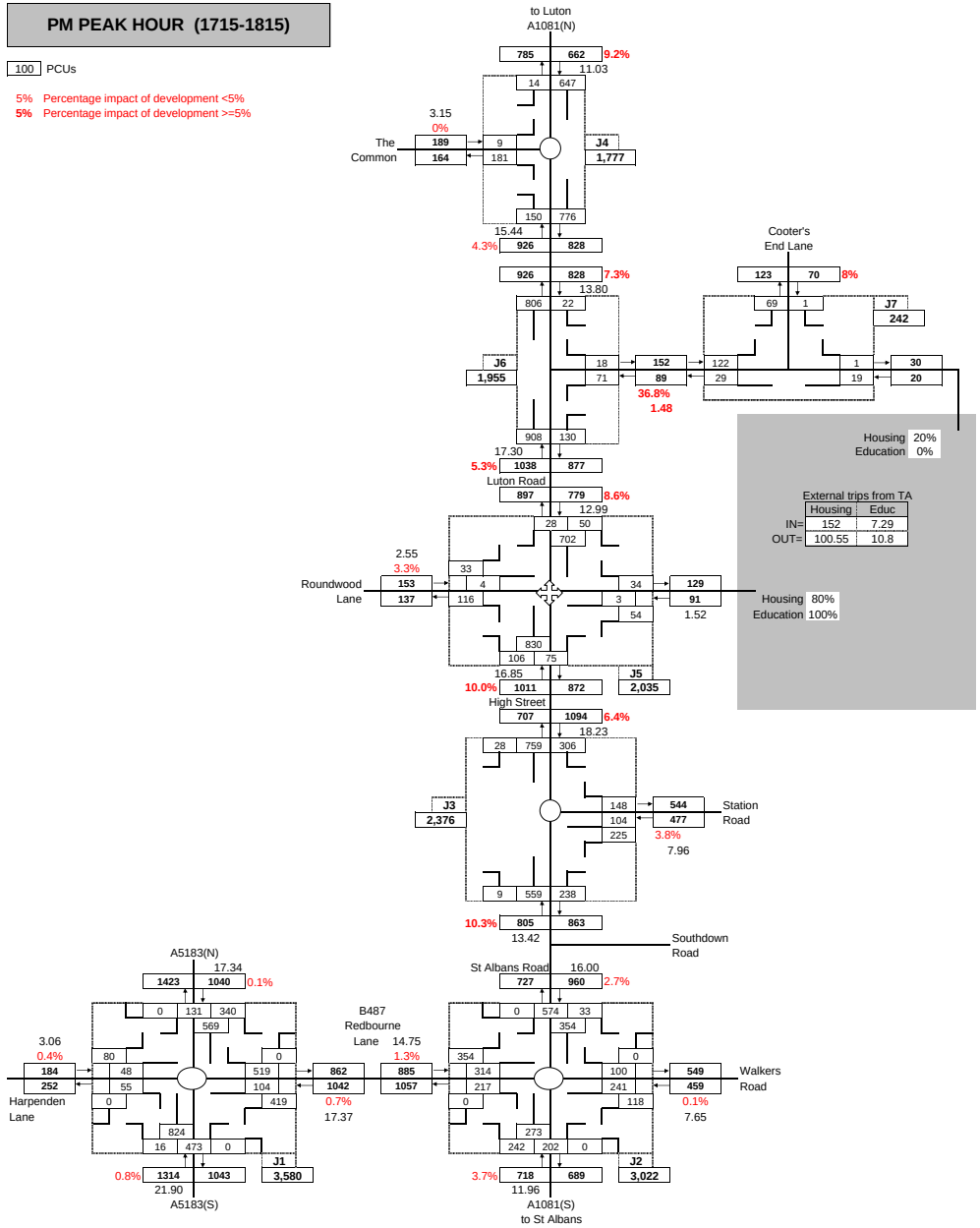
from turning Counts	from 2011 Census
28%	40%
23%	24%
49%	35%
100%	100%

Client:	**Commercial Estates Group**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	**10338 Land at Harpenden**	01/06/2016	
Title:	**2020 Forecast Traffic Flows with Development [PCUs]**	**Figure 7**	

AM PEAK HOUR (0730-0830)

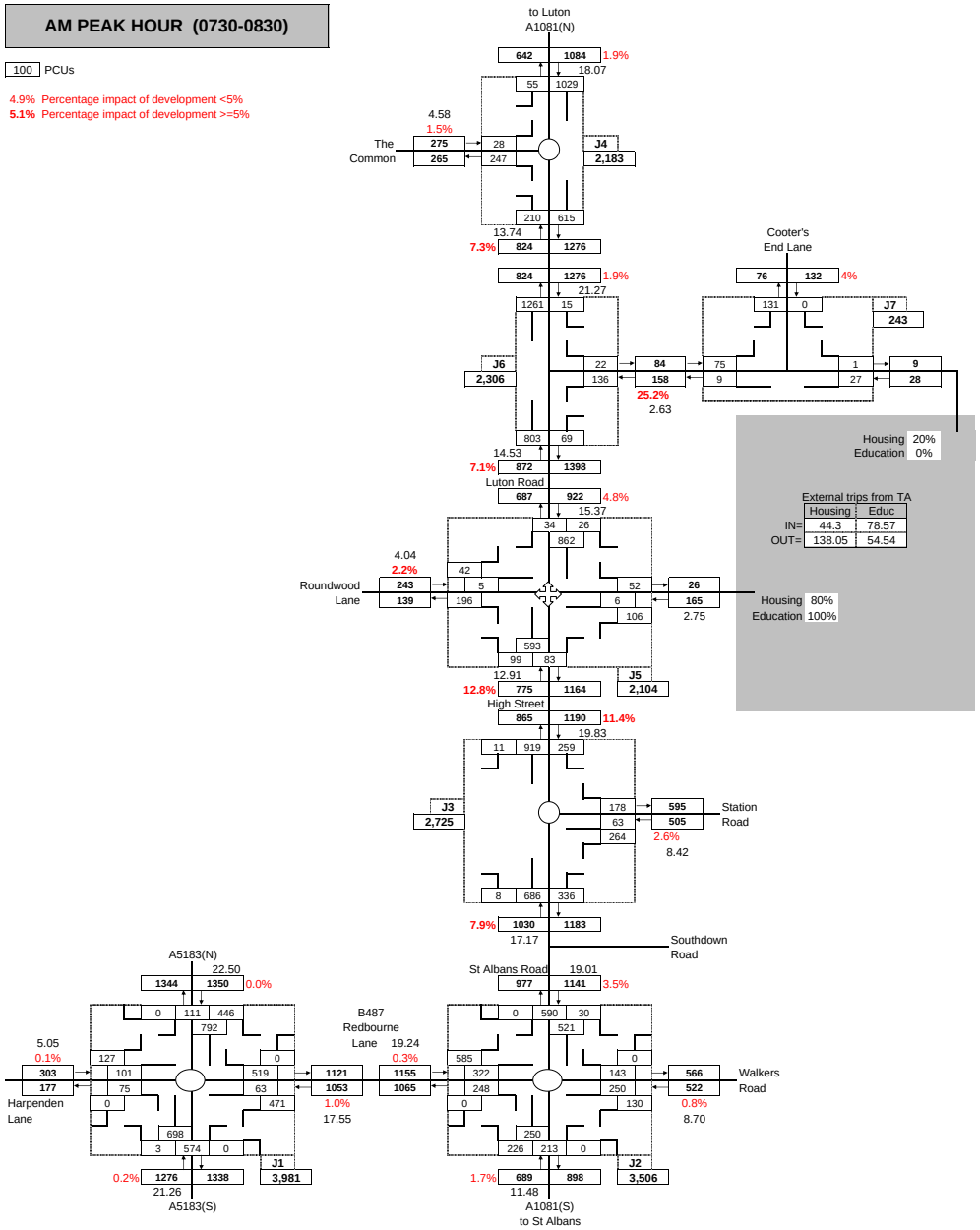


PM PEAK HOUR (1715-1815)

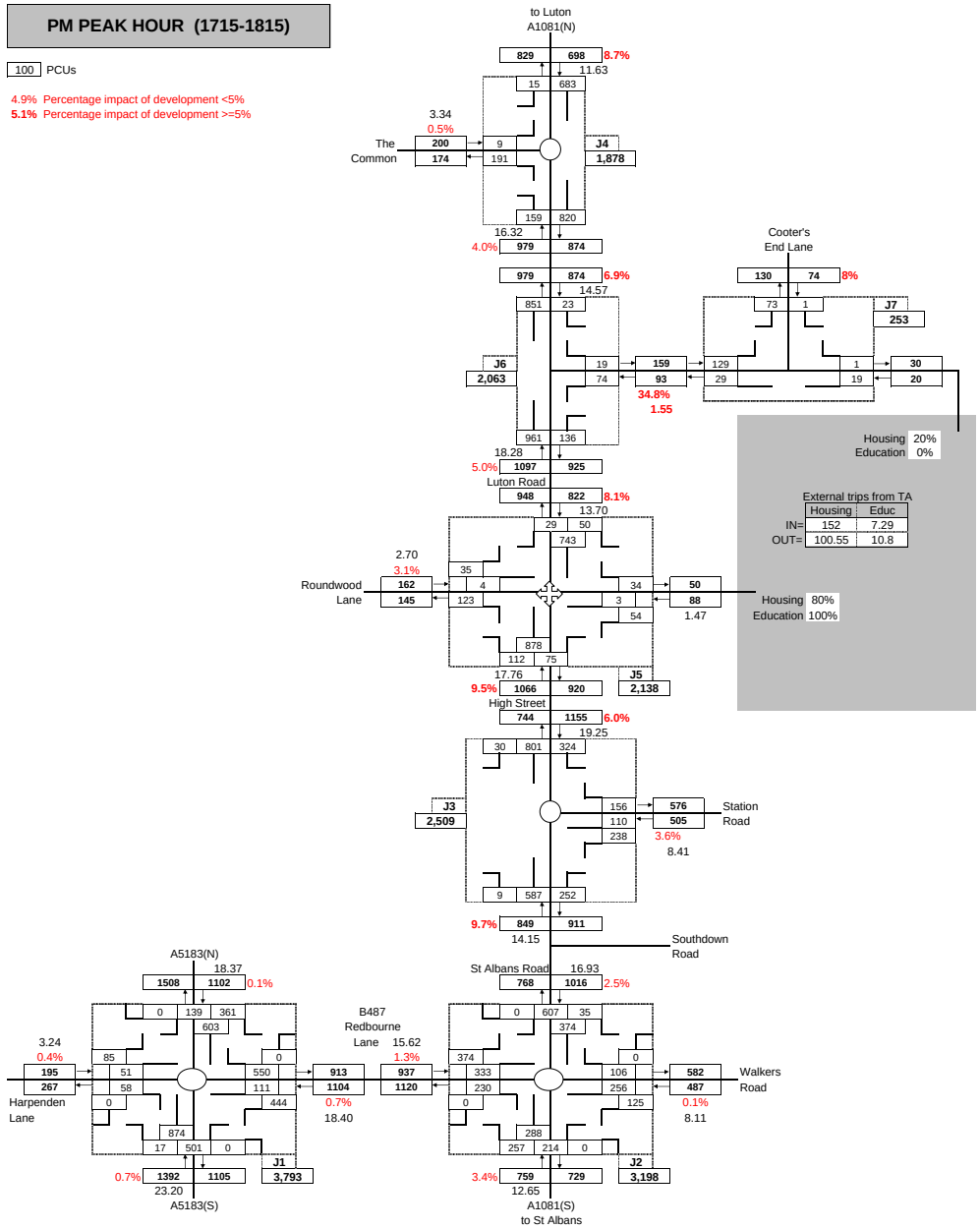


Client:	**Commercial Estates Group**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	**10338 Land at Harpenden**	01/06/2016	
Title:	**2025 Forecast Traffic Flows with Development [PCUs]**	**Figure 8**	

AM PEAK HOUR (0730-0830)

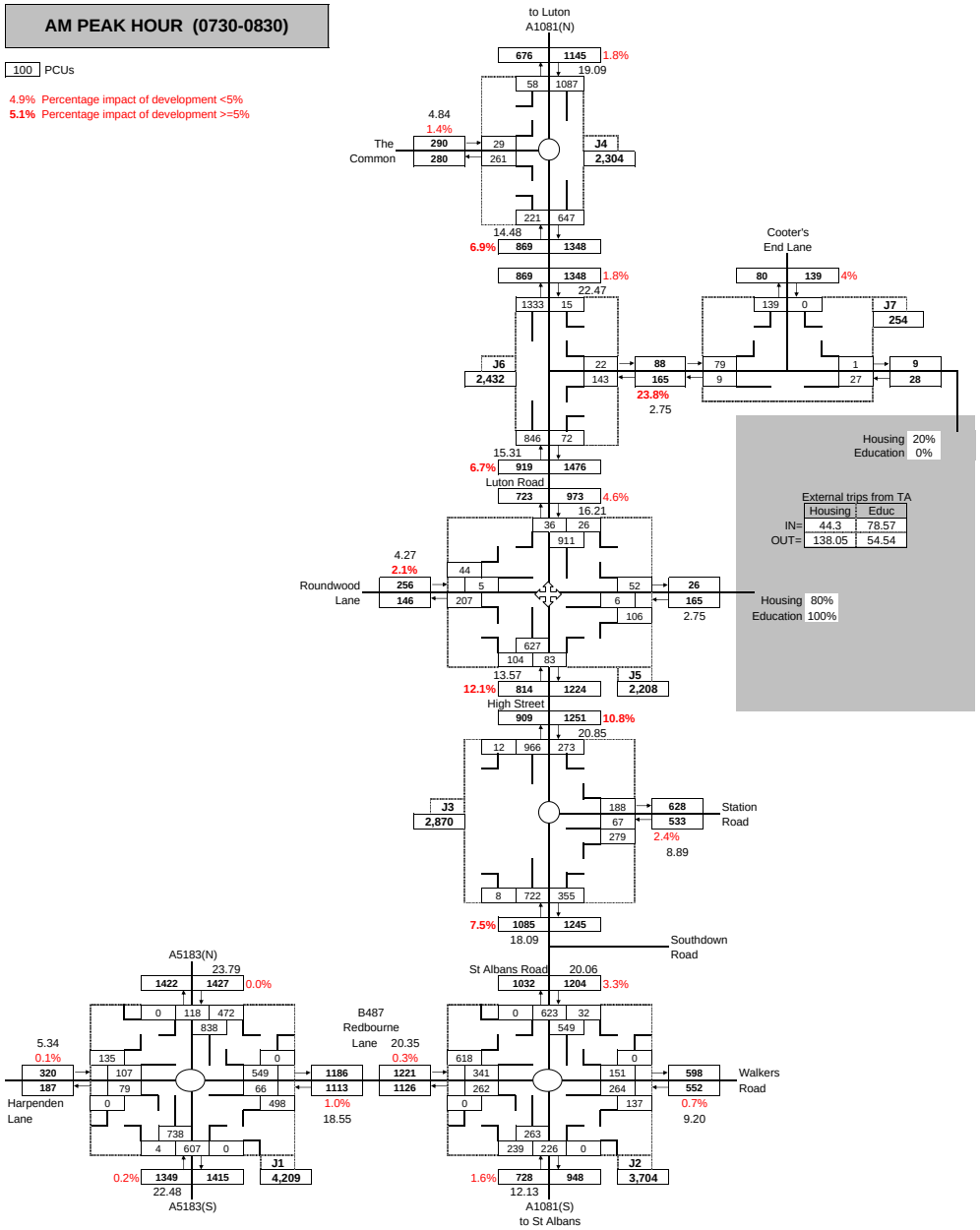


PM PEAK HOUR (1715-1815)

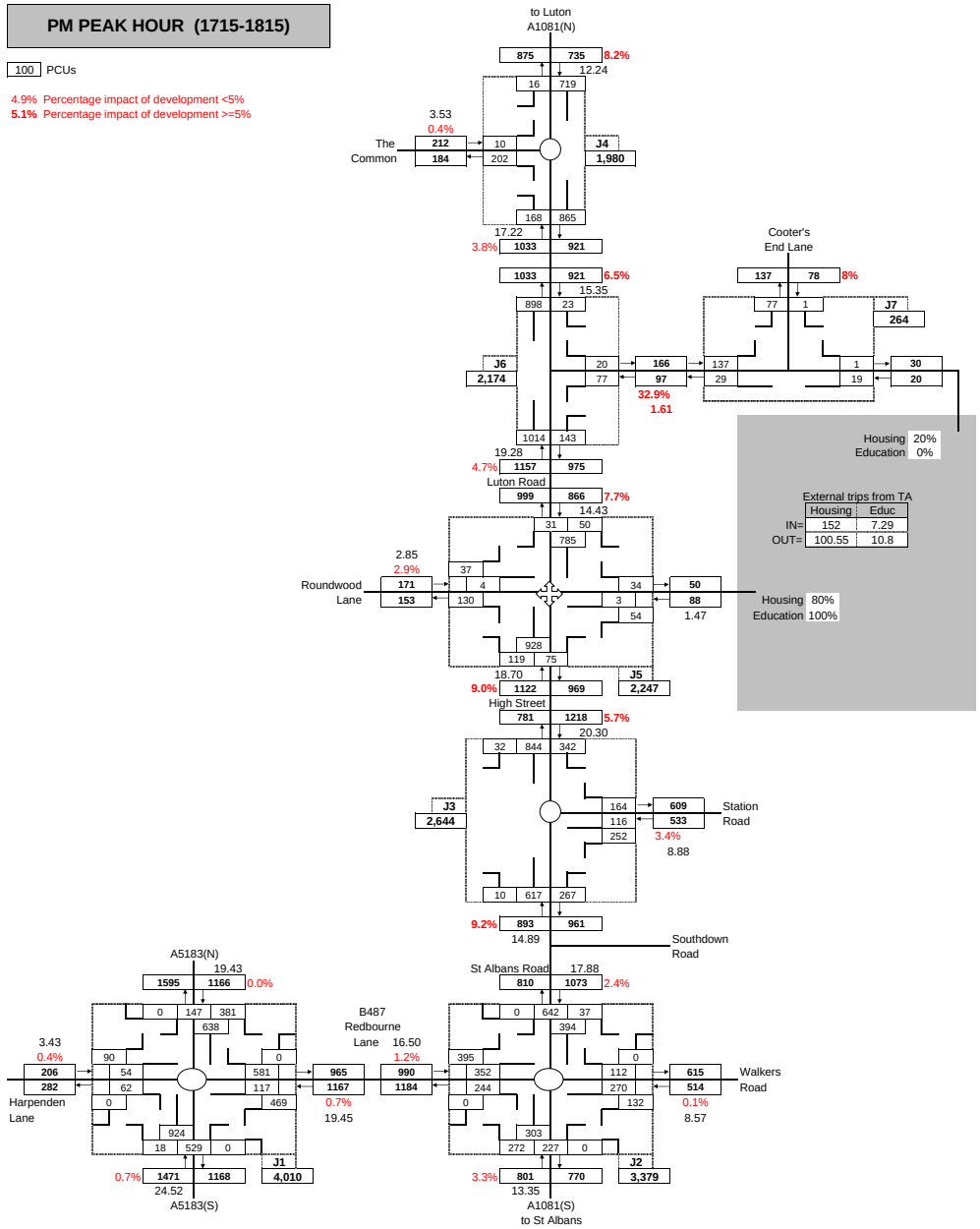


Client:	**Commercial Estates Group**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	**10338 Land at Harpenden**	01/06/2016	
Title:	**2031 Forecast Traffic Flows with Development [PCUs]**	**Figure 8**	

AM PEAK HOUR (0730-0830)



PM PEAK HOUR (1715-1815)

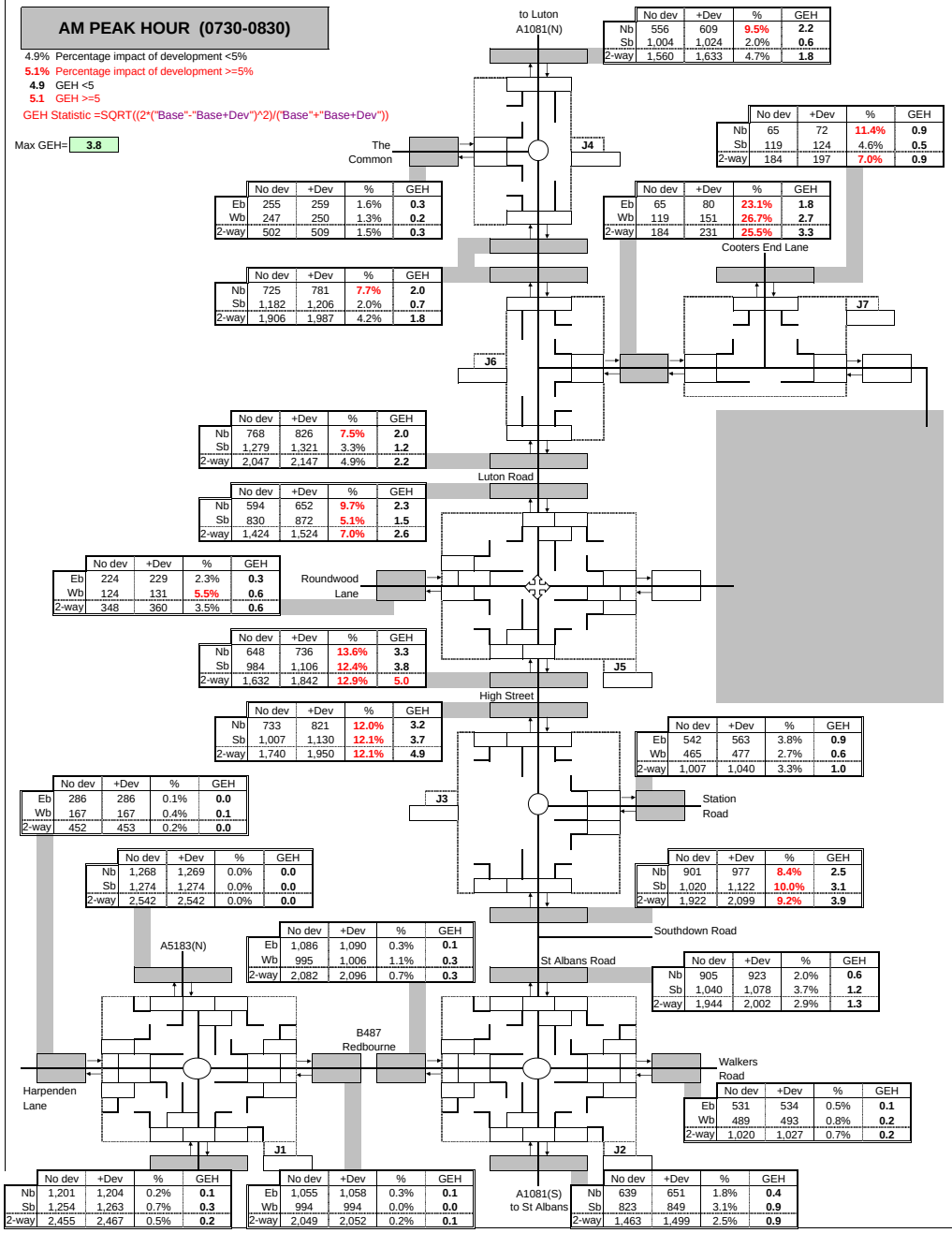


Client:	**Commercial Estates Group**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	**10338 Land at Harpenden**	01/06/2016	
Title:	**2020 Forecast Impact of Development Traffic**	**Figure 9**	

AM PEAK HOUR (0730-0830)

4.9% Percentage impact of development <5%
5.1% Percentage impact of development >=5%
4.9 GEH <5
5.1 GEH >=5
GEH Statistic =SQRT((2*("Base"-"Base+Dev")^2)/("Base"+"Base+Dev"))

Max GEH= 3.8



	No dev	+Dev	%	GEH
Nb	556	609	9.5%	2.2
Sb	1,004	1,024	2.0%	0.6
2-way	1,560	1,633	4.7%	1.8

	No dev	+Dev	%	GEH
Nb	65	72	11.4%	0.9
Sb	119	124	4.6%	0.5
2-way	184	197	7.0%	0.9

	No dev	+Dev	%	GEH
Eb	255	259	1.6%	0.3
Wb	247	250	1.3%	0.2
2-way	502	509	1.5%	0.3

	No dev	+Dev	%	GEH
Eb	65	80	23.1%	1.8
Wb	119	151	26.7%	2.7
2-way	184	231	25.5%	3.3

	No dev	+Dev	%	GEH
Nb	725	781	7.7%	2.0
Sb	1,182	1,206	2.0%	0.7
2-way	1,906	1,987	4.2%	1.8

	No dev	+Dev	%	GEH
Nb	768	826	7.5%	2.0
Sb	1,279	1,321	3.3%	1.2
2-way	2,047	2,147	4.9%	2.2

	No dev	+Dev	%	GEH
Nb	594	652	9.7%	2.3
Sb	830	872	5.1%	1.5
2-way	1,424	1,524	7.0%	2.6

	No dev	+Dev	%	GEH
Eb	224	229	2.3%	0.3
Wb	124	131	5.5%	0.6
2-way	348	360	3.5%	0.6

	No dev	+Dev	%	GEH
Nb	648	736	13.6%	3.3
Sb	984	1,106	12.4%	3.8
2-way	1,632	1,842	12.9%	5.0

	No dev	+Dev	%	GEH
Nb	733	821	12.0%	3.2
Sb	1,007	1,130	12.1%	3.7
2-way	1,740	1,950	12.1%	4.9

	No dev	+Dev	%	GEH
Eb	542	563	3.8%	0.9
Wb	465	477	2.7%	0.6
2-way	1,007	1,040	3.3%	1.0

	No dev	+Dev	%	GEH
Eb	286	286	0.1%	0.0
Wb	167	167	0.4%	0.1
2-way	452	453	0.2%	0.0

	No dev	+Dev	%	GEH
Nb	1,268	1,269	0.0%	0.0
Sb	1,274	1,274	0.0%	0.0
2-way	2,542	2,542	0.0%	0.0

	No dev	+Dev	%	GEH
Nb	901	977	8.4%	2.5
Sb	1,020	1,122	10.0%	3.1
2-way	1,922	2,099	9.2%	3.9

	No dev	+Dev	%	GEH
Eb	1,086	1,090	0.3%	0.1
Wb	995	1,006	1.1%	0.3
2-way	2,082	2,096	0.7%	0.3

	No dev	+Dev	%	GEH
Nb	905	923	2.0%	0.6
Sb	1,040	1,078	3.7%	1.2
2-way	1,944	2,002	2.9%	1.3

	No dev	+Dev	%	GEH
Eb	531	534	0.5%	0.1
Wb	489	493	0.8%	0.2
2-way	1,020	1,027	0.7%	0.2

	No dev	+Dev	%	GEH
Nb	1,201	1,204	0.2%	0.1
Sb	1,254	1,263	0.7%	0.3
2-way	2,455	2,467	0.5%	0.2

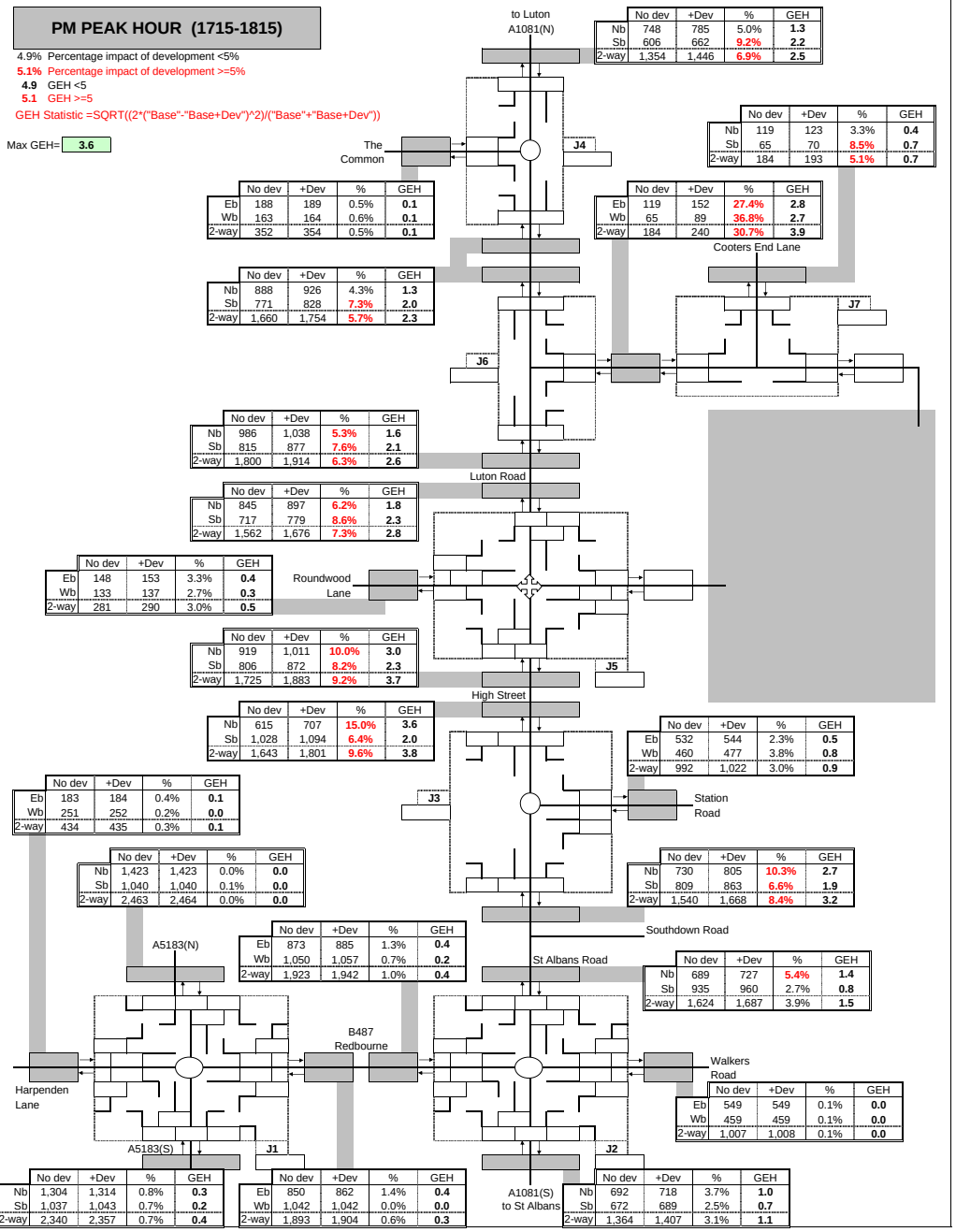
	No dev	+Dev	%	GEH
Eb	1,055	1,058	0.3%	0.1
Wb	994	994	0.0%	0.0
2-way	2,049	2,052	0.2%	0.1

	No dev	+Dev	%	GEH
Nb	639	651	1.8%	0.4
Sb	823	849	3.1%	0.9
2-way	1,463	1,499	2.5%	0.9

PM PEAK HOUR (1715-1815)

4.9% Percentage impact of development <5%
5.1% Percentage impact of development >=5%
4.9 GEH <5
5.1 GEH >=5
GEH Statistic =SQRT((2*("Base"-"Base+Dev")^2)/("Base"+"Base+Dev"))

Max GEH= 3.6



	No dev	+Dev	%	GEH
Nb	748	785	5.0%	1.3
Sb	606	662	9.2%	2.2
2-way	1,354	1,446	6.9%	2.5

	No dev	+Dev	%	GEH
Nb	119	123	3.3%	0.4
Sb	65	70	8.5%	0.7
2-way	184	193	5.1%	0.7

	No dev	+Dev	%	GEH
Eb	188	189	0.5%	0.1
Wb	163	164	0.6%	0.1
2-way	352	354	0.5%	0.1

	No dev	+Dev	%	GEH
Eb	119	152	27.4%	2.8
Wb	65	89	36.8%	2.7
2-way	184	240	30.7%	3.9

	No dev	+Dev	%	GEH
Nb	888	926	4.3%	1.3
Sb	771	828	7.3%	2.0
2-way	1,660	1,754	5.7%	2.3

	No dev	+Dev	%	GEH
Nb	986	1,038	5.3%	1.6
Sb	815	877	7.6%	2.1
2-way	1,800	1,914	6.3%	2.6

	No dev	+Dev	%	GEH
Nb	845	897	6.2%	1.8
Sb	717	779	8.6%	2.3
2-way	1,562	1,676	7.3%	2.8

	No dev	+Dev	%	GEH
Eb	148	153	3.3%	0.4
Wb	133	137	2.7%	0.3
2-way	281	290	3.0%	0.5

	No dev	+Dev	%	GEH
Nb	919	1,011	10.0%	3.0
Sb	806	872	8.2%	2.3
2-way	1,725	1,883	9.2%	3.7

	No dev	+Dev	%	GEH
Nb	615	707	15.0%	3.6
Sb	1,028	1,094	6.4%	2.0
2-way	1,643	1,801	9.6%	3.8

	No dev	+Dev	%	GEH
Eb	532	544	2.3%	0.5
Wb	460	477	3.8%	0.8
2-way	992	1,022	3.0%	0.9

	No dev	+Dev	%	GEH
Eb	183	184	0.4%	0.1
Wb	251	252	0.2%	0.0
2-way	434	435	0.3%	0.1

	No dev	+Dev	%	GEH
Nb	1,423	1,423	0.0%	0.0
Sb	1,040	1,040	0.1%	0.0
2-way	2,463	2,464	0.0%	0.0

	No dev	+Dev	%	GEH
Nb	730	805	10.3%	2.7
Sb	809	863	6.6%	1.9
2-way	1,540	1,668	8.4%	3.2

	No dev	+Dev	%	GEH
Eb	873	885	1.3%	0.4
Wb	1,050	1,057	0.7%	0.2
2-way	1,923	1,942	1.0%	0.4

	No dev	+Dev	%	GEH
Nb	689	727	5.4%	1.4
Sb	935	960	2.7%	0.8
2-way	1,624	1,687	3.9%	1.5

	No dev	+Dev	%	GEH
Eb	549	549	0.1%	0.0
Wb	459	459	0.1%	0.0
2-way	1,007	1,008	0.1%	0.0

	No dev	+Dev	%	GEH
Nb	1,304	1,314	0.8%	0.3
Sb	1,037	1,043	0.7%	0.2
2-way	2,340	2,357	0.7%	0.4

	No dev	+Dev	%	GEH
Eb	850	862	1.4%	0.4
Wb	1,042	1,042	0.0%	0.0
2-way	1,893	1,904	0.6%	0.3

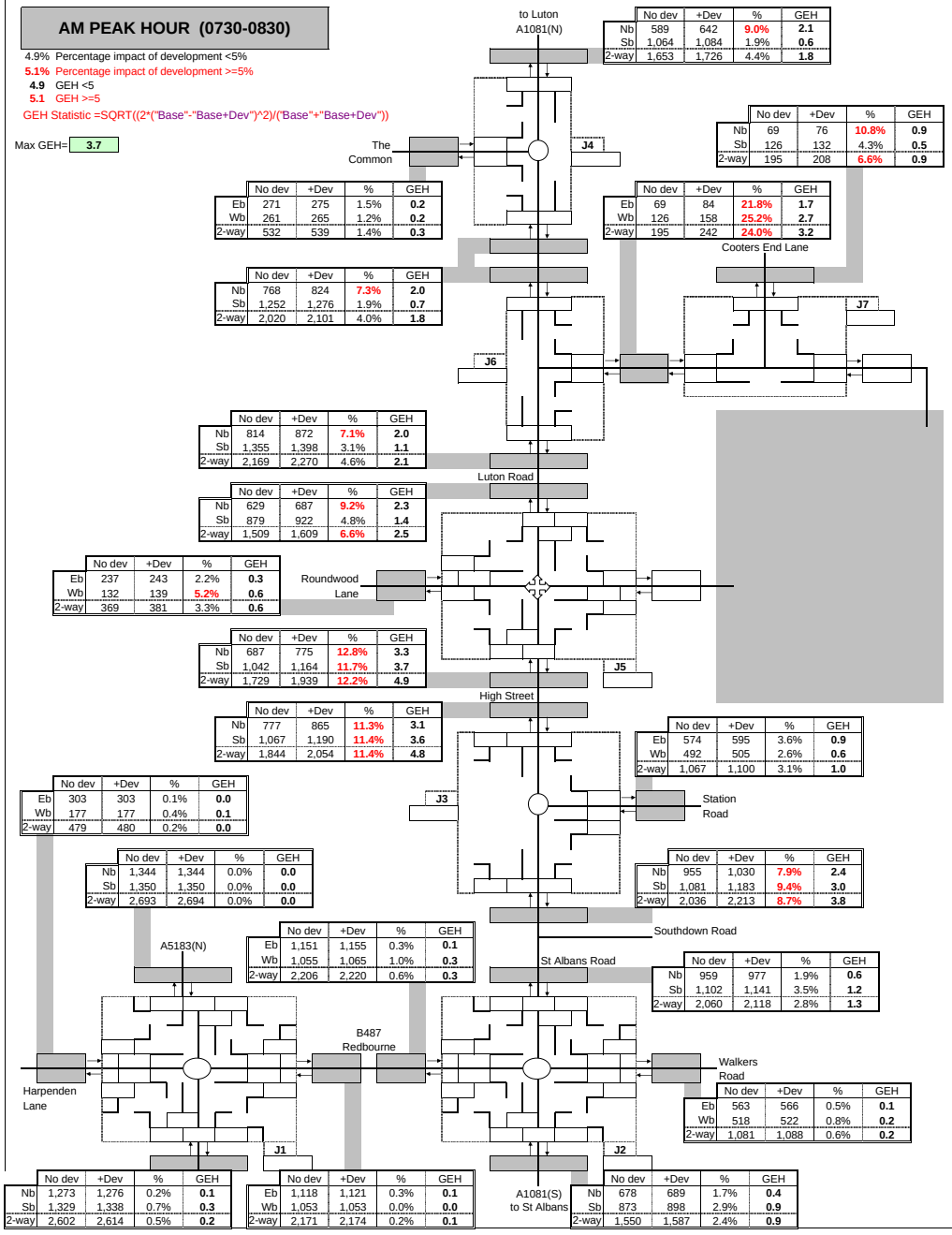
	No dev	+Dev	%	GEH
Nb	692	718	3.7%	1.0
Sb	672	689	2.5%	0.7
2-way	1,364	1,407	3.1%	1.1

Client:	**Commercial Estates Group**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	**10338 Land at Harpenden**	01/06/2016	
Title:	**2025 Forecast Impact of Development Traffic**	**Figure 10**	

AM PEAK HOUR (0730-0830)

4.9% Percentage impact of development <5%
5.1% Percentage impact of development >=5%
4.9 GEH <5
5.1 GEH >=5
GEH Statistic =SQRT((2*("Base"-"Base+Dev")^2)/("Base"+"Base+Dev"))

Max GEH= 3.7



	No dev	+Dev	%	GEH
Nb	589	642	9.0%	2.1
Sb	1,064	1,084	1.9%	0.6
2-way	1,653	1,726	4.4%	1.8

	No dev	+Dev	%	GEH
Nb	69	76	10.8%	0.9
Sb	126	132	4.3%	0.5
2-way	195	208	6.6%	0.9

	No dev	+Dev	%	GEH
Eb	271	275	1.5%	0.2
Wb	261	265	1.2%	0.2
2-way	532	539	1.4%	0.3

	No dev	+Dev	%	GEH
Eb	69	84	21.8%	1.7
Wb	126	158	25.2%	2.7
2-way	195	242	24.0%	3.2

	No dev	+Dev	%	GEH
Nb	768	824	7.3%	2.0
Sb	1,252	1,276	1.9%	0.7
2-way	2,020	2,101	4.0%	1.8

	No dev	+Dev	%	GEH
Nb	814	872	7.1%	2.0
Sb	1,355	1,398	3.1%	1.1
2-way	2,169	2,270	4.6%	2.1

	No dev	+Dev	%	GEH
Nb	629	687	9.2%	2.3
Sb	879	922	4.8%	1.4
2-way	1,509	1,609	6.6%	2.5

	No dev	+Dev	%	GEH
Eb	237	243	2.2%	0.3
Wb	132	139	5.2%	0.6
2-way	369	381	3.3%	0.6

	No dev	+Dev	%	GEH
Nb	687	775	12.8%	3.3
Sb	1,042	1,164	11.7%	3.7
2-way	1,729	1,939	12.2%	4.9

	No dev	+Dev	%	GEH
Nb	777	865	11.3%	3.1
Sb	1,067	1,190	11.4%	3.6
2-way	1,844	2,054	11.4%	4.8

	No dev	+Dev	%	GEH
Eb	574	595	3.6%	0.9
Wb	492	505	2.6%	0.6
2-way	1,067	1,100	3.1%	1.0

	No dev	+Dev	%	GEH
Eb	303	303	0.1%	0.0
Wb	177	177	0.4%	0.1
2-way	479	480	0.2%	0.0

	No dev	+Dev	%	GEH
Nb	1,344	1,344	0.0%	0.0
Sb	1,350	1,350	0.0%	0.0
2-way	2,693	2,694	0.0%	0.0

	No dev	+Dev	%	GEH
Nb	955	1,030	7.9%	2.4
Sb	1,081	1,183	9.4%	3.0
2-way	2,036	2,213	8.7%	3.8

	No dev	+Dev	%	GEH
Eb	1,151	1,155	0.3%	0.1
Wb	1,055	1,065	1.0%	0.3
2-way	2,206	2,220	0.6%	0.3

	No dev	+Dev	%	GEH
Nb	959	977	1.9%	0.6
Sb	1,102	1,141	3.5%	1.2
2-way	2,060	2,118	2.8%	1.3

	No dev	+Dev	%	GEH
Eb	563	566	0.5%	0.1
Wb	518	522	0.8%	0.2
2-way	1,081	1,088	0.6%	0.2

	No dev	+Dev	%	GEH
Nb	1,273	1,276	0.2%	0.1
Sb	1,329	1,338	0.7%	0.3
2-way	2,602	2,614	0.5%	0.2

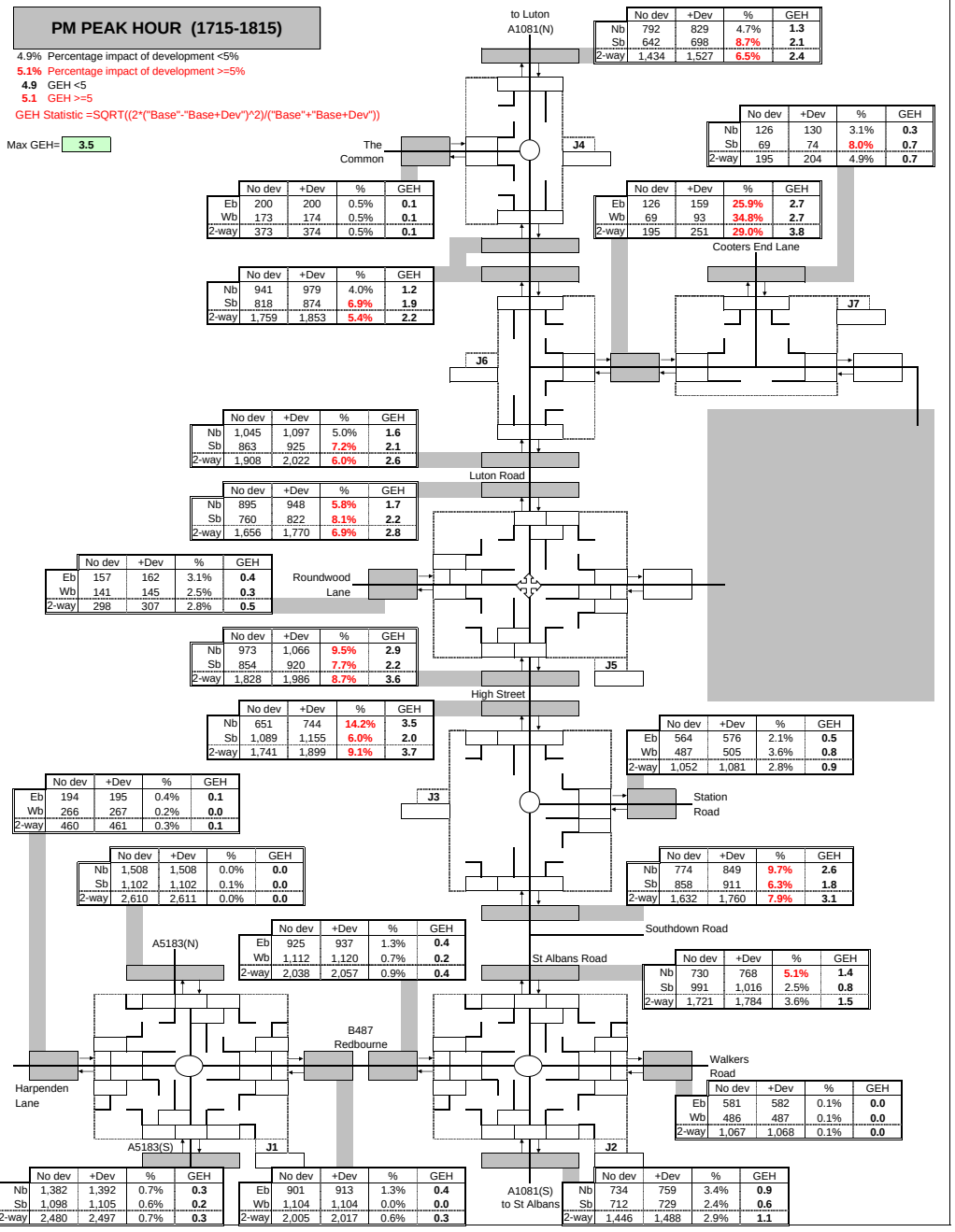
	No dev	+Dev	%	GEH
Eb	1,118	1,121	0.3%	0.1
Wb	1,053	1,053	0.0%	0.0
2-way	2,171	2,174	0.2%	0.1

	No dev	+Dev	%	GEH
Nb	678	689	1.7%	0.4
Sb	873	898	2.9%	0.9
2-way	1,550	1,587	2.4%	0.9

PM PEAK HOUR (1715-1815)

4.9% Percentage impact of development <5%
5.1% Percentage impact of development >=5%
4.9 GEH <5
5.1 GEH >=5
GEH Statistic =SQRT((2*("Base"-"Base+Dev")^2)/("Base"+"Base+Dev"))

Max GEH= 3.5



	No dev	+Dev	%	GEH
Nb	792	829	4.7%	1.3
Sb	642	698	8.7%	2.1
2-way	1,434	1,527	6.5%	2.4

	No dev	+Dev	%	GEH
Nb	126	130	3.1%	0.3
Sb	69	74	8.0%	0.7
2-way	195	204	4.9%	0.7

	No dev	+Dev	%	GEH
Eb	200	200	0.5%	0.1
Wb	173	174	0.5%	0.1
2-way	373	374	0.5%	0.1

	No dev	+Dev	%	GEH
Eb	126	159	25.9%	2.7
Wb	69	93	34.8%	2.7
2-way	195	251	29.0%	3.8

	No dev	+Dev	%	GEH
Nb	941	979	4.0%	1.2
Sb	818	874	6.9%	1.9
2-way	1,759	1,853	5.4%	2.2

	No dev	+Dev	%	GEH
Nb	1,045	1,097	5.0%	1.6
Sb	863	925	7.2%	2.1
2-way	1,908	2,022	6.0%	2.6

	No dev	+Dev	%	GEH
Nb	895	948	5.8%	1.7
Sb	760	822	8.1%	2.2
2-way	1,656	1,770	6.9%	2.8

	No dev	+Dev	%	GEH
Eb	157	162	3.1%	0.4
Wb	141	145	2.5%	0.3
2-way	298	307	2.8%	0.5

	No dev	+Dev	%	GEH
Nb	973	1,066	9.5%	2.9
Sb	854	920	7.7%	2.2
2-way	1,828	1,986	8.7%	3.6

	No dev	+Dev	%	GEH
Nb	651	744	14.2%	3.5
Sb	1,089	1,155	6.0%	2.0
2-way	1,741	1,899	9.1%	3.7

	No dev	+Dev	%	GEH
Eb	564	576	2.1%	0.5
Wb	487	505	3.6%	0.8
2-way	1,052	1,081	2.8%	0.9

	No dev	+Dev	%	GEH
Eb	194	195	0.4%	0.1
Wb	266	267	0.2%	0.0
2-way	460	461	0.3%	0.1

	No dev	+Dev	%	GEH
Nb	1,508	1,508	0.0%	0.0
Sb	1,102	1,102	0.1%	0.0
2-way	2,610	2,611	0.0%	0.0

	No dev	+Dev	%	GEH
Nb	774	849	9.7%	2.6
Sb	858	911	6.3%	1.8
2-way	1,632	1,760	7.9%	3.1

	No dev	+Dev	%	GEH
Eb	925	937	1.3%	0.4
Wb	1,112	1,120	0.7%	0.2
2-way	2,038	2,057	0.9%	0.4

	No dev	+Dev	%	GEH
Nb	730	768	5.1%	1.4
Sb	991	1,016	2.5%	0.8
2-way	1,721	1,784	3.6%	1.5

	No dev	+Dev	%	GEH
Eb	581	582	0.1%	0.0
Wb	486	487	0.1%	0.0
2-way	1,067	1,068	0.1%	0.0

	No dev	+Dev	%	GEH
Nb	1,382	1,392	0.7%	0.3
Sb	1,098	1,105	0.6%	0.2
2-way	2,480	2,497	0.7%	0.3

	No dev	+Dev	%	GEH
Eb	901	913	1.3%	0.4
Wb	1,104	1,104	0.0%	0.0
2-way	2,005	2,017	0.6%	0.3

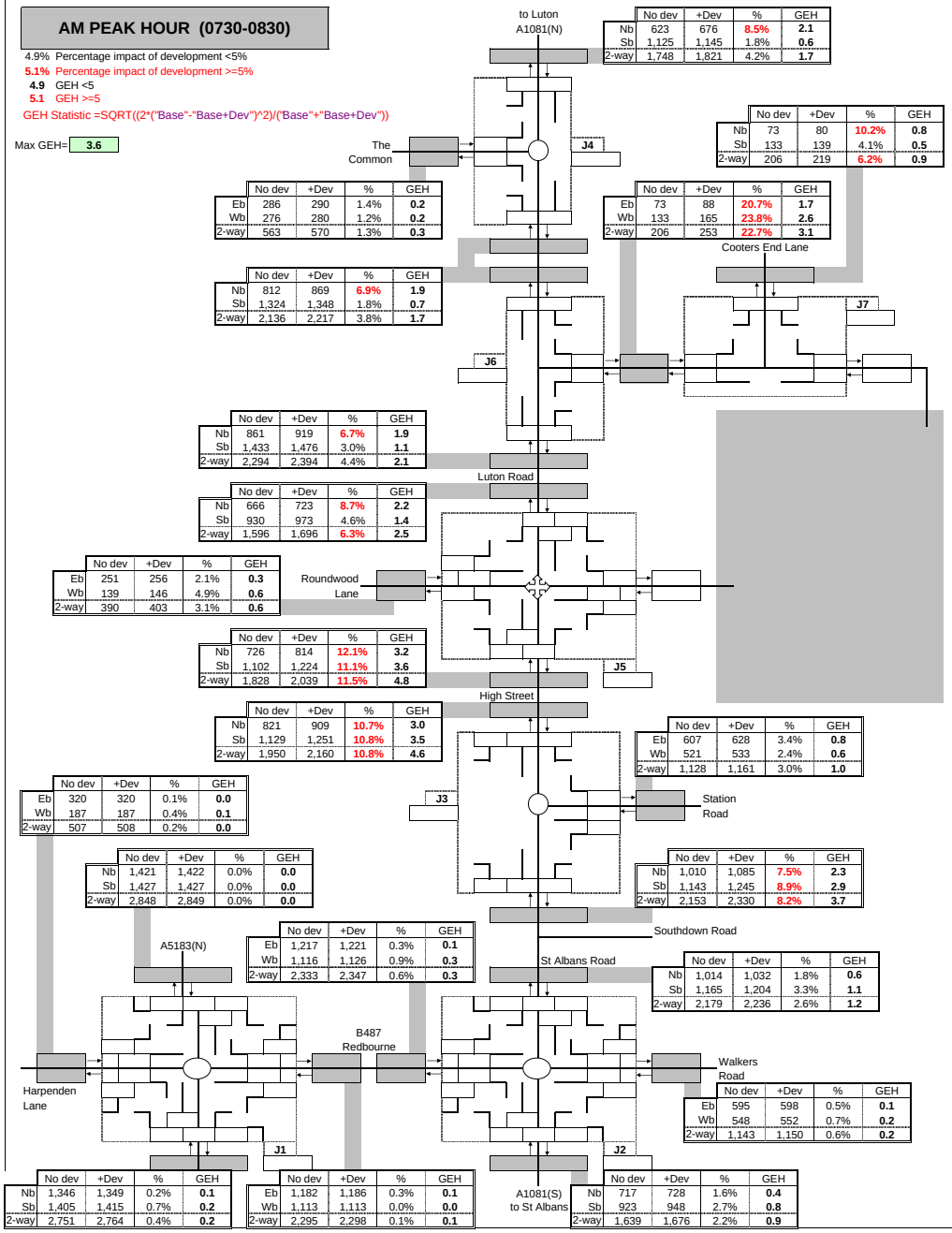
	No dev	+Dev	%	GEH
Nb	734	759	3.4%	0.9
Sb	712	729	2.4%	0.6
2-way	1,446	1,488	2.9%	1.1

Client:	**Commercial Estates Group**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	**10338 Land at Harpenden**	01/06/2016	
Title:	**2031 Forecast Impact of Development Traffic**	**Figure 11**	

AM PEAK HOUR (0730-0830)

4.9% Percentage impact of development <5%
5.1% Percentage impact of development >=5%
4.9 GEH <5
5.1 GEH >=5
GEH Statistic =SQRT((2*("Base"-"Base+Dev")^2)/("Base"+"Base+Dev"))

Max GEH= 3.6



	No dev	+Dev	%	GEH
Nb	623	676	8.5%	2.1
Sb	1,125	1,145	1.8%	0.6
2-way	1,748	1,821	4.2%	1.7

	No dev	+Dev	%	GEH
Nb	73	80	10.2%	0.8
Sb	133	139	4.1%	0.5
2-way	206	219	6.2%	0.9

	No dev	+Dev	%	GEH
Eb	286	290	1.4%	0.2
Wb	276	280	1.2%	0.2
2-way	563	570	1.3%	0.3

	No dev	+Dev	%	GEH
Eb	73	88	20.7%	1.7
Wb	133	165	23.8%	2.6
2-way	206	253	22.7%	3.1

	No dev	+Dev	%	GEH
Nb	812	869	6.9%	1.9
Sb	1,324	1,348	1.8%	0.7
2-way	2,136	2,217	3.8%	1.7

	No dev	+Dev	%	GEH
Nb	861	919	6.7%	1.9
Sb	1,433	1,476	3.0%	1.1
2-way	2,294	2,394	4.4%	2.1

	No dev	+Dev	%	GEH
Nb	666	723	8.7%	2.2
Sb	930	973	4.6%	1.4
2-way	1,596	1,696	6.3%	2.5

	No dev	+Dev	%	GEH
Eb	251	256	2.1%	0.3
Wb	139	146	4.9%	0.6
2-way	390	403	3.1%	0.6

	No dev	+Dev	%	GEH
Nb	726	814	12.1%	3.2
Sb	1,102	1,224	11.1%	3.6
2-way	1,828	2,039	11.5%	4.8

	No dev	+Dev	%	GEH
Nb	821	909	10.7%	3.0
Sb	1,129	1,251	10.8%	3.5
2-way	1,950	2,160	10.8%	4.6

	No dev	+Dev	%	GEH
Eb	607	628	3.4%	0.8
Wb	521	533	2.4%	0.6
2-way	1,128	1,161	3.0%	1.0

	No dev	+Dev	%	GEH
Eb	320	320	0.1%	0.0
Wb	187	187	0.4%	0.1
2-way	507	508	0.2%	0.0

	No dev	+Dev	%	GEH
Nb	1,421	1,422	0.0%	0.0
Sb	1,427	1,427	0.0%	0.0
2-way	2,848	2,849	0.0%	0.0

	No dev	+Dev	%	GEH
Nb	1,010	1,085	7.5%	2.3
Sb	1,143	1,245	8.9%	2.9
2-way	2,153	2,330	8.2%	3.7

	No dev	+Dev	%	GEH
Eb	1,217	1,221	0.3%	0.1
Wb	1,116	1,126	0.9%	0.3
2-way	2,333	2,347	0.6%	0.3

	No dev	+Dev	%	GEH
Nb	1,014	1,032	1.8%	0.6
Sb	1,165	1,204	3.3%	1.1
2-way	2,179	2,236	2.6%	1.2

	No dev	+Dev	%	GEH
Eb	595	598	0.5%	0.1
Wb	548	552	0.7%	0.2
2-way	1,143	1,150	0.6%	0.2

	No dev	+Dev	%	GEH
Nb	1,346	1,349	0.2%	0.1
Sb	1,405	1,415	0.7%	0.2
2-way	2,751	2,764	0.4%	0.2

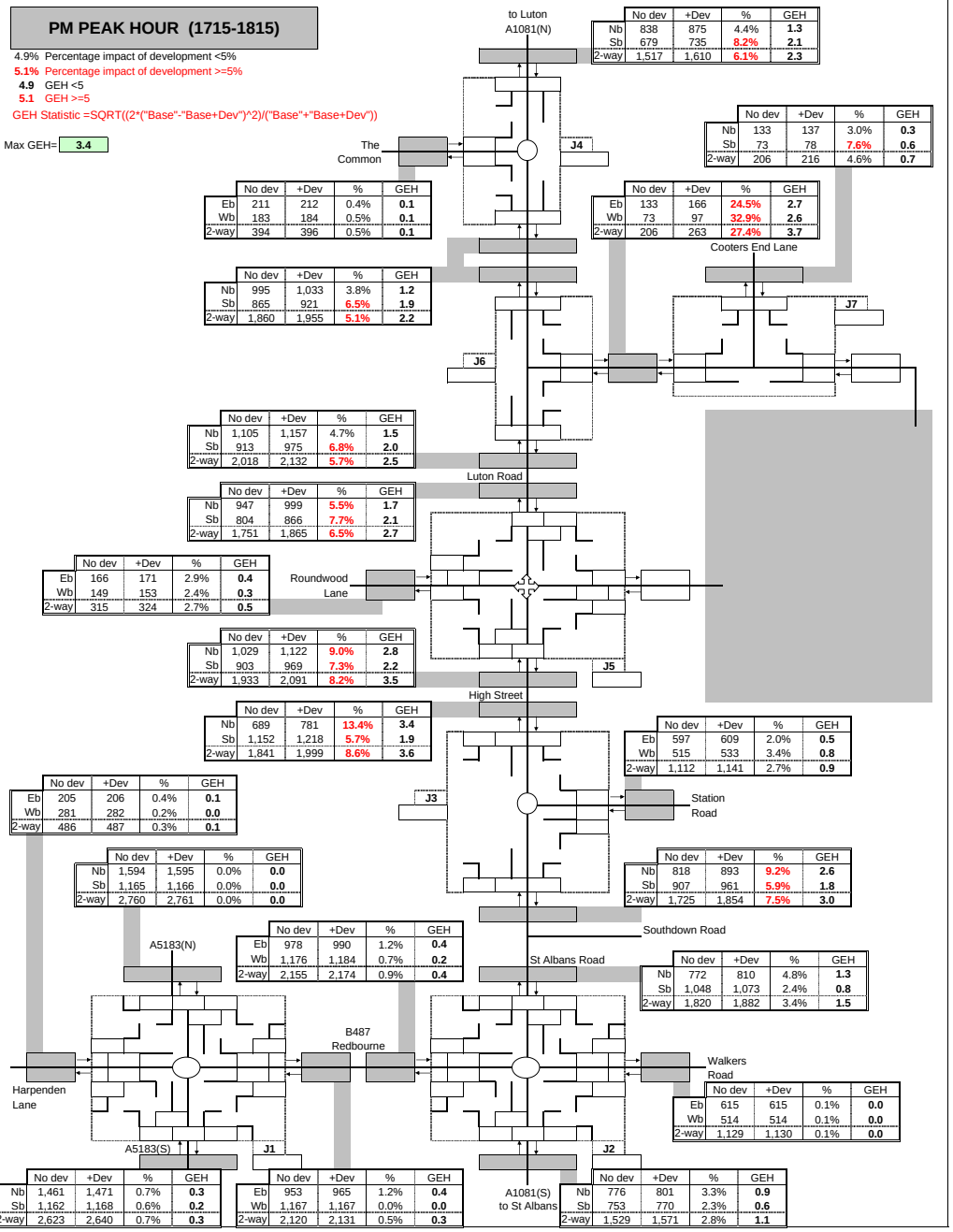
	No dev	+Dev	%	GEH
Eb	1,182	1,186	0.3%	0.1
Wb	1,113	1,113	0.0%	0.0
2-way	2,295	2,298	0.1%	0.1

	No dev	+Dev	%	GEH
Nb	717	728	1.6%	0.4
Sb	923	948	2.7%	0.8
2-way	1,639	1,676	2.2%	0.9

PM PEAK HOUR (1715-1815)

4.9% Percentage impact of development <5%
5.1% Percentage impact of development >=5%
4.9 GEH <5
5.1 GEH >=5
GEH Statistic =SQRT((2*("Base"-"Base+Dev")^2)/("Base"+"Base+Dev"))

Max GEH= 3.4



	No dev	+Dev	%	GEH
Nb	838	875	4.4%	1.3
Sb	679	735	8.2%	2.1
2-way	1,517	1,610	6.1%	2.3

	No dev	+Dev	%	GEH
Nb	133	137	3.0%	0.3
Sb	73	78	7.6%	0.6
2-way	206	216	4.6%	0.7

	No dev	+Dev	%	GEH
Eb	211	212	0.4%	0.1
Wb	183	184	0.5%	0.1
2-way	394	396	0.5%	0.1

	No dev	+Dev	%	GEH
Eb	133	166	24.5%	2.7
Wb	73	97	32.9%	2.6
2-way	206	263	27.4%	3.7

	No dev	+Dev	%	GEH
Nb	995	1,033	3.8%	1.2
Sb	865	921	6.5%	1.9
2-way	1,860	1,955	5.1%	2.2

	No dev	+Dev	%	GEH
Nb	1,105	1,157	4.7%	1.5
Sb	913	975	6.8%	2.0
2-way	2,018	2,132	5.7%	2.5

	No dev	+Dev	%	GEH
Nb	947	999	5.5%	1.7
Sb	804	866	7.7%	2.1
2-way	1,751	1,865	6.5%	2.7

	No dev	+Dev	%	GEH
Eb	166	171	2.9%	0.4
Wb	149	153	2.4%	0.3
2-way	315	324	2.7%	0.5

	No dev	+Dev	%	GEH
Nb	1,029	1,122	9.0%	2.8
Sb	903	969	7.3%	2.2
2-way	1,933	2,091	8.2%	3.5

	No dev	+Dev	%	GEH
Nb	689	781	13.4%	3.4
Sb	1,152	1,218	5.7%	1.9
2-way	1,841	1,999	8.6%	3.6

	No dev	+Dev	%	GEH
Eb	597	609	2.0%	0.5
Wb	515	533	3.4%	0.8
2-way	1,112	1,141	2.7%	0.9

	No dev	+Dev	%	GEH
Eb	205	206	0.4%	0.1
Wb	281	282	0.2%	0.0
2-way	486	487	0.3%	0.1

	No dev	+Dev	%	GEH
Nb	1,594	1,595	0.0%	0.0
Sb	1,165	1,166	0.0%	0.0
2-way	2,760	2,761	0.0%	0.0

	No dev	+Dev	%	GEH
Nb	818	893	9.2%	2.6
Sb	907	961	5.9%	1.8
2-way	1,725	1,854	7.5%	3.0

	No dev	+Dev	%	GEH
Eb	978	990	1.2%	0.4
Wb	1,176	1,184	0.7%	0.2
2-way	2,155	2,174	0.9%	0.4

	No dev	+Dev	%	GEH
Nb	772	810	4.8%	1.3
Sb	1,048	1,073	2.4%	0.8
2-way	1,820	1,882	3.4%	1.5

	No dev	+Dev	%	GEH
Eb	615	615	0.1%	0.0
Wb	514	514	0.1%	0.0
2-way	1,129	1,130	0.1%	0.0

	No dev	+Dev	%	GEH
Nb	1,461	1,471	0.7%	0.3
Sb	1,162	1,168	0.6%	0.2
2-way	2,623	2,640	0.7%	0.3

	No dev	+Dev	%	GEH
Eb	953	965	1.2%	0.4
Wb	1,167	1,167	0.0%	0.0
2-way	2,120	2,131	0.5%	0.3

	No dev	+Dev	%	GEH
Nb	776	801	3.3%	0.9
Sb	753	770	2.3%	0.6
2-way	1,529	1,571	2.8%	1.1

10338 Harpenden

	2-way peak hour link flow [PCUs]									
	2015 counted		2031		2031+dev		% impact of development		GEH value	
Road Link	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
A108 north of The Common	1442	1251	1748	1517	1821	1610	4%	**6%**	1.7	2.3
The Common	464	325	563	394	570	396	1%	0%	0.3	0.1
A108 south of The Common	1762	1534	2136	1860	2217	1955	4%	**5%**	1.7	2.2
Cooters End lane	170	170	206	206	253	263	**23%**	**27%**	3.1	3.7
A108 south of Cooters End lane	1892	1664	2294	2018	2394	2132	4%	**6%**	2.1	2.5
A108 north of Roundwood Lane	1316	1444	1596	1751	1696	1865	**6%**	**7%**	2.5	2.7
Roundwood Lane	322	260	390	315	403	324	3%	3%	0.6	0.5
A108 south of Roundwood Lane	1508	1594	1828	1933	2039	2091	**11%**	**8%**	4.8	3.5
A108 north of Station Road	1608	1518	1950	1841	2160	1999	**11%**	**9%**	4.6	3.6
Station Road	930	917	1128	1112	1161	1141	3%	3%	1.0	0.9
A108 south of Station Road	1776	1423	2153	1725	2330	1854	**8%**	**7%**	3.7	3.0
A108 north of Walkers Road	1797	1501	2179	1820	2236	1882	3%	3%	1.2	1.5
Walkers Road	943	931	1143	1129	1150	1130	1%	0%	0.2	0.0
A108 south of Walkers Road	1352	1261	1639	1529	1676	1571	2%	3%	0.9	1.1
B487 Redbourn Lane	1884	1742	2284	2112	2298	2131	1%	1%	0.3	0.4
A5183 north of B487 Redbourn Lane	2349	2276	2848	2760	2849	2761	0%	0%	0.0	0.0
A108 south of B487 Redbourn Lane	2269	2163	2751	2623	2764	2640	0%	1%	0.2	0.3
Harpenden Lane west of A5183	418	401	507	486	508	487	0%	0%	0.0	0.1
								maximum GEH=	4.8	

	2-way peak hour link flow [Vehicles]										
	2015 counted		2031		2031+dev		% impact of development		GEH value		
Road Link	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	%HGVs
A108 north of The Common	1412	1225	1712	1485	1783	1576	4%	**6%**	1.7	2.3	*2.1%*
The Common	462	324	560	393	568	394	1%	0%	0.3	0.1	*0.4%*
A108 south of The Common	1732	1507	2099	1828	2178	1921	4%	**5%**	1.7	2.1	*1.7%*
Cooters End lane	170	170	206	206	253	263	**23%**	**27%**	3.1	3.7	*0.0%*
A108 south of Cooters End lane	1862	1637	2257	1985	2356	2098	4%	**6%**	2.1	2.5	*1.6%*
A108 north of Roundwood Lane	1295	1421	1570	1722	1669	1835	**6%**	**7%**	2.5	2.7	*1.6%*
Roundwood Lane	320	259	388	314	400	322	3%	3%	0.6	0.5	*0.5%*
A108 south of Roundwood Lane	1488	1573	1804	1907	2011	2063	**11%**	**8%**	4.7	3.5	*1.3%*
A108 north of Station Road	1574	1486	1909	1802	2115	1957	**11%**	**9%**	4.6	3.6	*2.1%*
Station Road	919	906	1115	1099	1148	1128	3%	3%	1.0	0.9	*1.2%*
A108 south of Station Road	1746	1399	2117	1696	2291	1823	**8%**	**7%**	3.7	3.0	*1.7%*
A108 north of Walkers Road	1777	1484	2155	1800	2211	1862	3%	3%	1.2	1.4	*1.1%*
Walkers Road	927	915	1124	1110	1131	1111	1%	0%	0.2	0.0	*1.7%*
A108 south of Walkers Road	1338	1248	1622	1513	1659	1555	2%	3%	0.9	1.1	*1.0%*
B487 Redbourn Lane	1851	1712	2245	2076	2259	2095	1%	1%	0.3	0.4	*1.7%*
A5183 north of B487 Redbourn Lane	2322	2250	2815	2728	2816	2729	0%	0%	0.0	0.0	*1.2%*
A108 south of B487 Redbourn Lane	2243	2138	2719	2592	2731	2609	0%	1%	0.2	0.3	*1.2%*
Harpenden Lane west of A5183	413	396	501	481	502	482	0%	0%	0.0	0.1	*1.2%*
								maximum GEH=	4.7		

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J1-A5183 jw B487 Redbourn Lane\
10338 J1 A5183 jw B487 Redbourn Lane - 2015 AM [flat].vai"
(drive-on-the-left) at 14:32:56 on Thursday, 27 August 2015

FILE PROPERTIES

RUN TITLE: 10338 J1 A5183 jw B487 Redbourn Lane - 2015 AM [flat]
LOCATION: Harpenden
DATE: 27/08/15
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A5183 (N)
ARM B - B487 Redbourne Lane (E)
ARM C - A5183 (S)
ARM D - Harpenden Lane

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.20	7.50	10.00	30.00	52.00	30.0	0.575	25.712
ARM B	3.20	7.50	10.00	20.00	52.00	30.0	0.565	25.299
ARM C	3.60	7.50	10.00	40.00	52.00	40.0	0.578	26.665
ARM D	3.20	7.00	10.00	40.00	52.00	30.0	0.574	25.427

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
08.00 - 09.00	ARM A	0.000	0.331	0.587	0.082
		0.0	389.0	691.0	97.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.497	0.000	0.443	0.059
		452.0	0.0	403.0	54.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.549	0.449	0.000	0.003
		609.0	498.0	0.0	3.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.420	0.333	0.246	0.000
		111.0	88.0	65.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	19.62	19.60	1.001	- -	0.0	16.8	165.5	-	-0.051
ARM B	15.15	17.69	0.856	- -	0.0	5.1	64.0	-	0.316
ARM C	18.50	21.02	0.880	- -	0.0	6.2	75.9	-	0.308
ARM D	4.40	10.85	0.405	- -	0.0	0.7	9.5	-	0.153

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	19.62	19.49	1.007	- -	16.8	25.2	318.3	-	1.269
ARM B	15.15	17.47	0.867	- -	5.1	5.8	83.5	-	0.407
ARM C	18.50	20.90	0.885	- -	6.2	6.9	98.9	-	0.394
ARM D	4.40	10.56	0.417	- -	0.7	0.7	10.4	-	0.162

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	19.62	19.48	1.007	- - -	25.2	31.8	429.0	-	1.633
ARM B	15.15	17.43	0.869	- - -	5.8	6.1	90.0	-	0.424
ARM C	18.50	20.89	0.886	- - -	6.9	7.2	105.5	-	0.406
ARM D	4.40	10.53	0.418	- - -	0.7	0.7	10.6	-	0.163

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	19.62	19.48	1.007	- - -	31.8	37.6	521.9	-	1.935
ARM B	15.15	17.41	0.870	- - -	6.1	6.3	93.2	-	0.431
ARM C	18.50	20.88	0.886	- - -	7.2	7.3	108.6	-	0.411
ARM D	4.40	10.53	0.418	- - -	0.7	0.7	10.7	-	0.163

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	16.8	**********
08.30	25.2	**********
08.45	31.8	**********
09.00	37.6	**********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	5.1	*****
08.30	5.8	******
08.45	6.1	******
09.00	6.3	******

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	6.2	******
08.30	6.9	*******
08.45	7.2	*******
09.00	7.3	*******

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.7	*
08.30	0.7	*
08.45	0.7	*
09.00	0.7	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1177.2	1177.2	1434.7	1.22	1471.1	1.25
B	909.0	909.0	330.7	0.36	331.9	0.37
C	1110.0	1110.0	388.8	0.35	390.1	0.35
D	264.0	264.0	41.3	0.16	41.3	0.16
ALL	3460.2	3460.2	2195.5	0.63	2234.3	0.65

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 15:58:58 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J1-A5183 jw B487 Redbourn Lane\
10338 J1 A5183 jw B487 Redbourn Lane - 2015 PM [flat].vai"
(drive-on-the-left) at 14:33:00 on Thursday, 27 August 2015

FILE PROPERTIES

RUN TITLE: 10338 J1 A5183 jw B487 Redbourn Lane - 2015 PM [flat]
LOCATION: Harpenden
DATE: 27/08/15
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A5183 (N)
ARM B - B487 Redbourne Lane (E)
ARM C - A5183 (S)
ARM D - Harpenden Lane

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.20	7.50	10.00	30.00	52.00	30.0	0.575	25.712
ARM B	3.20	7.50	10.00	20.00	52.00	30.0	0.565	25.299
ARM C	3.60	7.50	10.00	40.00	52.00	40.0	0.578	26.665
ARM D	3.20	7.00	10.00	40.00	52.00	30.0	0.574	25.427

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
17.00 - 18.00	ARM A	0.000	0.327	0.547	0.126
		0.0	314.0	526.0	121.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.501	0.000	0.399	0.100
		479.0	0.0	381.0	96.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.632	0.355	0.000	0.012
		762.0	428.0	0.0	15.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.438	0.260	0.302	0.000
		74.0	44.0	51.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	16.02	20.94	0.765	- - -	0.0	3.1	41.6	-	0.188
ARM B	15.93	18.80	0.847	- - -	0.0	4.9	61.7	-	0.288
ARM C	20.08	20.09	0.999	- - -	0.0	16.8	165.7	-	0.633
ARM D	2.82	10.20	0.277	- - -	0.0	0.4	5.4	-	0.135

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	16.02	20.82	0.770	- - -	3.1	3.2	47.6	-	0.208
ARM B	15.93	18.72	0.851	- - -	4.9	5.3	76.8	-	0.348
ARM C	20.08	19.97	1.005	- - -	16.8	25.0	317.0	-	1.233
ARM D	2.82	9.79	0.288	- - -	0.4	0.4	5.9	-	0.143

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	16.02	20.79	0.771	- - -	3.2	3.3	48.9	-	0.209
ARM B	15.93	18.72	0.851	- - -	5.3	5.4	80.3	-	0.353
ARM C	20.08	19.97	1.006	- - -	25.0	31.6	426.0	-	1.584
ARM D	2.82	9.72	0.290	- - -	0.4	0.4	6.1	-	0.145

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	16.02	20.78	0.771	- - -	3.3	3.3	49.4	-	0.210
ARM B	15.93	18.72	0.851	- - -	5.4	5.5	81.8	-	0.355
ARM C	20.08	19.96	1.006	- - -	31.6	37.2	516.6	-	1.878
ARM D	2.82	9.68	0.291	- - -	0.4	0.4	6.1	-	0.146

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	3.1	***
17.30	3.2	***
17.45	3.3	***
18.00	3.3	***

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	4.9	*****
17.30	5.3	*****
17.45	5.4	*****
18.00	5.5	*****

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	16.8	*****************
17.30	25.0	*************************
17.45	31.6	********************************
18.00	37.2	*************************************

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.4
17.30	0.4
17.45	0.4
18.00	0.4

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	961.2	961.2	187.5	0.20	187.8	0.20
B	955.8	955.8	300.5	0.31	301.3	0.32
C	1204.8	1204.8	1425.3	1.18	1460.0	1.21
D	169.2	169.2	23.5	0.14	23.5	0.14
ALL	3291.0	3291.0	1936.9	0.59	1972.6	0.60

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 15:59:35 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J1-A5183 jw B487 Redbourn Lane\
10338 J1 A5183 jw B487 Redbourn Lane - 2031 AM [flat].vai"
(drive-on-the-left) at 10:45:41 on Wednesday, 25 May 2016

FILE PROPERTIES

RUN TITLE: 10338 J1 A5183 jw B487 Redbourn Lane - 2031 AM [flat]
LOCATION: Harpenden
DATE: 25/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A5183 (N)
ARM B - B487 Redbourne Lane (E)
ARM C - A5183 (S)
ARM D - Harpenden Lane

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.20	7.50	10.00	30.00	52.00	30.0	0.575	25.712
ARM B	3.20	7.50	10.00	20.00	52.00	30.0	0.565	25.299
ARM C	3.60	7.50	10.00	40.00	52.00	40.0	0.578	26.665
ARM D	3.20	7.00	10.00	40.00	52.00	30.0	0.574	25.427

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
08.00 - 09.00	ARM A	0.000	0.331	0.587	0.083
		0.0	472.0	838.0	118.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.497	0.000	0.444	0.059
		548.0	0.0	489.0	65.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.548	0.449	0.000	0.003
		738.0	604.0	0.0	4.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.421	0.333	0.246	0.000
		135.0	107.0	79.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	23.79	18.84	1.263	- - -	0.0	77.8	604.8	-	2.208
ARM B	18.37	17.53	1.048	- - -	0.0	23.4	211.4	-	0.895
ARM C	22.43	20.37	1.101	- - -	0.0	38.6	323.2	-	1.133
ARM D	5.34	9.27	0.576	- - -	0.0	1.3	17.9	-	0.244

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	23.79	18.74	1.270	- - -	77.8	153.7	1736.4	-	6.294
ARM B	18.37	17.47	1.052	- - -	23.4	39.4	473.1	-	2.001
ARM C	22.43	20.21	1.110	- - -	38.6	72.7	835.3	-	2.913
ARM D	5.34	8.96	0.596	- - -	1.3	1.4	20.9	-	0.275

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	23.79	18.73	1.270	- - -	153.7	229.6	2874.3	-	10.323
ARM B	18.37	17.47	1.052	- - -	39.4	54.3	703.0	-	2.853
ARM C	22.43	20.18	1.111	- - -	72.7	106.7	1345.3	-	4.566
ARM D	5.34	8.93	0.598	- - -	1.4	1.5	21.7	-	0.278

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	23.79	18.73	1.270	- - -	229.6	305.4	4012.2	-	14.365
ARM B	18.37	17.46	1.052	- - -	54.3	68.7	922.4	-	3.674
ARM C	22.43	20.18	1.112	- - -	106.7	140.7	1855.1	-	6.237
ARM D	5.34	8.92	0.598	- - -	1.5	1.5	21.9	-	0.279

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	77.8	**********
08.30	153.7	**********
08.45	229.6	**********
09.00	305.4	**********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	23.4	**********
08.30	39.4	**********
08.45	54.3	**********
09.00	68.7	**********

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	38.6	**********
08.30	72.7	**********
08.45	106.7	**********
09.00	140.7	**********

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	1.3	*
08.30	1.4	*
08.45	1.5	*
09.00	1.5	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *		T75
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	
A	1427.4	1427.4	9227.7	6.46	11717.1	8.21	
B	1102.2	1102.2	2309.9	2.10	2444.9	2.22	
C	1345.8	1345.8	4358.9	3.24	4849.3	3.60	
D	320.4	320.4	82.4	0.26	82.5	0.26	
ALL	4195.8	4195.8	15979.0	3.81	19093.9	4.55	

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:18:06 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J1-A5183 jw B487 Redbourn Lane\
10338 J1 A5183 jw B487 Redbourn Lane - 2031 PM [flat].vai"
(drive-on-the-left) at 09:02:02 on Wednesday, 1 June 2016

FILE PROPERTIES

RUN TITLE: 10338 J1 A5183 jw B487 Redbourn Lane - 2031 PM [flat]
LOCATION: Harpenden
DATE: 25/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A5183 (N)
ARM B - B487 Redbourne Lane (E)
ARM C - A5183 (S)
ARM D - Harpenden Lane

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.20	7.50	10.00	30.00	52.00	30.0	0.575	25.712
ARM B	3.20	7.50	10.00	20.00	52.00	30.0	0.565	25.299
ARM C	3.60	7.50	10.00	40.00	52.00	40.0	0.578	26.665
ARM D	3.20	7.00	10.00	40.00	52.00	30.0	0.574	25.427

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
17.00 - 18.00	ARM A	0.000	0.327	0.547	0.126
		0.0	381.0	638.0	147.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.501	0.000	0.399	0.100
		581.0	0.0	462.0	116.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.632	0.355	0.000	0.012
		924.0	519.0	0.0	18.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.439	0.259	0.302	0.000
		90.0	53.0	62.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	19.42	20.72	0.937	- - -	0.0	9.7	108.8	-	0.426
ARM B	19.32	17.57	1.099	- - -	0.0	33.8	285.5	-	1.167
ARM C	24.35	19.37	1.257	- - -	0.0	78.4	609.6	-	2.161
ARM D	3.42	9.68	0.353	- - -	0.0	0.5	7.7	-	0.158

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	19.42	20.68	0.939	- - -	9.7	11.5	160.7	-	0.633
ARM B	19.32	17.37	1.112	- - -	33.8	63.9	733.4	-	2.988
ARM C	24.35	19.24	1.266	- - -	78.4	155.2	1752.0	-	6.186
ARM D	3.42	9.54	0.358	- - -	0.5	0.6	8.2	-	0.163

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	19.42	20.68	0.939	- - -	11.5	12.4	179.9	-	0.680
ARM B	19.32	17.35	1.114	- - -	63.9	93.8	1182.7	-	4.688
ARM C	24.35	19.23	1.266	- - -	155.2	232.0	2903.5	-	10.156
ARM D	3.42	9.54	0.358	- - -	0.6	0.6	8.3	-	0.163

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	19.42	20.68	0.939	- - -	12.4	13.0	190.6	-	0.705
ARM B	19.32	17.34	1.114	- - -	93.8	123.7	1631.5	-	6.390
ARM C	24.35	19.23	1.266	- - -	232.0	308.7	4055.2	-	14.139
ARM D	3.42	9.54	0.358	- - -	0.6	0.6	8.3	-	0.163

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	9.7	**********
17.30	11.5	***********
17.45	12.4	************
18.00	13.0	************

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	33.8	**********
17.30	63.9	**********
17.45	93.8	**********
18.00	123.7	**********

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	78.4	**********
17.30	155.2	**********
17.45	232.0	**********
18.00	308.7	**********

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	0.5	*
17.30	0.6	*
17.45	0.6	*
18.00	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1165.2	1165.2	639.9	0.55	644.0	0.55
B	1159.2	1159.2	3833.0	3.31	4274.4	3.69
C	1461.0	1461.0	9320.3	6.38	11798.5	8.08
D	205.2	205.2	32.5	0.16	32.5	0.16
ALL	3990.6	3990.6	13825.8	3.46	16749.4	4.20

T75

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:18:19 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J1-A5183 jw B487 Redbourn Lane\
10338 J1 A5183 jw B487 Redbourn Lane - 2031+Dev Rev3 AM [flat].vai"
(drive-on-the-left) at 08:53:46 on Wednesday, 1 June 2016

FILE PROPERTIES

RUN TITLE: 10338 J1 A5183 jw B487 Redbourn Lane - 2031+Dev Rev3 AM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A5183 (N)
ARM B - B487 Redbourne Lane (E)
ARM C - A5183 (S)
ARM D - Harpenden Lane

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.20	7.50	10.00	30.00	52.00	30.0	0.575	25.712
ARM B	3.20	7.50	10.00	20.00	52.00	30.0	0.565	25.299
ARM C	3.60	7.50	10.00	40.00	52.00	40.0	0.578	26.665
ARM D	3.20	7.00	10.00	40.00	52.00	30.0	0.574	25.427

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
08.00 - 09.00	ARM A	0.000	0.331	0.587	0.083
		0.0	472.0	838.0	118.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.493	0.000	0.447	0.059
		549.0	0.0	498.0	66.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.547	0.450	0.000	0.003
		738.0	607.0	0.0	4.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.421	0.333	0.246	0.000
		135.0	107.0	79.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	23.79	18.82	1.264	- - -	0.0	78.1	606.8	-	2.216
ARM B	18.55	17.53	1.058	- - -	0.0	25.3	224.6	-	0.945
ARM C	22.48	20.39	1.102	- - -	0.0	39.0	326.0	-	1.138
ARM D	5.34	9.28	0.576	- - -	0.0	1.3	17.9	-	0.244

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	23.79	18.72	1.271	- - -	78.1	154.3	1743.1	-	6.322
ARM B	18.55	17.47	1.062	- - -	25.3	43.4	516.6	-	2.168
ARM C	22.48	20.23	1.111	- - -	39.0	73.4	843.9	-	2.936
ARM D	5.34	8.97	0.595	- - -	1.3	1.4	20.8	-	0.274

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	23.79	18.71	1.271	- - -	154.3	230.5	2885.8	-	10.372
ARM B	18.55	17.47	1.062	- - -	43.4	60.5	779.8	-	3.143
ARM C	22.48	20.21	1.112	- - -	73.4	107.7	1358.7	-	4.602
ARM D	5.34	8.95	0.597	- - -	1.4	1.4	21.6	-	0.276

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	23.79	18.71	1.271	- - -	230.5	306.7	4028.7	-	14.433
ARM B	18.55	17.47	1.062	- - -	60.5	77.3	1034.1	-	4.090
ARM C	22.48	20.21	1.113	- - -	107.7	142.0	1872.8	-	6.285
ARM D	5.34	8.94	0.597	- - -	1.4	1.5	21.8	-	0.277

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	78.1	**********
08.30	154.3	**********
08.45	230.5	**********
09.00	306.7	**********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	25.3	**********
08.30	43.4	**********
08.45	60.5	**********
09.00	77.3	**********

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	39.0	**********
08.30	73.4	**********
08.45	107.7	**********
09.00	142.0	**********

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	1.3	*
08.30	1.4	*
08.45	1.4	*
09.00	1.5	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *		T75
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	
A	1427.4	1427.4	9264.4	6.49	11777.5	8.25	
B	1113.0	1113.0	2555.2	2.30	2726.3	2.45	
C	1348.8	1348.8	4401.4	3.26	4900.3	3.63	
D	320.4	320.4	82.1	0.26	82.3	0.26	
ALL	4209.6	4209.6	16303.2	3.87	19486.3	4.63	

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:18:50 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J1-A5183 jw B487 Redbourn Lane\
10338 J1 A5183 jw B487 Redbourn Lane - 2031+Dev Rev3 PM [flat].vai"
(drive-on-the-left) at 08:53:54 on Wednesday, 1 June 2016

FILE PROPERTIES

RUN TITLE: 10338 J1 A5183 jw B487 Redbourn Lane - 2031+Dev Rev3 PM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A5183 (N)
ARM B - B487 Redbourne Lane (E)
ARM C - A5183 (S)
ARM D - Harpenden Lane

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.20	7.50	10.00	30.00	52.00	30.0	0.575	25.712
ARM B	3.20	7.50	10.00	20.00	52.00	30.0	0.565	25.299
ARM C	3.60	7.50	10.00	40.00	52.00	40.0	0.578	26.665
ARM D	3.20	7.00	10.00	40.00	52.00	30.0	0.574	25.427

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
17.00 - 18.00	ARM A	0.000	0.327	0.547	0.126
		0.0	381.0	638.0	147.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.498	0.000	0.402	0.100
		581.0	0.0	469.0	117.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.628	0.360	0.000	0.012
		924.0	529.0	0.0	18.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.437	0.262	0.301	0.000
		90.0	54.0	62.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	19.43	20.66	0.941	- -	0.0	9.9	111.1	-	0.437
ARM B	19.45	17.58	1.107	- -	0.0	35.3	296.6	-	1.213
ARM C	24.52	19.39	1.265	- -	0.0	80.5	625.0	-	2.217
ARM D	3.43	9.69	0.354	- -	0.0	0.5	7.7	-	0.158

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	19.43	20.62	0.942	- -	9.9	11.9	165.9	-	0.652
ARM B	19.45	17.37	1.120	- -	35.3	67.3	770.5	-	3.128
ARM C	24.52	19.27	1.272	- -	80.5	159.4	1799.2	-	6.331
ARM D	3.43	9.56	0.359	- -	0.5	0.6	8.2	-	0.163

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	19.43	20.62	0.942	- - -	11.9	12.9	186.9	-	0.706
ARM B	19.45	17.35	1.121	- - -	67.3	99.1	1247.9	-	4.932
ARM C	24.52	19.27	1.273	- - -	159.4	238.2	2981.8	-	10.411
ARM D	3.43	9.56	0.359	- - -	0.6	0.6	8.3	-	0.163

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	19.43	20.62	0.942	- - -	12.9	13.5	198.7	-	0.734
ARM B	19.45	17.34	1.122	- - -	99.1	131.0	1725.6	-	6.752
ARM C	24.52	19.26	1.273	- - -	238.2	317.1	4164.6	-	14.494
ARM D	3.43	9.56	0.359	- - -	0.6	0.6	8.3	-	0.163

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	9.9	**********
17.30	11.9	************
17.45	12.9	*************
18.00	13.5	**************

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	35.3	**********
17.30	67.3	**********
17.45	99.1	**********
18.00	131.0	**********

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	80.5	**********
17.30	159.4	**********
17.45	238.2	**********
18.00	317.1	**********

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	0.5	*
17.30	0.6	*
17.45	0.6	*
18.00	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *		T75
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	
A	1165.8	1165.8	662.6	0.57	667.1	0.57	
B	1167.0	1167.0	4040.7	3.46	4535.3	3.89	
C	1471.2	1471.2	9570.7	6.51	12180.0	8.28	
D	205.8	205.8	32.6	0.16	32.6	0.16	
ALL	4009.8	4009.8	14306.6	3.57	17415.0	4.34	

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:18:37 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J1-A5183 jw B487 Redbourn Lane\
10338 J1 A5183 jw B487 Redbourn Lane +Impr - 2031+Dev Rev3 AM [flat].vai"
(drive-on-the-left) at 08:54:00 on Wednesday, 1 June 2016

FILE PROPERTIES

RUN TITLE: 10338 J1 A5183 jw B487 Redbourn Lane +Impr - 2031+Dev Rev3 AM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A5183 (N)
ARM B - B487 Redbourne Lane (E)
ARM C - A5183 (S)
ARM D - Harpenden Lane

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.20	8.00	10.00	30.00	52.00	30.0	0.579	26.138
ARM B	3.20	8.00	10.00	20.00	52.00	30.0	0.570	25.718
ARM C	3.60	8.00	10.00	40.00	52.00	40.0	0.583	27.127
ARM D	3.20	7.00	10.00	40.00	52.00	30.0	0.574	25.427

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
08.00 - 09.00	ARM A	0.000	0.331	0.587	0.083
		0.0	472.0	838.0	118.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.493	0.000	0.447	0.059
		549.0	0.0	498.0	66.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.547	0.450	0.000	0.003
		738.0	607.0	0.0	4.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.421	0.333	0.246	0.000
		135.0	107.0	79.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	23.79	19.12	1.244	- - -	0.0	73.9	576.2	-	2.074
ARM B	18.55	17.78	1.043	- - -	0.0	22.8	207.0	-	0.866
ARM C	22.48	20.73	1.084	- - -	0.0	34.9	297.5	-	1.030
ARM D	5.34	9.08	0.588	- - -	0.0	1.4	18.7	-	0.255

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	23.79	19.01	1.252	- - -	73.9	145.8	1647.3	-	5.898
ARM B	18.55	17.72	1.047	- - -	22.8	37.9	457.0	-	1.916
ARM C	22.48	20.56	1.093	- - -	34.9	64.7	748.6	-	2.585
ARM D	5.34	8.74	0.611	- - -	1.4	1.5	22.1	-	0.292

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	23.79	19.00	1.252	- - -	145.8	217.7	2725.6	-	9.657
ARM B	18.55	17.72	1.047	- - -	37.9	51.8	673.6	-	2.704
ARM C	22.48	20.54	1.095	- - -	64.7	94.4	1193.7	-	4.003
ARM D	5.34	8.71	0.613	- - -	1.5	1.5	23.0	-	0.296

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	23.79	19.00	1.252	- - -	217.7	289.6	3804.1	-	13.430
ARM B	18.55	17.72	1.047	- - -	51.8	65.3	878.8	-	3.455
ARM C	22.48	20.52	1.095	- - -	94.4	123.9	1637.4	-	5.429
ARM D	5.34	8.70	0.614	- - -	1.5	1.6	23.3	-	0.297

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	73.9	**********
08.30	145.8	**********
08.45	217.7	**********
09.00	289.6	**********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	22.8	**********
08.30	37.9	**********
08.45	51.8	**********
09.00	65.3	**********

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	34.9	**********
08.30	64.7	**********
08.45	94.4	**********
09.00	123.9	**********

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	1.4	*
08.30	1.5	**
08.45	1.5	**
09.00	1.6	**

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1427.4	1427.4	8753.2	6.13	10959.7	7.68
B	1113.0	1113.0	2216.3	1.99	2336.6	2.10
C	1348.8	1348.8	3877.2	2.87	4251.4	3.15
D	320.4	320.4	87.2	0.27	87.3	0.27
ALL	4209.6	4209.6	14933.8	3.55	17635.0	4.19

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:19:06 on 01/06/2016]

_____ A R C A D Y 6 _____

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

_____

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J1-A5183 jw B487 Redbourn Lane\
10338 J1 A5183 jw B487 Redbourn Lane +Impr - 2031+Dev Rev3 PM [flat].vai"
(drive-on-the-left) at 08:54:05 on Wednesday, 1 June 2016

FILE PROPERTIES
****

RUN TITLE: 10338 J1 A5183 jw B487 Redbourn Lane +Impr - 2031+Dev Rev3 PM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA
****
ARM A - A5183 (N)
ARM B - B487 Redbourne Lane (E)
ARM C - A5183 (S)
ARM D - Harpenden Lane

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.20	8.00	10.00	30.00	52.00	30.0	0.579	26.138
ARM B	3.20	8.00	10.00	20.00	52.00	30.0	0.570	25.718
ARM C	3.60	8.00	10.00	40.00	52.00	40.0	0.583	27.127
ARM D	3.20	7.00	10.00	40.00	52.00	30.0	0.574	25.427

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
17.00 - 18.00	ARM A	0.000	0.327	0.547	0.126
		0.0	381.0	638.0	147.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.498	0.000	0.402	0.100
		581.0	0.0	469.0	117.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.628	0.360	0.000	0.012
		924.0	529.0	0.0	18.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.437	0.262	0.301	0.000
		90.0	54.0	62.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	19.43	20.98	0.926	- -	0.0	8.8	101.3	-	0.396
ARM B	19.45	17.90	1.086	- -	0.0	31.5	269.4	-	1.088
ARM C	24.52	19.69	1.245	- -	0.0	76.3	594.2	-	2.075
ARM D	3.43	9.45	0.363	- -	0.0	0.6	8.0	-	0.164

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	19.43	20.95	0.928	- -	8.8	10.2	144.4	-	0.563
ARM B	19.45	17.71	1.098	- -	31.5	58.6	676.9	-	2.726
ARM C	24.52	19.55	1.254	- -	76.3	150.9	1703.9	-	5.925
ARM D	3.43	9.31	0.368	- -	0.6	0.6	8.6	-	0.170

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	19.43	20.95	0.928	- - -	10.2	10.9	158.8	-	0.596
ARM B	19.45	17.69	1.099	- - -	58.6	85.4	1080.8	-	4.213
ARM C	24.52	19.54	1.255	- - -	150.9	225.6	2823.9	-	9.726
ARM D	3.43	9.31	0.369	- - -	0.6	0.6	8.7	-	0.170

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	19.43	20.95	0.928	- - -	10.9	11.3	166.4	-	0.613
ARM B	19.45	17.68	1.100	- - -	85.4	112.2	1482.5	-	5.711
ARM C	24.52	19.54	1.255	- - -	225.6	300.3	3944.7	-	13.538
ARM D	3.43	9.31	0.369	- - -	0.6	0.6	8.7	-	0.170

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	8.8	*********
17.30	10.2	**********
17.45	10.9	***********
18.00	11.3	***********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	31.5	********************************
17.30	58.6	**********
17.45	85.4	**********
18.00	112.2	**********

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	76.3	**********
17.30	150.9	**********
17.45	225.6	**********
18.00	300.3	**********

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	0.6	*
17.30	0.6	*
17.45	0.6	*
18.00	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1165.8	1165.8	571.0	0.49	574.0	0.49
B	1167.0	1167.0	3509.6	3.01	3865.6	3.31
C	1471.2	1471.2	9066.7	6.16	11374.9	7.73
D	205.8	205.8	33.9	0.16	33.9	0.16
ALL	4009.8	4009.8	13181.2	3.29	15848.4	3.95

T75

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:19:14 on 01/06/2016]

_____ A R C A D Y 6 _____

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

Adapted from ARCADY/3 which is Crown Copyright
by permission of the controller of HMSO

_____

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J2-A1081 jw B487 Redbourn Lane\
10338-J2 A1081 jw B487 Redbourn Lane - 2015 AM [flat].vai"
(drive-on-the-left) at 14:24:24 on Thursday, 27 August 2015

FILE PROPERTIES

RUN TITLE: 10338 J2 A1081 jw B487 Redbourne Lane - 2015 AM [flat]
LOCATION: Harpenden
DATE: 27/08/15
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Walkers Road
ARM C - A1081 (S)
ARM D - B487 Redbourn Lane (W)

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	6.00	10.00	15.00	37.00	40.0	0.592	25.014
ARM B	3.50	7.00	6.00	30.00	37.00	30.0	0.603	24.229
ARM C	4.00	6.00	8.00	25.00	37.00	40.0	0.602	25.168
ARM D	3.20	6.00	6.00	30.00	37.00	40.0	0.559	21.429

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
08.00 - 09.00	ARM A	0.000	0.025	0.450	0.525
		0.0	24.0	432.0	505.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.268	0.000	0.250	0.482
		121.0	0.0	113.0	218.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.352	0.315	0.000	0.333
		208.0	186.0	0.0	197.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.505	0.280	0.215	0.000
		507.0	281.0	216.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	16.02	18.60	0.861	- -	0.0	5.3	66.5	-	0.310
ARM B	7.53	12.98	0.580	- -	0.0	1.3	18.7	-	0.178
ARM C	9.85	16.85	0.585	- -	0.0	1.4	19.4	-	0.139
ARM D	16.73	16.68	1.003	- -	0.0	15.7	153.9	-	-0.060

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	16.02	18.41	0.870	- -	5.3	6.0	86.2	-	0.396
ARM B	7.53	12.73	0.592	- -	1.3	1.4	20.9	-	0.192
ARM C	9.85	16.72	0.589	- -	1.4	1.4	21.0	-	0.145
ARM D	16.73	16.63	1.006	- -	15.7	23.1	294.1	-	1.377

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	16.02	18.38	0.872	- - -	6.0	6.3	92.4	-	0.412
ARM B	7.53	12.69	0.593	- - -	1.4	1.4	21.4	-	0.193
ARM C	9.85	16.71	0.590	- - -	1.4	1.4	21.3	-	0.146
ARM D	16.73	16.63	1.006	- - -	23.1	28.9	391.6	-	1.752

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	16.02	18.37	0.872	- - -	6.3	6.4	95.3	-	0.417
ARM B	7.53	12.68	0.594	- - -	1.4	1.4	21.6	-	0.194
ARM C	9.85	16.70	0.590	- - -	1.4	1.4	21.4	-	0.146
ARM D	16.73	16.63	1.006	- - -	28.9	34.0	472.6	-	2.062

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	5.3	*****
08.30	6.0	******
08.45	6.3	******
09.00	6.4	******

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	1.3	*
08.30	1.4	*
08.45	1.4	*
09.00	1.4	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	1.4	*
08.30	1.4	*
08.45	1.4	*
09.00	1.4	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	15.7	**********
08.30	23.1	**********
08.45	28.9	**********
09.00	34.0	**********

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	961.2	961.2	340.5	0.35	341.6	0.36
B	451.8	451.8	82.7	0.18	82.8	0.18
C	591.0	591.0	83.1	0.14	83.1	0.14
D	1003.8	1003.8	1312.3	1.31	1347.1	1.34
ALL	3007.8	3007.8	1818.6	0.60	1854.6	0.62

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

_____ A R C A D Y 6 _____

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

Adapted from ARCADY/3 which is Crown Copyright
by permission of the controller of HMSO

_____

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J2-A1081 jw B487 Redbourn Lane\
10338-J2 A1081 jw B487 Redbourn Lane - 2015 PM [flat].vai"
(drive-on-the-left) at 14:24:28 on Thursday, 27 August 2015

FILE PROPERTIES

RUN TITLE: 10338 J2 A1081 jw B487 Redbourne Lane - 2015 PM [flat]
LOCATION: Harpenden
DATE: 27/08/15
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Walkers Road
ARM C - A1081 (S)
ARM D - B487 Redbourn Lane (W)

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	6.00	10.00	15.00	37.00	40.0	0.592	25.014
ARM B	3.50	7.00	6.00	30.00	37.00	30.0	0.603	24.229
ARM C	4.00	6.00	8.00	25.00	37.00	40.0	0.602	25.168
ARM D	3.20	6.00	6.00	30.00	37.00	40.0	0.559	21.429

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
17.00 - 18.00	ARM A	0.000	0.035	0.360	0.605
		0.0	30.0	311.0	523.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.217	0.000	0.257	0.526
		92.0	0.0	109.0	223.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.358	0.292	0.000	0.350
		229.0	187.0	0.0	224.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.392	0.359	0.249	0.000
		316.0	290.0	201.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	14.42	18.43	0.782	- -	0.0	3.4	44.4	-	0.225
ARM B	7.07	13.98	0.506	- -	0.0	1.0	14.2	-	0.142
ARM C	10.67	16.86	0.633	- -	0.0	1.7	23.4	-	0.156
ARM D	13.45	16.74	0.803	- -	0.0	3.7	48.4	-	0.266

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	14.42	18.33	0.787	- -	3.4	3.5	52.0	-	0.254
ARM B	7.07	13.82	0.512	- -	1.0	1.0	15.4	-	0.148
ARM C	10.67	16.76	0.637	- -	1.7	1.7	25.6	-	0.164
ARM D	13.45	16.70	0.806	- -	3.7	3.9	57.8	-	0.304

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	14.42	18.32	0.787	- - -	3.5	3.6	53.5	-	0.255
ARM B	7.07	13.81	0.512	- - -	1.0	1.0	15.6	-	0.148
ARM C	10.67	16.75	0.637	- - -	1.7	1.7	25.9	-	0.164
ARM D	13.45	16.70	0.806	- - -	3.9	4.0	59.5	-	0.306

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	14.42	18.32	0.787	- - -	3.6	3.6	54.1	-	0.256
ARM B	7.07	13.81	0.512	- - -	1.0	1.0	15.6	-	0.148
ARM C	10.67	16.75	0.637	- - -	1.7	1.7	26.1	-	0.164
ARM D	13.45	16.70	0.806	- - -	4.0	4.0	60.3	-	0.307

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	3.4	***
17.30	3.5	****
17.45	3.6	****
18.00	3.6	****

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	1.0	*
17.30	1.0	*
17.45	1.0	*
18.00	1.0	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	1.7	**
17.30	1.7	**
17.45	1.7	**
18.00	1.7	**

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	3.7	****
17.30	3.9	****
17.45	4.0	****
18.00	4.0	****

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	865.2	865.2	204.0	0.24	204.4	0.24
B	424.2	424.2	60.8	0.14	60.8	0.14
C	640.2	640.2	101.0	0.16	101.0	0.16
D	807.0	807.0	226.0	0.28	226.5	0.28
ALL	2736.6	2736.6	591.7	0.22	592.7	0.22

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 16:00:08 on 01/06/2016]

_____ A R C A D Y 6 _____

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

_____

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J2-A1081 jw B487 Redbourn Lane\
10338-J2 A1081 jw B487 Redbourn Lane - 2031 AM [flat].vai"
(drive-on-the-left) at 11:16:30 on Wednesday, 25 May 2016

FILE PROPERTIES

RUN TITLE: 10338 J2 A1081 jw B487 Redbourne Lane - 2031 AM [flat]
LOCATION: Harpenden
DATE: 25/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Walkers Road
ARM C - A1081 (S)
ARM D - B487 Redbourn Lane (W)

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	6.00	10.00	15.00	37.00	40.0	0.592	25.014
ARM B	3.50	7.00	6.00	30.00	37.00	30.0	0.603	24.229
ARM C	4.00	6.00	8.00	25.00	37.00	40.0	0.602	25.168
ARM D	3.20	6.00	6.00	30.00	37.00	40.0	0.559	21.429

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
08.00 - 09.00	ARM A	0.000	0.025	0.450	0.525
		0.0	29.0	524.0	612.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.268	0.000	0.250	0.482
		147.0	0.0	137.0	264.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.351	0.315	0.000	0.333
		252.0	226.0	0.0	239.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.505	0.280	0.215	0.000
		615.0	341.0	262.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	19.42	18.28	1.063	- -	0.0	27.0	237.8	-	0.957
ARM B	9.13	11.85	0.771	- -	0.0	3.1	39.5	-	0.323
ARM C	11.94	15.56	0.767	- -	0.0	3.1	40.5	-	0.249
ARM D	20.29	15.72	1.291	- -	0.0	71.8	557.8	-	2.445

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	19.42	18.21	1.067	- -	27.0	46.9	555.9	-	2.225
ARM B	9.13	11.56	0.790	- -	3.1	3.5	49.9	-	0.400
ARM C	11.94	15.33	0.779	- -	3.1	3.3	48.6	-	0.291
ARM D	20.29	15.62	1.299	- -	71.8	141.9	1603.1	-	6.972

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	19.42	18.21	1.067	- - -	46.9	66.0	847.4	-	3.259
ARM B	9.13	11.52	0.792	- - -	3.5	3.6	53.3	-	0.412
ARM C	11.94	15.31	0.780	- - -	3.3	3.4	50.8	-	0.294
ARM D	20.29	15.62	1.299	- - -	141.9	212.0	2654.6	-	11.436

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	19.42	18.21	1.067	- - -	66.0	84.7	1130.7	-	4.278
ARM B	9.13	11.51	0.793	- - -	3.6	3.7	54.7	-	0.415
ARM C	11.94	15.30	0.781	- - -	3.4	3.5	51.6	-	0.297
ARM D	20.29	15.61	1.299	- - -	212.0	282.2	3706.8	-	15.918

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	27.0	**********
08.30	46.9	**********
08.45	66.0	**********
09.00	84.7	**********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	3.1	***
08.30	3.5	***
08.45	3.6	****
09.00	3.7	****

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	3.1	***
08.30	3.3	***
08.45	3.4	***
09.00	3.5	***

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	71.8	**********
08.30	141.9	**********
08.45	212.0	**********
09.00	282.2	**********

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1165.2	1165.2	2771.8	2.38	2968.9	2.55
B	547.8	547.8	197.5	0.36	198.1	0.36
C	716.4	716.4	191.5	0.27	191.9	0.27
D	1217.4	1217.4	8522.3	7.00	11072.4	9.10
ALL	3646.8	3646.8	11683.0	3.20	14431.3	3.96

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:14:47 on 01/06/2016]

_____ A R C A D Y 6 _____

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

_____

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J2-A1081 jw B487 Redbourn Lane\
10338-J2 A1081 jw B487 Redbourn Lane - 2031 PM [flat].vai"
(drive-on-the-left) at 11:16:33 on Wednesday, 25 May 2016

FILE PROPERTIES

RUN TITLE: 10338 J2 A1081 jw B487 Redbourne Lane - 2031 PM [flat]
LOCATION: Harpenden
DATE: 25/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Walkers Road
ARM C - A1081 (S)
ARM D - B487 Redbourn Lane (W)

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	6.00	10.00	15.00	37.00	40.0	0.592	25.014
ARM B	3.50	7.00	6.00	30.00	37.00	30.0	0.603	24.229
ARM C	4.00	6.00	8.00	25.00	37.00	40.0	0.602	25.168
ARM D	3.20	6.00	6.00	30.00	37.00	40.0	0.559	21.429

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
17.00 - 18.00	ARM A	0.000	0.034	0.360	0.606
		0.0	36.0	377.0	634.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.218	0.000	0.257	0.525
		112.0	0.0	132.0	270.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.358	0.292	0.000	0.350
		278.0	227.0	0.0	272.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.391	0.360	0.249	0.000
		383.0	352.0	244.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	17.46	17.39	1.004	- -	0.0	16.2	158.4	-	-0.058
ARM B	8.57	12.41	0.691	- -	0.0	2.1	28.5	-	0.244
ARM C	12.93	15.42	0.839	- -	0.0	4.5	56.8	-	0.330
ARM D	16.46	15.82	1.041	- -	0.0	20.6	189.0	-	0.899

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	17.46	17.18	1.016	- -	16.2	25.6	316.7	-	1.427
ARM B	8.57	12.08	0.709	- -	2.1	2.3	34.0	-	0.281
ARM C	12.93	15.20	0.851	- -	4.5	5.1	73.5	-	0.420
ARM D	16.46	15.70	1.048	- -	20.6	34.6	416.7	-	1.977

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	17.46	17.15	1.018	- - -	25.6	33.6	445.5	-	1.915
ARM B	8.57	12.01	0.713	- - -	2.3	2.4	35.7	-	0.288
ARM C	12.93	15.16	0.853	- - -	5.1	5.4	79.0	-	0.436
ARM D	16.46	15.70	1.048	- - -	34.6	47.5	616.7	-	2.798

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	17.46	17.14	1.019	- - -	33.6	41.0	560.4	-	2.348
ARM B	8.57	11.99	0.715	- - -	2.4	2.4	36.4	-	0.292
ARM C	12.93	15.14	0.854	- - -	5.4	5.5	81.7	-	0.444
ARM D	16.46	15.70	1.049	- - -	47.5	59.9	806.3	-	3.590

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	16.2	**********
17.30	25.6	**********
17.45	33.6	**********
18.00	41.0	**********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	2.1	**
17.30	2.3	**
17.45	2.4	**
18.00	2.4	**

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	4.5	*****
17.30	5.1	*****
17.45	5.4	*****
18.00	5.5	******

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	20.6	**********
17.30	34.6	**********
17.45	47.5	**********
18.00	59.9	**********

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *		T75
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	
A	1047.6	1047.6	1480.9	1.41	1529.9	1.46	
B	514.2	514.2	134.6	0.26	134.9	0.26	
C	775.8	775.8	291.0	0.38	292.0	0.38	
D	987.6	987.6	2028.7	2.05	2143.2	2.17	
ALL	3325.2	3325.2	3935.3	1.18	4100.0	1.23	

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:15:07 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J2-A1081 jw B487 Redbourn Lane\
10338-J2 A1081 jw B487 Redbourn Lane - 2031+Dev Rev3 AM [flat].vai"
(drive-on-the-left) at 09:11:23 on Wednesday, 1 June 2016

FILE PROPERTIES

RUN TITLE: 10338 J2 A1081 jw B487 Redbourne Lane - 2031+Dev Rev3 AM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Walkers Road
ARM C - A1081 (S)
ARM D - B487 Redbourn Lane (W)

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	6.00	10.00	15.00	37.00	40.0	0.592	25.014
ARM B	3.50	7.00	6.00	30.00	37.00	30.0	0.603	24.229
ARM C	4.00	6.00	8.00	25.00	37.00	40.0	0.602	25.168
ARM D	3.20	6.00	6.00	30.00	37.00	40.0	0.559	21.429

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
08.00 - 09.00	ARM A	0.000	0.027	0.456	0.517
		0.0	32.0	549.0	623.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.274	0.000	0.248	0.478
		151.0	0.0	137.0	264.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.361	0.310	0.000	0.328
		263.0	226.0	0.0	239.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.506	0.279	0.215	0.000
		618.0	341.0	262.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	20.06	18.32	1.095	- - -	0.0	33.9	287.3	-	1.130
ARM B	9.20	11.78	0.781	- - -	0.0	3.2	41.3	-	0.336
ARM C	12.13	15.55	0.780	- - -	0.0	3.3	42.9	-	0.261
ARM D	20.35	15.58	1.306	- - -	0.0	74.6	578.0	-	2.552

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	20.06	18.26	1.099	- - -	33.9	61.9	719.4	-	2.800
ARM B	9.20	11.54	0.798	- - -	3.2	3.6	52.2	-	0.415
ARM C	12.13	15.34	0.791	- - -	3.3	3.6	51.8	-	0.307
ARM D	20.35	15.48	1.314	- - -	74.6	147.7	1667.5	-	7.307

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	20.06	18.26	1.099	- - -	61.9	89.3	1134.1	-	4.283
ARM B	9.20	11.52	0.799	- - -	3.6	3.8	55.5	-	0.425
ARM C	12.13	15.32	0.792	- - -	3.6	3.7	54.2	-	0.312
ARM D	20.35	15.47	1.315	- - -	147.7	220.9	2764.4	-	12.015

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	20.06	18.26	1.099	- - -	89.3	116.6	1544.1	-	5.759
ARM B	9.20	11.51	0.799	- - -	3.8	3.8	56.9	-	0.429
ARM C	12.13	15.32	0.792	- - -	3.7	3.7	55.1	-	0.313
ARM D	20.35	15.47	1.315	- - -	220.9	294.1	3862.2	-	16.735

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	33.9	**********
08.30	61.9	**********
08.45	89.3	**********
09.00	116.6	**********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	3.2	***
08.30	3.6	****
08.45	3.8	****
09.00	3.8	****

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	3.3	***
08.30	3.6	****
08.45	3.7	****
09.00	3.7	****

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	74.6	**********
08.30	147.7	**********
08.45	220.9	**********
09.00	294.1	**********

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1203.6	1203.6	3685.0	3.06	4057.1	3.37
B	552.0	552.0	205.9	0.37	206.5	0.37
C	727.8	727.8	204.1	0.28	204.5	0.28
D	1221.0	1221.0	8872.0	7.27	11666.8	9.56
ALL	3704.4	3704.4	12967.0	3.50	16134.9	4.36

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:16:01 on 01/06/2016]

_____ A R C A D Y 6 _____

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

_____

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J2-A1081 jw B487 Redbourn Lane\
10338-J2 A1081 jw B487 Redbourn Lane - 2031+Dev Rev3 PM [flat].vai"
(drive-on-the-left) at 09:11:35 on Wednesday, 1 June 2016

FILE PROPERTIES

RUN TITLE: 10338 J2 A1081 jw B487 Redbourne Lane - 2031+Dev Rev3 PM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Walkers Road
ARM C - A1081 (S)
ARM D - B487 Redbourn Lane (W)

GEOMETRIC DATA

I ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I ARM A	I	4.00	I	6.00	I	10.00	I	15.00	I	37.00	I	40.0	I	0.592	I	25.014	I
I ARM B	I	3.50	I	7.00	I	6.00	I	30.00	I	37.00	I	30.0	I	0.603	I	24.229	I
I ARM C	I	4.00	I	6.00	I	8.00	I	25.00	I	37.00	I	40.0	I	0.602	I	25.168	I
I ARM D	I	3.20	I	6.00	I	6.00	I	30.00	I	37.00	I	40.0	I	0.559	I	21.429	I

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
17.00 - 18.00	ARM A	0.000	0.034	0.367	0.598
		0.0	37.0	394.0	642.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.218	0.000	0.257	0.525
		112.0	0.0	132.0	270.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.378	0.283	0.000	0.339
		303.0	227.0	0.0	272.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.399	0.355	0.246	0.000
		395.0	352.0	244.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	17.88	17.51	1.021	- - -	0.0	18.8	178.0	-	0.771
ARM B	8.57	12.32	0.696	- - -	0.0	2.2	29.1	-	0.249
ARM C	13.35	15.40	0.867	- - -	0.0	5.4	65.7	-	0.373
ARM D	16.50	15.60	1.057	- - -	0.0	23.1	206.7	-	0.982

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	17.88	17.32	1.033	- - -	18.8	31.0	376.8	-	1.653
ARM B	8.57	12.00	0.714	- - -	2.2	2.4	34.7	-	0.288
ARM C	13.35	15.19	0.879	- - -	5.4	6.3	88.8	-	0.500
ARM D	16.50	15.48	1.066	- - -	23.1	40.4	478.2	-	2.266

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	17.88	17.29	1.034	- - -	31.0	42.1	549.5	-	2.295
ARM B	8.57	11.95	0.717	- - -	2.4	2.5	36.4	-	0.294
ARM C	13.35	15.16	0.881	- - -	6.3	6.6	97.2	-	0.527
ARM D	16.50	15.47	1.067	- - -	40.4	56.8	729.3	-	3.325

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	17.88	17.28	1.035	- - -	42.1	52.6	710.6	-	2.906
ARM B	8.57	11.92	0.719	- - -	2.5	2.5	37.1	-	0.298
ARM C	13.35	15.14	0.882	- - -	6.6	6.9	101.3	-	0.538
ARM D	16.50	15.46	1.067	- - -	56.8	72.9	973.2	-	4.353

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	18.8	******************
17.30	31.0	*******************************
17.45	42.1	**
18.00	52.6	***

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	2.2	**
17.30	2.4	**
17.45	2.5	**
18.00	2.5	**

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	5.4	*****
17.30	6.3	******
17.45	6.6	*******
18.00	6.9	*******

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	23.1	**********************
17.30	40.4	**************************************
17.45	56.8	***
18.00	72.9	**

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *		T75
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	
A	1072.8	1072.8	1814.8	1.69	1894.7	1.77	
B	514.2	514.2	137.4	0.27	137.6	0.27	
C	801.0	801.0	353.0	0.44	354.6	0.44	
D	990.0	990.0	2387.3	2.41	2559.3	2.59	
ALL	3378.0	3378.0	4692.5	1.39	4946.2	1.46	

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:15:36 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J2-A1081 jw B487 Redbourn Lane\
10338-J2 A1081 jw B487 Redbourn Lane [HL-07] - 2031+Dev Rev3 AM [flat].vai"
(drive-on-the-left) at 09:11:42 on Wednesday, 1 June 2016

FILE PROPERTIES

RUN TITLE: 10338 J2 A1081 jw B487 Redbourne Lane +Impr HL-07 - 2031+Dev Rev3 AM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Walkers Road
ARM C - A1081 (S)
ARM D - B487 Redbourn Lane (W)

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	7.00	15.00	15.00	37.00	40.0	0.628	27.936
ARM B	3.50	7.00	6.00	30.00	37.00	30.0	0.603	24.229
ARM C	4.00	6.00	8.00	25.00	37.00	40.0	0.602	25.168
ARM D	3.20	7.00	6.00	30.00	37.00	40.0	0.567	22.086

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
08.00 - 09.00	ARM A	0.000	0.027	0.456	0.517
		0.0	32.0	549.0	623.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.274	0.000	0.248	0.478
		151.0	0.0	137.0	264.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.361	0.310	0.000	0.328
		263.0	226.0	0.0	239.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.506	0.279	0.215	0.000
		618.0	341.0	262.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	20.06	20.68	0.970	- - -	0.0	13.0	136.3	-	0.520
ARM B	9.20	10.89	0.845	- - -	0.0	4.5	54.3	-	0.452
ARM C	12.13	15.15	0.800	- - -	0.0	3.6	47.0	-	0.288
ARM D	20.35	16.18	1.258	- - -	0.0	66.2	517.3	-	2.210

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	20.06	20.60	0.974	- - -	13.0	17.1	228.8	-	0.893
ARM B	9.20	10.53	0.874	- - -	4.5	5.7	78.1	-	0.659
ARM C	12.13	14.87	0.816	- - -	3.6	4.1	58.9	-	0.354
ARM D	20.35	16.06	1.267	- - -	66.2	130.6	1476.5	-	6.263

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	20.06	20.60	0.974	- - -	17.1	19.8	278.2	-	1.035
ARM B	9.20	10.47	0.879	- - -	5.7	6.2	89.6	-	0.723
ARM C	12.13	14.82	0.818	- - -	4.1	4.3	62.8	-	0.365
ARM D	20.35	16.05	1.268	- - -	130.6	195.2	2443.8	-	10.257

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	20.06	20.60	0.974	- - -	19.8	21.7	311.7	-	1.135
ARM B	9.20	10.44	0.881	- - -	6.2	6.5	95.7	-	0.752
ARM C	12.13	14.80	0.820	- - -	4.3	4.3	64.6	-	0.372
ARM D	20.35	16.04	1.268	- - -	195.2	259.8	3412.5	-	14.275

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	13.0	**********
08.30	17.1	**********
08.45	19.8	**********
09.00	21.7	**********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	4.5	****
08.30	5.7	******
08.45	6.2	******
09.00	6.5	*******

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	3.6	****
08.30	4.1	****
08.45	4.3	****
09.00	4.3	****

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	66.2	**********
08.30	130.6	**********
08.45	195.2	**********
09.00	259.8	**********

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1203.6	1203.6	955.0	0.79	966.4	0.80
B	552.0	552.0	317.7	0.58	319.7	0.58
C	727.8	727.8	233.3	0.32	234.0	0.32
D	1221.0	1221.0	7850.0	6.43	9953.3	8.15
ALL	3704.4	3704.4	9356.1	2.53	11473.4	3.10

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:16:27 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

Adapted from ARCADY/3 which is Crown Copyright
by permission of the controller of HMSO

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J2-A1081 jw B487 Redbourn Lane\
10338-J2 A1081 jw B487 Redbourn Lane [HL-07] - 2031+Dev Rev3 PM [flat].vai"
(drive-on-the-left) at 09:11:48 on Wednesday, 1 June 2016

FILE PROPERTIES

RUN TITLE: 10338 J2 A1081 jw B487 Redbourne Lane +Impr HL-07 - 2031+Dev Rev3 PM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Walkers Road
ARM C - A1081 (S)
ARM D - B487 Redbourn Lane (W)

GEOMETRIC DATA

I ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I ARM A	I	4.00	I	7.00	I	15.00	I	15.00	I	37.00	I	40.0	I	0.628	I	27.936	I
I ARM B	I	3.50	I	7.00	I	6.00	I	30.00	I	37.00	I	30.0	I	0.603	I	24.229	I
I ARM C	I	4.00	I	6.00	I	8.00	I	25.00	I	37.00	I	40.0	I	0.602	I	25.168	I
I ARM D	I	3.20	I	7.00	I	6.00	I	30.00	I	37.00	I	40.0	I	0.567	I	22.086	I

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
17.00 - 18.00	ARM A	0.000	0.034	0.367	0.598
		0.0	37.0	394.0	642.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.218	0.000	0.257	0.525
		112.0	0.0	132.0	270.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.378	0.283	0.000	0.339
		303.0	227.0	0.0	272.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.399	0.355	0.246	0.000
		395.0	352.0	244.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	17.88	19.85	0.901	- -	0.0	7.1	84.8	-	0.359
ARM B	8.57	11.81	0.725	- -	0.0	2.5	32.7	-	0.281
ARM C	13.35	15.13	0.882	- -	0.0	5.9	71.0	-	0.405
ARM D	16.50	16.19	1.019	- -	0.0	17.6	167.6	-	0.791

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	17.88	19.62	0.911	- -	7.1	8.5	118.9	-	0.504
ARM B	8.57	11.52	0.744	- -	2.5	2.7	39.7	-	0.334
ARM C	13.35	14.93	0.894	- -	5.9	7.0	99.0	-	0.562
ARM D	16.50	16.05	1.028	- -	17.6	28.3	347.5	-	1.652

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	17.88	19.58	0.913	- - -	8.5	9.1	132.4	-	0.541
ARM B	8.57	11.48	0.747	- - -	2.7	2.8	41.9	-	0.341
ARM C	13.35	14.91	0.896	- - -	7.0	7.5	109.5	-	0.598
ARM D	16.50	16.04	1.029	- - -	28.3	37.7	496.5	-	2.252

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	17.88	19.56	0.914	- - -	9.1	9.5	139.6	-	0.558
ARM B	8.57	11.46	0.748	- - -	2.8	2.9	42.8	-	0.344
ARM C	13.35	14.90	0.896	- - -	7.5	7.8	114.8	-	0.612
ARM D	16.50	16.03	1.029	- - -	37.7	46.5	632.6	-	2.799

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	7.1	*******
17.30	8.5	********
17.45	9.1	*********
18.00	9.5	*********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	2.5	**
17.30	2.7	***
17.45	2.8	***
18.00	2.9	***

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	5.9	******
17.30	7.0	*******
17.45	7.5	********
18.00	7.8	********

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	17.6	******************
17.30	28.3	****************************
17.45	37.7	*************************************
18.00	46.5	**

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1072.8	1072.8	475.7	0.44	478.0	0.45
B	514.2	514.2	157.2	0.31	157.5	0.31
C	801.0	801.0	394.3	0.49	396.4	0.49
D	990.0	990.0	1644.2	1.66	1711.8	1.73
ALL	3378.0	3378.0	2671.5	0.79	2743.7	0.81

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:16:41 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J3-A1081 jw Station Road\10338-J3 A1081 jw Station Road - 2015 AM [flat].vai"
(drive-on-the-left) at 12:02:50 on Wednesday, 11 May 2016

FILE PROPERTIES

RUN TITLE: 10338-J3 A1081 jw Station Road - 2015 AM [flat]
LOCATION: Harpenden
DATE: 11/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Station Road
ARM C - A1081 (S)
ARM D - Exit

GEOMETRIC DATA

ARM B HAS A ZEBRA CROSSING

ARM C HAS A ZEBRA CROSSING

I ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I ARM A	I	3.50	I	6.00	I	20.00	I	15.00	I	17.00	I	40.0	I	0.612	I	25.332	I
I ARM B	I	3.50	I	4.00	I	5.00	I	5.00	I	17.00	I	40.0	I	0.456	I	16.035	I
I ARM C	I	3.50	I	4.00	I	5.00	I	40.00	I	17.00	I	30.0	I	0.570	I	20.067	I
I ARM D	I	3.50	I	4.00	I	5.00	I	30.00	I	17.00	I	30.0	I	0.566	I	19.907	I

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
08.00 - 09.00					
	ARM A	0.000	0.223	0.766	0.011
		0.0	208.0	713.0	10.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.336	0.000	0.536	0.128
		144.0	0.0	230.0	55.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.640	0.352	0.000	0.008
		533.0	293.0	0.0	7.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

PEDESTRIAN CROSSING DATA
PEDESTRIAN CROSSING FLOW:
ARM B: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ARM C: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ZEBRA CROSSINGS

T40

ARM	LENGTH OF CROSSING (M) (ENTRY)	(EXIT)	QUEUEING SPACE BETWEEN CROSSING AND JUNCTION ENTRY (VEHS)	QUEUEING SPACE WITHOUT BLOCKING BACK INTO JUNCTION (VEHS)
B	10.00	3.50	5.0	5.0
C	6.00	3.50	4.0	2.0

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)		START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15										
ARM A	15.52	22.39	0.693	- -	-	0.0	2.2	30.5	-	0.140
ARM B	7.16	9.75	0.735	- -	0.5	0.0	2.5	33.0	-	0.345
ARM C	13.88	18.12	0.766	- -	0.3	0.0	3.1	41.1	-	0.216
ARM D	0.00	10.91	0.000	- -	-	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	15.52	22.34	0.695	- - -	2.2	2.2	33.3	-	0.147
ARM B	7.16	9.66	0.741	- - 0.5	2.5	2.7	39.7	-	0.393
ARM C	13.88	18.08	0.768	- - 0.3	3.1	3.2	47.2	-	0.237
ARM D	0.00	10.77	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	15.52	22.34	0.695	- - -	2.2	2.2	33.7	-	0.147
ARM B	7.16	9.66	0.741	- - 0.5	2.7	2.8	41.1	-	0.397
ARM C	13.88	18.08	0.768	- - 0.3	3.2	3.2	48.2	-	0.238
ARM D	0.00	10.76	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	15.52	22.34	0.695	- - -	2.2	2.3	33.8	-	0.147
ARM B	7.16	9.66	0.741	- - 0.5	2.8	2.8	41.7	-	0.399
ARM C	13.88	18.08	0.768	- - 0.3	3.2	3.2	48.6	-	0.238
ARM D	0.00	10.76	0.000	- - -	0.0	0.0	0.0	-	0.000

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	2.2	**
08.30	2.2	**
08.45	2.2	**
09.00	2.3	**

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	2.5	***
08.30	2.7	***
08.45	2.8	***
09.00	2.8	***

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	3.1	***
08.30	3.2	***
08.45	3.2	***
09.00	3.2	***

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A	931.2	931.2	131.3	0.14	131.4	0.14
B	429.6	429.6	155.4	0.36	155.8	0.36
C	832.8	832.8	185.0	0.22	185.3	0.22
D	0.0	0.0	0.0	0.00	0.0	0.00
ALL	2193.6	2193.6	471.7	0.22	472.5	0.22

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 16:00:28 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J3-A1081 jw Station Road\10338-J3 A1081 jw Station Road - 2015 PM [flat].vai"
(drive-on-the-left) at 12:02:54 on Wednesday, 11 May 2016

FILE PROPERTIES

RUN TITLE: 10338-J3 A1081 jw Station Road - 2015 PM [flat]
LOCATION: Harpenden
DATE: 11/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Station Road
ARM C - A1081 (S)
ARM D - Exit

GEOMETRIC DATA

ARM B HAS A ZEBRA CROSSING

ARM C HAS A ZEBRA CROSSING

I ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I ARM A	I	3.50	I	6.00	I	20.00	I	15.00	I	17.00	I	40.0	I	0.612	I	25.332	I
I ARM B	I	3.50	I	4.00	I	5.00	I	5.00	I	17.00	I	40.0	I	0.456	I	16.035	I
I ARM C	I	3.50	I	4.00	I	5.00	I	40.00	I	17.00	I	30.0	I	0.570	I	20.067	I
I ARM D	I	3.50	I	4.00	I	5.00	I	30.00	I	17.00	I	30.0	I	0.566	I	19.907	I

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
17.00 - 18.00	ARM A	0.000	0.286	0.686	0.027
		0.0	272.0	652.0	26.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.285	0.000	0.489	0.226
		121.0	0.0	208.0	96.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.662	0.326	0.000	0.012
		447.0	220.0	0.0	8.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

PEDESTRIAN CROSSING DATA
PEDESTRIAN CROSSING FLOW:
ARM B: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ARM C: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ZEBRA CROSSINGS

T40

ARM	LENGTH OF CROSSING (M) (ENTRY)	(EXIT)	QUEUEING SPACE BETWEEN CROSSING AND JUNCTION ENTRY (VEHS)	QUEUEING SPACE WITHOUT BLOCKING BACK INTO JUNCTION (VEHS)
B	10.00	3.50	5.0	5.0
C	6.00	3.50	4.0	2.0

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	15.83	23.11	0.685	- - -	0.0	2.1	29.5	-	0.132
ARM B	7.08	10.31	0.687	- - 0.5	0.0	2.1	27.5	-	0.287
ARM C	11.25	17.80	0.632	- - 0.3	0.0	1.7	23.4	-	0.148
ARM D	0.00	12.56	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	15.83	23.09	0.686	- -	-	2.1	2.1	32.0	-	0.138
ARM B	7.08	10.24	0.691	- -	0.5	2.1	2.2	31.8	-	0.314
ARM C	11.25	17.76	0.633	- -	0.3	1.7	1.7	25.4	-	0.153
ARM D	0.00	12.48	0.000	- -	-	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	15.83	23.09	0.686	- -	-	2.1	2.2	32.3	-	0.138
ARM B	7.08	10.24	0.691	- -	0.5	2.2	2.2	32.6	-	0.316
ARM C	11.25	17.76	0.634	- -	0.3	1.7	1.7	25.6	-	0.154
ARM D	0.00	12.48	0.000	- -	-	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	15.83	23.09	0.686	- -	-	2.2	2.2	32.4	-	0.138
ARM B	7.08	10.24	0.691	- -	0.5	2.2	2.2	32.9	-	0.316
ARM C	11.25	17.76	0.634	- -	0.3	1.7	1.7	25.7	-	0.154
ARM D	0.00	12.48	0.000	- -	-	0.0	0.0	0.0	-	0.000

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	2.1	**
17.30	2.1	**
17.45	2.2	**
18.00	2.2	**

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	2.1	**
17.30	2.2	**
17.45	2.2	**
18.00	2.2	**

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	1.7	**
17.30	1.7	**
17.45	1.7	**
18.00	1.7	**

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A	949.8	949.8	126.4	0.13	126.5	0.13
B	424.8	424.8	124.8	0.29	125.1	0.29
C	675.0	675.0	100.1	0.15	100.2	0.15
D	0.0	0.0	0.0	0.00	0.0	0.00
ALL	2049.6	2049.6	351.3	0.17	351.7	0.17

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 16:00:37 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J3-A1081 jw Station Road\10338-J3 A1081 jw Station Road - 2031 AM [flat].vai"
(drive-on-the-left) at 12:06:38 on Wednesday, 25 May 2016

FILE PROPERTIES

RUN TITLE: 10338-J3 A1081 jw Station Road - 2031 AM [flat]
LOCATION: Harpenden
DATE: 25/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Station Road
ARM C - A1081 (S)
ARM D - Exit

GEOMETRIC DATA

ARM B HAS A ZEBRA CROSSING

ARM C HAS A ZEBRA CROSSING

I ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I ARM A	I	3.50	I	6.00	I	20.00	I	15.00	I	17.00	I	40.0	I	0.612	I	25.332	I
I ARM B	I	3.50	I	4.00	I	5.00	I	5.00	I	17.00	I	40.0	I	0.456	I	16.035	I
I ARM C	I	3.50	I	4.00	I	5.00	I	40.00	I	17.00	I	30.0	I	0.570	I	20.067	I
I ARM D	I	3.50	I	4.00	I	5.00	I	30.00	I	17.00	I	30.0	I	0.566	I	19.907	I

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
08.00 - 09.00	ARM A	0.000	0.225	0.764	0.011
		0.0	252.0	856.0	12.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.336	0.000	0.536	0.129
		175.0	0.0	279.0	67.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.640	0.352	0.000	0.008
		646.0	355.0	0.0	8.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

PEDESTRIAN CROSSING DATA
PEDESTRIAN CROSSING FLOW:
ARM B: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ARM C: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ZEBRA CROSSINGS

T40

ARM	LENGTH OF CROSSING (M) (ENTRY)	(EXIT)	QUEUEING SPACE BETWEEN CROSSING AND JUNCTION ENTRY (VEHS)	QUEUEING SPACE WITHOUT BLOCKING BACK INTO JUNCTION (VEHS)
B	10.00		5.0	5.0
C	6.00	3.50	4.0	2.0

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	18.81	21.83	0.862	- -	0.0	5.5	68.7	-	0.272
ARM B	8.68	8.10	1.072	BB- 0.5	0.0	15.9	142.9	-	1.352
ARM C	16.83	17.94	0.938	- - 0.3	0.0	9.4	104.2	-	0.474
ARM D	0.00	9.36	0.000	- -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	18.81	21.72	0.866	- - -	5.5	5.9	86.2	-	0.333
ARM B	8.68	7.95	1.092	BB- 0.5	15.9	28.4	333.7	-	3.119
ARM C	16.83	17.87	0.942	- - 0.3	9.4	11.4	158.1	-	0.725
ARM D	0.00	9.04	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	18.81	21.71	0.867	- - -	5.9	6.1	90.6	-	0.339
ARM B	8.68	7.94	1.094	BB- 0.5	28.4	40.2	514.8	-	4.614
ARM C	16.83	17.86	0.942	- - 0.3	11.4	12.5	180.4	-	0.791
ARM D	0.00	8.99	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	18.81	21.70	0.867	- - -	6.1	6.2	92.6	-	0.342
ARM B	8.68	7.93	1.094	BB- 0.5	40.2	51.9	690.8	-	6.057
ARM C	16.83	17.86	0.943	- - 0.3	12.5	13.2	193.5	-	0.833
ARM D	0.00	8.98	0.000	- - -	0.0	0.0	0.0	-	0.000

WARNING Entry capacities in certain time segments
(flagged BB in Queue and Delay Table) are restricted due
to traffic queueing to leave the junction on an adjacent arm

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	5.5	*****
08.30	5.9	******
08.45	6.1	******
09.00	6.2	******

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	15.9	****************
08.30	28.4	****************************
08.45	40.2	**
09.00	51.9	***

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	9.4	*********
08.30	11.4	***********
08.45	12.5	************
09.00	13.2	*************

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1128.6	1128.6	338.2	0.30	339.1	0.30
B	520.8	520.8	1682.2	3.23	1851.7	3.56
C	1009.8	1009.8	636.2	0.63	641.1	0.63
D	0.0	0.0	0.0	0.00	0.0	0.00
ALL	2659.2	2659.2	2656.6	1.00	2831.9	1.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:37:43 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J3-A1081 jw Station Road\10338-J3 A1081 jw Station Road - 2031 PM [flat].vai"
(drive-on-the-left) at 12:06:42 on Wednesday, 25 May 2016

FILE PROPERTIES

RUN TITLE: 10338-J3 A1081 jw Station Road - 2031 PM [flat]
LOCATION: Harpenden
DATE: 25/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Station Road
ARM C - A1081 (S)
ARM D - Exit

GEOMETRIC DATA

ARM B HAS A ZEBRA CROSSING

ARM C HAS A ZEBRA CROSSING

I ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I ARM A	I	3.50	I	6.00	I	20.00	I	15.00	I	17.00	I	40.0	I	0.612	I	25.332	I
I ARM B	I	3.50	I	4.00	I	5.00	I	5.00	I	17.00	I	40.0	I	0.456	I	16.035	I
I ARM C	I	3.50	I	4.00	I	5.00	I	40.00	I	17.00	I	30.0	I	0.570	I	20.067	I
I ARM D	I	3.50	I	4.00	I	5.00	I	30.00	I	17.00	I	30.0	I	0.566	I	19.907	I

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
17.00 - 18.00	ARM A	0.000	0.286	0.686	0.028
		0.0	330.0	791.0	32.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.285	0.000	0.489	0.225
		147.0	0.0	252.0	116.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.662	0.326	0.000	0.012
		542.0	267.0	0.0	10.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

PEDESTRIAN CROSSING DATA
PEDESTRIAN CROSSING FLOW:
ARM B: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ARM C: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ZEBRA CROSSINGS

T40

ARM	LENGTH OF CROSSING (M) (ENTRY)	(EXIT)	QUEUEING SPACE BETWEEN CROSSING AND JUNCTION ENTRY (VEHS)	QUEUEING SPACE WITHOUT BLOCKING BACK INTO JUNCTION (VEHS)
B	10.00		5.0	5.0
C	6.00	3.50	4.0	2.0

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	19.20	22.64	0.848	- -	0.0	5.0	64.0	-	0.247
ARM B	8.59	8.76	0.981	BB- 0.5	0.0	9.7	97.9	-	0.911
ARM C	13.64	17.45	0.781	- - 0.3	0.0	3.3	43.9	-	0.236
ARM D	0.00	11.12	0.000	- -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	19.20	22.60	0.850	- - -	5.0	5.3	77.7	-	0.289
ARM B	8.59	8.62	0.997	BB- 0.5	9.7	14.5	184.2	-	1.724
ARM C	13.64	17.35	0.786	- - 0.3	3.3	3.5	51.6	-	0.266
ARM D	0.00	10.95	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	19.20	22.60	0.850	- - -	5.3	5.4	80.5	-	0.292
ARM B	8.59	8.61	0.997	BB- 0.5	14.5	18.1	245.4	-	2.178
ARM C	13.64	17.33	0.787	- - 0.3	3.5	3.6	53.3	-	0.269
ARM D	0.00	10.94	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	19.20	22.60	0.850	- - -	5.4	5.5	81.7	-	0.293
ARM B	8.59	8.61	0.997	BB- 0.5	18.1	21.0	294.1	-	2.539
ARM C	13.64	17.32	0.788	- - 0.3	3.6	3.6	54.0	-	0.271
ARM D	0.00	10.93	0.000	- - -	0.0	0.0	0.0	-	0.000

WARNING Entry capacities in certain time segments
(flagged BB in Queue and Delay Table) are restricted due
to traffic queueing to leave the junction on an adjacent arm

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	5.0	*****
17.30	5.3	*****
17.45	5.4	*****
18.00	5.5	*****

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	9.7	**********
17.30	14.5	**************
17.45	18.1	******************
18.00	21.0	**********************

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	3.3	***
17.30	3.5	****
17.45	3.6	****
18.00	3.6	****

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A	1152.0	1152.0	303.9	0.26	304.6	0.26
B	515.4	515.4	821.7	1.59	847.4	1.64
C	818.4	818.4	202.8	0.25	203.2	0.25
D	0.0	0.0	0.0	0.00	0.0	0.00
ALL	2485.8	2485.8	1328.3	0.53	1355.1	0.55

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:37:55 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J3-A1081 jw Station Road\
10338-J3 A1081 jw Station Road - 2031+Dev Rev3 AM [flat].vai"
(drive-on-the-left) at 09:30:12 on Wednesday, 1 June 2016

FILE PROPERTIES

RUN TITLE: 10338-J3 A1081 jw Station Road - 2031+Dev Rev3 AM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Station Road
ARM C - A1081 (S)
ARM D - Exit

GEOMETRIC DATA

ARM B HAS A ZEBRA CROSSING

ARM C HAS A ZEBRA CROSSING

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	6.00	20.00	15.00	17.00	40.0	0.612	25.332
ARM B	3.50	4.00	5.00	5.00	17.00	40.0	0.456	16.035
ARM C	3.50	4.00	5.00	40.00	17.00	30.0	0.570	20.067
ARM D	3.50	4.00	5.00	30.00	17.00	30.0	0.566	19.907

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
08.00 - 09.00	ARM A	0.000	0.218	0.772	0.010
		0.0	273.0	966.0	12.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.352	0.000	0.522	0.125
		188.0	0.0	279.0	67.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.665	0.327	0.000	0.007
		722.0	355.0	0.0	8.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

PEDESTRIAN CROSSING DATA
PEDESTRIAN CROSSING FLOW:
ARM B: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ARM C: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ZEBRA CROSSINGS

T40

ARM	LENGTH OF CROSSING (M) (ENTRY)	(EXIT)	QUEUEING SPACE BETWEEN CROSSING AND JUNCTION ENTRY (VEHS)	QUEUEING SPACE WITHOUT BLOCKING BACK INTO JUNCTION (VEHS)
B	10.00		5.0	5.0
C	6.00	3.50	4.0	2.0

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	20.85	21.91	0.952	- -	0.0	11.2	122.4	-	0.449
ARM B	8.89	7.23	1.230	BB- 0.5	0.0	28.6	231.9	-	2.330
ARM C	18.09	18.06	1.002	- - 0.3	0.0	16.2	159.4	-	-0.055
ARM D	0.00	8.96	0.000	- -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	20.85	21.78	0.957	- - -	11.2	14.1	192.4	-	0.718
ARM B	8.89	6.95	1.280	BB- 0.5	28.6	58.0	649.8	-	6.536
ARM C	18.09	18.07	1.001	- - 0.3	16.2	23.2	298.8	-	1.283
ARM D	0.00	8.62	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	20.85	21.76	0.958	- - -	14.1	15.9	226.0	-	0.806
ARM B	8.89	6.91	1.287	BB- 0.5	58.0	87.8	1093.5	-	10.798
ARM C	18.09	18.07	1.001	- - 0.3	23.2	28.6	389.5	-	1.605
ARM D	0.00	8.57	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	20.85	21.75	0.959	- - -	15.9	17.0	247.1	-	0.867
ARM B	8.89	6.90	1.289	BB- 0.5	87.8	117.7	1541.4	-	15.109
ARM C	18.09	18.07	1.001	- - 0.3	28.6	33.1	462.8	-	1.868
ARM D	0.00	8.54	0.000	- - -	0.0	0.0	0.0	-	0.000

WARNING Entry capacities in certain time segments
(flagged BB in Queue and Delay Table) are restricted due
to traffic queueing to leave the junction on an adjacent arm

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	11.2	**********
08.30	14.1	**********
08.45	15.9	**********
09.00	17.0	**********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	28.6	**********
08.30	58.0	**********
08.45	87.8	**********
09.00	117.7	**********

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	16.2	**********
08.30	23.2	**********
08.45	28.6	**********
09.00	33.1	**********

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1251.0	1251.0	787.9	0.63	794.6	0.64
B	533.4	533.4	3516.6	6.59	4521.2	8.48
C	1085.4	1085.4	1310.5	1.21	1340.7	1.24
D	0.0	0.0	0.0	0.00	0.0	0.00
ALL	2869.8	2869.8	5615.0	1.96	6656.5	2.32

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:38:31 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J3-A1081 jw Station Road\
10338-J3 A1081 jw Station Road - 2031+Dev Rev3 PM [flat].vai"
(drive-on-the-left) at 09:30:30 on Wednesday, 1 June 2016

FILE PROPERTIES

RUN TITLE: 10338-J3 A1081 jw Station Road - 2031+Dev Rev3 PM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Station Road
ARM C - A1081 (S)
ARM D - Exit

GEOMETRIC DATA

ARM B HAS A ZEBRA CROSSING

ARM C HAS A ZEBRA CROSSING

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	6.00	20.00	15.00	17.00	40.0	0.612	25.332
ARM B	3.50	4.00	5.00	5.00	17.00	40.0	0.456	16.035
ARM C	3.50	4.00	5.00	40.00	17.00	30.0	0.570	20.067
ARM D	3.50	4.00	5.00	30.00	17.00	30.0	0.566	19.907

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
17.00 - 18.00	ARM A	0.000	0.281	0.693	0.026
		0.0	342.0	844.0	32.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.308	0.000	0.474	0.218
		164.0	0.0	252.0	116.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.690	0.299	0.000	0.011
		617.0	267.0	0.0	10.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

PEDESTRIAN CROSSING DATA
PEDESTRIAN CROSSING FLOW:
ARM B: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ARM C: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ZEBRA CROSSINGS

T40

ARM	LENGTH OF CROSSING (M) (ENTRY)	(EXIT)	QUEUEING SPACE BETWEEN CROSSING AND JUNCTION ENTRY (VEHS)	QUEUEING SPACE WITHOUT BLOCKING BACK INTO JUNCTION (VEHS)
B	10.00		5.0	5.0
C	6.00	3.50	4.0	2.0

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	20.30	22.66	0.896	- -	0.0	7.0	85.1	-	0.315
ARM B	8.88	8.30	1.070	BB- 0.5	0.0	16.0	143.8	-	1.329
ARM C	14.89	17.42	0.855	- - 0.3	0.0	5.1	63.2	-	0.319
ARM D	0.00	10.40	0.000	- -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	20.30	22.60	0.898	- - -	7.0	7.8	112.1	-	0.406
ARM B	8.88	8.12	1.093	BB- 0.5	16.0	28.8	337.6	-	3.091
ARM C	14.89	17.35	0.858	- - 0.3	5.1	5.5	80.2	-	0.391
ARM D	0.00	10.19	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	20.30	22.60	0.898	- - -	7.8	8.1	119.4	-	0.418
ARM B	8.88	8.11	1.095	BB- 0.5	28.8	41.1	524.3	-	4.590
ARM C	14.89	17.34	0.859	- - 0.3	5.5	5.7	84.4	-	0.400
ARM D	0.00	10.17	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	20.30	22.60	0.898	- - -	8.1	8.3	122.8	-	0.423
ARM B	8.88	8.10	1.096	BB- 0.5	41.1	53.1	706.6	-	6.070
ARM C	14.89	17.34	0.859	- - 0.3	5.7	5.8	86.3	-	0.403
ARM D	0.00	10.17	0.000	- - -	0.0	0.0	0.0	-	0.000

WARNING Entry capacities in certain time segments
(flagged BB in Queue and Delay Table) are restricted due
to traffic queueing to leave the junction on an adjacent arm

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	7.0	*******
17.30	7.8	********
17.45	8.1	********
18.00	8.3	********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	16.0	****************
17.30	28.8	****************************
17.45	41.1	**
18.00	53.1	***

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	5.1	*****
17.30	5.5	******
17.45	5.7	******
18.00	5.8	******

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A	1218.0	1218.0	439.3	0.36	440.8	0.36
B	532.8	532.8	1712.3	3.21	1886.4	3.54
C	893.4	893.4	314.1	0.35	315.0	0.35
D	0.0	0.0	0.0	0.00	0.0	0.00
ALL	2644.2	2644.2	2465.7	0.93	2642.3	1.00

T75

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 09:38:13 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J3-A1081 jw Station Road\
10338-J3 A1081 jw Station Road [HL-08] - 2031+Dev Rev3 AM [flat].vai"
(drive-on-the-left) at 10:19:11 on Wednesday, 1 June 2016

FILE PROPERTIES

RUN TITLE: 10338-J3 A1081 jw Station Road +[HL-08] - 2031+Dev Rev3 AM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Station Road
ARM C - A1081 (S)
ARM D - Exit

GEOMETRIC DATA

ARM B HAS A ZEBRA CROSSING

ARM C HAS A ZEBRA CROSSING

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	7.00	20.00	15.00	17.00	40.0	0.639	27.526
ARM B	3.50	5.70	5.00	5.00	17.00	40.0	0.483	18.246
ARM C	3.50	5.00	5.00	40.00	17.00	30.0	0.595	22.066
ARM D	3.50	4.00	5.00	30.00	17.00	30.0	0.566	19.907

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
08.00 - 09.00	ARM A	0.000	0.218	0.772	0.010
		0.0	273.0	966.0	12.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.352	0.000	0.522	0.125
		188.0	0.0	279.0	67.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.665	0.327	0.000	0.007
		722.0	355.0	0.0	8.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

PEDESTRIAN CROSSING DATA
PEDESTRIAN CROSSING FLOW:
ARM B: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ARM C: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ZEBRA CROSSINGS

T40

ARM	LENGTH OF CROSSING (M) (ENTRY)	(EXIT)	QUEUEING SPACE BETWEEN CROSSING AND JUNCTION ENTRY (VEHS)	QUEUEING SPACE WITHOUT BLOCKING BACK INTO JUNCTION (VEHS)
B	10.00		5.0	5.0
C	6.00	3.50	4.0	2.0

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	20.85	23.84	0.875	- -	-	0.0	6.0	75.4	-	0.270
ARM B	8.89	8.34	1.067	BB-	0.5	0.0	15.8	142.1	-	1.312
ARM C	18.09	19.72	0.917	- -	0.3	0.0	8.1	93.9	-	0.394
ARM D	0.00	8.49	0.000	- -	-	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	20.85	23.74	0.878	- - -	6.0	6.6	95.5	-	0.332
ARM B	8.89	8.15	1.091	BB- 0.5	15.8	28.4	332.8	-	3.047
ARM C	18.09	19.66	0.920	- - 0.3	8.1	9.4	132.5	-	0.553
ARM D	0.00	8.19	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	20.85	23.73	0.879	- - -	6.6	6.8	100.6	-	0.341
ARM B	8.89	8.13	1.093	BB- 0.5	28.4	40.5	517.1	-	4.518
ARM C	18.09	19.65	0.921	- - 0.3	9.4	10.0	145.6	-	0.587
ARM D	0.00	8.15	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	20.85	23.73	0.879	- - -	6.8	6.9	102.9	-	0.343
ARM B	8.89	8.13	1.094	BB- 0.5	40.5	52.4	696.7	-	5.964
ARM C	18.09	19.64	0.921	- - 0.3	10.0	10.3	152.5	-	0.602
ARM D	0.00	8.14	0.000	- - -	0.0	0.0	0.0	-	0.000

WARNING Entry capacities in certain time segments
(flagged BB in Queue and Delay Table) are restricted due
to traffic queueing to leave the junction on an adjacent arm

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	6.0	******
08.30	6.6	*******
08.45	6.8	*******
09.00	6.9	*******

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	15.8	****************
08.30	28.4	****************************
08.45	40.5	**
09.00	52.4	***

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	8.1	********
08.30	9.4	*********
08.45	10.0	**********
09.00	10.3	**********

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A	1251.0	1251.0	374.3	0.30	375.3	0.30
B	533.4	533.4	1688.8	3.17	1857.5	3.48
C	1085.4	1085.4	524.5	0.48	527.2	0.49
D	0.0	0.0	0.0	0.00	0.0	0.00
ALL	2869.8	2869.8	2587.6	0.90	2760.1	0.96

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 10:20:26 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J3-A1081 jw Station Road\
10338-J3 A1081 jw Station Road [HL-08] - 2031+Dev Rev3 PM [flat].vai"
(drive-on-the-left) at 10:18:52 on Wednesday, 1 June 2016

FILE PROPERTIES

RUN TITLE: 10338-J3 A1081 jw Station Road [HL-08] - 2031+Dev Rev3 PM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - Station Road
ARM C - A1081 (S)
ARM D - Exit

GEOMETRIC DATA

ARM B HAS A ZEBRA CROSSING

ARM C HAS A ZEBRA CROSSING

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	7.00	20.00	15.00	17.00	40.0	0.639	27.526
ARM B	3.50	5.70	5.00	5.00	17.00	40.0	0.483	18.246
ARM C	3.50	5.00	5.00	40.00	17.00	30.0	0.595	22.066
ARM D	3.50	4.00	5.00	30.00	17.00	30.0	0.566	19.907

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
17.00 - 18.00	ARM A	0.000	0.281	0.693	0.026
		0.0	342.0	844.0	32.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.308	0.000	0.474	0.218
		164.0	0.0	252.0	116.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.690	0.299	0.000	0.011
		617.0	267.0	0.0	10.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

PEDESTRIAN CROSSING DATA
PEDESTRIAN CROSSING FLOW:
ARM B: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ARM C: PEDESTRIAN FLOWS ARE INPUT DIRECTLY
ZEBRA CROSSINGS

T40

ARM	LENGTH OF CROSSING (M) (ENTRY)	(EXIT)	QUEUEING SPACE BETWEEN CROSSING AND JUNCTION ENTRY (VEHS)	QUEUEING SPACE WITHOUT BLOCKING BACK INTO JUNCTION (VEHS)
B	10.00		5.0	5.0
C	6.00	3.50	4.0	2.0

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	20.30	24.71	0.821	- -	0.0	4.3	56.2	-	0.202
ARM B	8.88	9.72	0.913	BB- 0.5	0.0	6.6	73.1	-	0.646
ARM C	14.89	19.11	0.779	- - 0.3	0.0	3.3	44.0	-	0.216
ARM D	0.00	10.22	0.000	- -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	20.30	24.67	0.823	- - -	4.3	4.5	65.7	-	0.227
ARM B	8.88	9.51	0.934	BB- 0.5	6.6	8.8	117.3	-	1.053
ARM C	14.89	19.01	0.783	- - 0.3	3.3	3.5	51.1	-	0.240
ARM D	0.00	10.06	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	20.30	24.67	0.823	- - -	4.5	4.5	67.3	-	0.228
ARM B	8.88	9.49	0.935	BB- 0.5	8.8	10.0	141.2	-	1.202
ARM C	14.89	18.99	0.784	- - 0.3	3.5	3.5	52.6	-	0.243
ARM D	0.00	10.04	0.000	- - -	0.0	0.0	0.0	-	0.000

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	20.30	24.67	0.823	- - -	4.5	4.5	68.0	-	0.228
ARM B	8.88	9.49	0.936	BB- 0.5	10.0	10.7	155.5	-	1.291
ARM C	14.89	18.98	0.784	- - 0.3	3.5	3.6	53.2	-	0.243
ARM D	0.00	10.04	0.000	- - -	0.0	0.0	0.0	-	0.000

WARNING Entry capacities in certain time segments
(flagged BB in Queue and Delay Table) are restricted due
to traffic queueing to leave the junction on an adjacent arm

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	4.3	****
17.30	4.5	****
17.45	4.5	*****
18.00	4.5	*****

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	6.6	*******
17.30	8.8	*********
17.45	10.0	**********
18.00	10.7	***********

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	3.3	***
17.30	3.5	***
17.45	3.5	****
18.00	3.6	****

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A	1218.0	1218.0	257.1	0.21	257.6	0.21
B	532.8	532.8	487.1	0.91	493.2	0.93
C	893.4	893.4	200.8	0.22	201.2	0.23
D	0.0	0.0	0.0	0.00	0.0	0.00
ALL	2644.2	2644.2	945.1	0.36	951.9	0.36

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 10:20:34 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J4-A1081 jw The Common\10338-J4 A1081 jw The Common - 2015 AM [flat].vai"
(drive-on-the-left) at 12:58:52 on Wednesday, 11 May 2016

FILE PROPERTIES

RUN TITLE: 10338-J4 A1081 jw The Common - 2015 AM [flat]
LOCATION: Harpenden
DATE: 11/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - A1081 (S)
ARM C - The Common

MINI-ROUNDABOUT GEOMETRIC DATA

JUNCTION IN LONDON
LIGHTING CONDITIONS : NORMAL
ROAD SURFACE CONDITION: NORMAL

T5

ARM	V (M)	E (M)	Lm(M)	Vm(M)	A (M)	K (M)	G (%)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	4.50	5.00	3.50	16.00	14.00	0.00	0.588	21.253*
ARM B	3.50	4.00	2.00	3.50	10.00	8.00	0.00	0.544	15.311
ARM C	3.00	4.00	2.00	3.00	8.00	6.00	0.00	0.524	11.719

V = approach half-width Lm = effective flare length A = distance between arms
E = entry width Vm = minimum approach half-width K= entry corner kerb line G=gradient over 50 m
WARNING One or more intercept values (flagged * in the table)
have been adjusted according to local input values
from a previous run and listed below -

T6

	ADJUSTMENT TO INTERCEPT (PCU/MIN)
ARM A	5.000

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TIME	FROM/T	TURNING PROPORTIONS / TURNING COUNTS / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 09.00	ARM A	0.000	0.948	0.052
		0.0	880.0	48.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.731	0.000	0.269
		490.0	0.0	180.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.102	0.898	0.000
		24.0	212.0	0.0
		(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	15.47	19.21	0.805	- -	0.0	3.8	49.9	-	0.237
ARM B	11.17	14.88	0.751	- -	0.0	2.8	37.4	-	0.246
ARM C	3.93	7.51	0.523	- -	0.0	1.1	14.5	-	0.269

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	15.47	19.18	0.807	- -	3.8	4.0	58.7	-	0.267
ARM B	11.17	14.88	0.751	- -	2.8	2.9	43.1	-	0.268
ARM C	3.93	7.44	0.528	- -	1.1	1.1	16.2	-	0.285

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	15.47	19.18	0.807	- -	4.0	4.0	60.3	-	0.269
ARM B	11.17	14.88	0.751	- -	2.9	2.9	43.9	-	0.269
ARM C	3.93	7.44	0.528	- -	1.1	1.1	16.5	-	0.285

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	15.47	19.18	0.807	- - -	4.0	4.1	60.9	-	0.269
ARM B	11.17	14.88	0.751	- - -	2.9	3.0	44.3	-	0.269
ARM C	3.93	7.44	0.528	- - -	1.1	1.1	16.6	-	0.285

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	3.8	****
08.30	4.0	****
08.45	4.0	****
09.00	4.1	****

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	2.8	***
08.30	2.9	***
08.45	2.9	***
09.00	3.0	***

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	1.1	*
08.30	1.1	*
08.45	1.1	*
09.00	1.1	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	928.2	928.2	229.8	0.25	230.2	0.25
B	670.2	670.2	168.8	0.25	169.1	0.25
C	235.8	235.8	63.8	0.27	63.8	0.27
ALL	1834.2	1834.2	462.3	0.25	463.1	0.25

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 16:01:12 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J4-A1081 jw The Common\10338-J4 A1081 jw The Common - 2015 PM [flat].vai"
(drive-on-the-left) at 12:59:06 on Wednesday, 11 May 2016

FILE PROPERTIES

RUN TITLE: 10338-J4 A1081 jw The Common - 2015 PM [flat]
LOCATION: Harpenden
DATE: 11/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - A1081 (S)
ARM C - The Common

MINI-ROUNDABOUT GEOMETRIC DATA

JUNCTION IN LONDON
LIGHTING CONDITIONS : NORMAL
ROAD SURFACE CONDITION: NORMAL

T5

ARM	V (M)	E (M)	Lm(M)	Vm(M)	A (M)	K (M)	G (%)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	4.50	5.00	3.50	16.00	14.00	0.00	0.588	16.253
ARM B	3.50	4.00	2.00	3.50	10.00	8.00	0.00	0.544	20.311*
ARM C	3.00	4.00	2.00	3.00	8.00	6.00	0.00	0.524	11.719

V = approach half-width Lm = effective flare length A = distance between arms
E = entry width Vm = minimum approach half-width K= entry corner kerb line G=gradient over 50 m
WARNING One or more intercept values (flagged * in the table)
have been adjusted according to local input values
from a previous run and listed below -

T6

	ADJUSTMENT TO INTERCEPT (PCU/MIN)
ARM B	5.000

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

IARM	FLOW SCALE(%)
A	100
B	100
C	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TIME	FROM/T	TURNING PROPORTIONS / TURNING COUNTS / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
17.00 - 18.00	ARM A	0.000	0.977	0.023
		0.0	547.0	13.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.832	0.000	0.168
		683.0	0.0	138.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.046	0.954	0.000
		8.0	166.0	0.0
		(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	9.33	14.66	0.636	- -	0.0	1.7	23.4	-	0.180
ARM B	13.68	20.19	0.677	- -	0.0	2.0	28.3	-	0.147
ARM C	2.90	5.82	0.499	- -	0.0	1.0	12.9	-	0.329
17.15-17.30									
ARM A	9.33	14.63	0.638	- -	1.7	1.7	25.7	-	0.189
ARM B	13.68	20.19	0.677	- -	2.0	2.1	30.8	-	0.153
ARM C	2.90	5.76	0.504	- -	1.0	1.0	14.6	-	0.350
17.30-17.45									
ARM A	9.33	14.63	0.638	- -	1.7	1.7	26.0	-	0.189
ARM B	13.68	20.19	0.677	- -	2.1	2.1	31.1	-	0.153
ARM C	2.90	5.76	0.504	- -	1.0	1.0	14.9	-	0.350

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	9.33	14.63	0.638	- - -	1.7	1.7	26.1	-	0.189
ARM B	13.68	20.19	0.677	- - -	2.1	2.1	31.2	-	0.153
ARM C	2.90	5.76	0.504	- - -	1.0	1.0	15.0	-	0.350

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	1.7	**
17.30	1.7	**
17.45	1.7	**
18.00	1.7	**

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	2.0	**
17.30	2.1	**
17.45	2.1	**
18.00	2.1	**

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	1.0	*
17.30	1.0	*
17.45	1.0	*
18.00	1.0	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	559.8	559.8	101.4	0.18	101.5	0.18
B	820.8	820.8	121.5	0.15	121.6	0.15
C	174.0	174.0	57.4	0.33	57.5	0.33
ALL	1554.6	1554.6	280.3	0.18	280.6	0.18

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 16:01:26 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J4-A1081 jw The Common\10338-J4 A1081 jw The Common - 2031 AM [flat].vai"
(drive-on-the-left) at 12:07:50 on Wednesday, 25 May 2016

FILE PROPERTIES

RUN TITLE: 10338-J4 A1081 jw The Common - 2031 AM [flat]
LOCATION: Harpenden
DATE: 25/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - A1081 (S)
ARM C - The Common

MINI-ROUNDABOUT GEOMETRIC DATA

JUNCTION IN LONDON
LIGHTING CONDITIONS : NORMAL
ROAD SURFACE CONDITION: NORMAL

T5

ARM	V (M)	E (M)	Lm(M)	Vm(M)	A (M)	K (M)	G (%)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	4.50	5.00	3.50	16.00	14.00	0.00	0.588	21.253*
ARM B	3.50	4.00	2.00	3.50	10.00	8.00	0.00	0.544	15.311
ARM C	3.00	4.00	2.00	3.00	8.00	6.00	0.00	0.524	11.719

V = approach half-width Lm = effective flare length A = distance between arms
E = entry width Vm = minimum approach half-width K= entry corner kerb line G=gradient over 50 m
WARNING One or more intercept values (flagged * in the table)
have been adjusted according to local input values
from a previous run and listed below -

T6

ARM	ADJUSTMENT TO INTERCEPT (PCU/MIN)
A	5.000

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TIME	FROM/T	TURNING PROPORTIONS / TURNING COUNTS / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 09.00	ARM A	0.000	0.948	0.052
		0.0	1067.0	58.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.732	0.000	0.268
		594.0	0.0	218.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.101	0.899	0.000
		29.0	257.0	0.0
		(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	18.75	18.81	0.997	- -	-	0.0	15.9	157.3	- 0.647
ARM B	13.54	14.81	0.914	- -	-	0.0	7.4	84.4	- 0.479
ARM C	4.77	6.72	0.710	- -	-	0.0	2.2	28.2	- 0.451
08.15-08.30									
ARM A	18.75	18.74	1.000	- -	-	15.9	23.0	294.6	- 1.228
ARM B	13.54	14.80	0.915	- -	-	7.4	8.6	121.0	- 0.678
ARM C	4.77	6.56	0.727	- -	-	2.2	2.5	35.5	- 0.544
08.30-08.45									
ARM A	18.75	18.73	1.001	- -	-	23.0	28.5	388.0	- 1.548
ARM B	13.54	14.79	0.915	- -	-	8.6	9.1	133.1	- 0.718
ARM C	4.77	6.55	0.729	- -	-	2.5	2.5	37.7	- 0.557

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	18.75	18.73	1.001	- - -	28.5	33.2	463.9	-	1.804
ARM B	13.54	14.79	0.915	- - -	9.1	9.5	139.6	-	0.735
ARM C	4.77	6.54	0.729	- - -	2.5	2.6	38.6	-	0.558

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	15.9	**********
08.30	23.0	**********
08.45	28.5	**********
09.00	33.2	**********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	7.4	*******
08.30	8.6	********
08.45	9.1	********
09.00	9.5	********

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	2.2	**
08.30	2.5	**
08.45	2.5	***
09.00	2.6	***

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1125.0	1125.0	1303.8	1.16	1333.3	1.19
B	812.4	812.4	478.1	0.59	481.2	0.59
C	286.2	286.2	140.0	0.49	140.5	0.49
ALL	2223.6	2223.6	1921.9	0.86	1954.9	0.88

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 10:32:36 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J4-A1081 jw The Common\10338-J4 A1081 jw The Common - 2031 PM [flat].vai"
(drive-on-the-left) at 12:07:55 on Wednesday, 25 May 2016

FILE PROPERTIES

RUN TITLE: 10338-J4 A1081 jw The Common - 2031 PM [flat]
LOCATION: Harpenden
DATE: 25/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - A1081 (S)
ARM C - The Common

MINI-ROUNDABOUT GEOMETRIC DATA

JUNCTION IN LONDON
LIGHTING CONDITIONS : NORMAL
ROAD SURFACE CONDITION: NORMAL

T5

ARM	V (M)	E (M)	Lm(M)	Vm(M)	A (M)	K (M)	G (%)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	4.50	5.00	3.50	16.00	14.00	0.00	0.588	16.253
ARM B	3.50	4.00	2.00	3.50	10.00	8.00	0.00	0.544	20.311*
ARM C	3.00	4.00	2.00	3.00	8.00	6.00	0.00	0.524	11.719

V = approach half-width Lm = effective flare length A = distance between arms
E = entry width Vm = minimum approach half-width K= entry corner kerb line G=gradient over 50 m
WARNING One or more intercept values (flagged * in the table)
have been adjusted according to local input values
from a previous run and listed below -

T6

	ADJUSTMENT TO INTERCEPT (PCU/MIN)
ARM B	5.000

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TIME	FROM/T	TURNING PROPORTIONS / TURNING COUNTS / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
17.00 - 18.00	ARM A	0.000	0.976	0.024
		0.0	663.0	16.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.832	0.000	0.168
		828.0	0.0	167.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.047	0.953	0.000
		10.0	201.0	0.0
		(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME		DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15										
	ARM A	11.32	14.39	0.787	- -	-	0.0	3.4	43.8	0.287
	ARM B	16.59	20.17	0.823	- -	-	0.0	4.2	54.8	0.244
	ARM C	3.52	4.61	0.763	- -	-	0.0	2.6	31.7	0.715
17.15-17.30										
	ARM A	11.32	14.31	0.791	- -	-	3.4	3.6	52.5	0.330
	ARM B	16.59	20.17	0.823	- -	-	4.2	4.4	65.1	0.276
	ARM C	3.52	4.49	0.783	- -	-	2.6	3.1	43.8	0.944
17.30-17.45										
	ARM A	11.32	14.30	0.792	- -	-	3.6	3.7	54.4	0.334
	ARM B	16.59	20.17	0.823	- -	-	4.4	4.5	66.8	0.278
	ARM C	3.52	4.49	0.784	- -	-	3.1	3.3	47.9	0.986

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	11.32	14.29	0.792	- - -	3.7	3.7	55.2	-	0.335
ARM B	16.59	20.17	0.823	- - -	4.5	4.5	67.6	-	0.279
ARM C	3.52	4.49	0.784	- - -	3.3	3.4	49.7	-	1.003

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	3.4	***
17.30	3.6	****
17.45	3.7	****
18.00	3.7	****

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	4.2	****
17.30	4.4	****
17.45	4.5	****
18.00	4.5	*****

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	2.6	***
17.30	3.1	***
17.45	3.3	***
18.00	3.4	***

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	679.2	679.2	205.9	0.30	206.4	0.30
B	995.4	995.4	254.4	0.26	254.9	0.26
C	211.2	211.2	173.1	0.82	174.3	0.83
ALL	1885.8	1885.8	633.3	0.34	635.6	0.34

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 10:32:47 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J4-A1081 jw The Common\10338-J4 A1081 jw The Common - 2031+Dev AM [flat].vai"
(drive-on-the-left) at 12:14:11 on Wednesday, 25 May 2016

FILE PROPERTIES

RUN TITLE: 10338-J4 A1081 jw The Common - 2031+Dev AM [flat]
LOCATION: Harpenden
DATE: 25/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - A1081 (S)
ARM C - The Common

MINI-ROUNDABOUT GEOMETRIC DATA

JUNCTION IN LONDON
LIGHTING CONDITIONS : NORMAL
ROAD SURFACE CONDITION: NORMAL

T5

ARM	V (M)	E (M)	Lm(M)	Vm(M)	A (M)	K (M)	G (%)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	4.50	5.00	3.50	16.00	14.00	0.00	0.588	21.253*
ARM B	3.50	4.00	2.00	3.50	10.00	8.00	0.00	0.544	15.311
ARM C	3.00	4.00	2.00	3.00	8.00	6.00	0.00	0.524	11.719

V = approach half-width Lm = effective flare length A = distance between arms
E = entry width Vm = minimum approach half-width K= entry corner kerb line G=gradient over 50 m
WARNING One or more intercept values (flagged * in the table)
have been adjusted according to local input values
from a previous run and listed below -

T6

ARM	ADJUSTMENT TO INTERCEPT (PCU/MIN)
ARM A	5.000

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

IARM	FLOW SCALE(%)
A	100
B	100
C	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

TIME	FROM/T	TURNING PROPORTIONS / TURNING COUNTS / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 09.00	ARM A	0.000	0.949	0.051
		0.0	1080.0	58.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.741	0.000	0.259
		633.0	0.0	221.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.100	0.900	0.000
		29.0	261.0	0.0
		(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	18.97	18.78	1.010	- -	0.0	17.8	171.9	-	-0.053
ARM B	14.23	14.82	0.960	- -	0.0	10.5	111.2	-	0.605
ARM C	4.84	6.47	0.748	- -	0.0	2.6	32.4	-	0.515
08.15-08.30									
ARM A	18.97	18.71	1.014	- -	17.8	27.1	339.8	-	1.397
ARM B	14.23	14.80	0.961	- -	10.5	13.4	181.9	-	0.994
ARM C	4.84	6.27	0.772	- -	2.6	3.0	42.9	-	0.664
08.30-08.45									
ARM A	18.97	18.70	1.015	- -	27.1	34.9	466.1	-	1.834
ARM B	14.23	14.80	0.962	- -	13.4	15.2	216.1	-	1.135
ARM C	4.84	6.24	0.776	- -	3.0	3.2	46.7	-	0.694

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	18.97	18.69	1.015	- - -	34.9	41.8	576.1	-	2.215
ARM B	14.23	14.80	0.962	- - -	15.2	16.5	238.6	-	1.224
ARM C	4.84	6.23	0.777	- - -	3.2	3.3	48.5	-	0.706

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	17.8	******************
08.30	27.1	****************************
08.45	34.9	**********************************
09.00	41.8	**

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	10.5	**********
08.30	13.4	*************
08.45	15.2	***************
09.00	16.5	*****************

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	2.6	***
08.30	3.0	***
08.45	3.2	***
09.00	3.3	***

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1138.2	1138.2	1553.9	1.37	1600.7	1.41
B	853.8	853.8	747.8	0.88	757.0	0.89
C	290.4	290.4	170.5	0.59	171.4	0.59
ALL	2282.4	2282.4	2472.1	1.08	2529.0	1.11

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 10:33:19 on 01/06/2016]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J4-A1081 jw The Common\10338-J4 A1081 jw The Common - 2031+Dev PM [flat].vai"
(drive-on-the-left) at 12:08:06 on Wednesday, 25 May 2016

FILE PROPERTIES

RUN TITLE: 10338-J4 A1081 jw The Common - 2031+Dev PM [flat]
LOCATION: Harpenden
DATE: 25/05/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA

ARM A - A1081 (N)
ARM B - A1081 (S)
ARM C - The Common

MINI-ROUNDABOUT GEOMETRIC DATA

JUNCTION IN LONDON
LIGHTING CONDITIONS : NORMAL
ROAD SURFACE CONDITION: NORMAL

T5

ARM	V (M)	E (M)	Lm(M)	Vm(M)	A (M)	K (M)	G (%)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	4.50	5.00	3.50	16.00	14.00	0.00	0.588	16.253
ARM B	3.50	4.00	2.00	3.50	10.00	8.00	0.00	0.544	20.311*
ARM C	3.00	4.00	2.00	3.00	8.00	6.00	0.00	0.524	11.719

V = approach half-width Lm = effective flare length A = distance between arms
E = entry width Vm = minimum approach half-width K= entry corner kerb line G=gradient over 50 m
WARNING One or more intercept values (flagged * in the table)
have been adjusted according to local input values
from a previous run and listed below -

T6

	ADJUSTMENT TO INTERCEPT (PCU/MIN)
ARM B	5.000

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

IARM	I FLOW SCALE(%) I
I A I	100 I
I B I	100 I
I C I	100 I

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

T33

TIME	FROM/T	TURNING PROPORTIONS / TURNING COUNTS / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
17.00 - 18.00	ARM A	0.000	0.978	0.022
		0.0	708.0	16.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.836	0.000	0.164
		855.0	0.0	168.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.047	0.953	0.000
		10.0	202.0	0.0
		(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	12.06	14.39	0.838	- -	0.0	4.5	55.8	-	0.349
ARM B	17.06	20.17	0.846	- -	0.0	4.9	62.0	-	0.270
ARM C	3.53	4.39	0.804	- -	0.0	3.1	36.1	-	0.826
17.15-17.30									
ARM A	12.06	14.30	0.843	- -	4.5	4.9	71.0	-	0.429
ARM B	17.06	20.17	0.846	- -	4.9	5.2	75.6	-	0.316
ARM C	3.53	4.26	0.829	- -	3.1	3.8	53.1	-	1.176
17.30-17.45									
ARM A	12.06	14.29	0.844	- -	4.9	5.1	75.0	-	0.439
ARM B	17.06	20.17	0.846	- -	5.2	5.3	78.2	-	0.319
ARM C	3.53	4.25	0.830	- -	3.8	4.1	60.0	-	1.258

TRL TRL Viewer 3.2 AG P:\.. \J4-A1081 jw The Common\10338-J4 A1081 jw The Common - 2031+Dev PM [flat].vao -

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	12.06	14.28	0.844	- - -	5.1	5.2	76.9	-	0.443
ARM B	17.06	20.17	0.846	- - -	5.3	5.3	79.3	-	0.320
ARM C	3.53	4.25	0.830	- - -	4.1	4.3	63.4	-	1.291

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	4.5	****
17.30	4.9	*****
17.45	5.1	*****
18.00	5.2	*****

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	4.9	*****
17.30	5.2	*****
17.45	5.3	*****
18.00	5.3	*****

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	3.1	***
17.30	3.8	****
17.45	4.1	****
18.00	4.3	****

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	723.6	723.6	278.7	0.39	279.7	0.39
B	1023.6	1023.6	295.1	0.29	295.8	0.29
C	211.8	211.8	212.6	1.00	214.7	1.01
ALL	1959.0	1959.0	786.4	0.40	790.2	0.40

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 10:33:09 on 01/06/2016]

_____ A R C A D Y 6 _____

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

_____

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J4-A1081 jw The Common\
10338-J4 A1081 jw The Common [HL-09] - 2031+Dev Rev3 AM [flat].vai"
(drive-on-the-left) at 10:29:50 on Wednesday, 1 June 2016

FILE PROPERTIES
****

RUN TITLE: 10338-J4 A1081 jw The Common [HL-09] - 2031+Dev Rev3 AM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA
****
ARM A - A1081 (N)
ARM B - A1081 (S)
ARM C - The Common

MINI-ROUNDABOUT GEOMETRIC DATA

JUNCTION IN LONDON
LIGHTING CONDITIONS : NORMAL
ROAD SURFACE CONDITION: NORMAL

T5

ARM	V (M)	E (M)	Lm(M)	Vm(M)	A (M)	K (M)	G (%)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	5.00	5.00	3.50	16.00	14.00	0.00	0.596	21.800*
ARM B	3.50	6.00	2.00	3.50	10.00	8.00	0.00	0.555	16.092
ARM C	3.00	4.00	2.00	3.00	8.00	6.00	0.00	0.524	11.719

V = approach half-width Lm = effective flare length A = distance between arms
E = entry width Vm = minimum approach half-width K= entry corner kerb line G=gradient over 50 m
WARNING One or more intercept values (flagged * in the table)
have been adjusted according to local input values
from a previous run and listed below -

T6

ARM	ADJUSTMENT TO INTERCEPT (PCU/MIN)
A	5.000

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

IARM	FLOW SCALE(%)
A	100
B	100
C	100

TIME PERIOD BEGINS(08.00)AND ENDS(09.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

TIME	FROM/T	ARM A	ARM B	ARM C
08.00 - 09.00		TURNING PROPORTIONS		
		TURNING COUNTS		
		(PERCENTAGE OF H.V.S)		
	ARM A	0.000	0.949	0.051
		0.0	1087.0	58.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.745	0.000	0.255
		647.0	0.0	221.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.100	0.900	0.000
		29.0	261.0	0.0
		(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	19.09	19.31	0.989	- -	-	0.0	14.9	150.8	- 0.608
ARM B	14.48	15.58	0.929	- -	-	0.0	8.4	93.9	- 0.498
ARM C	4.84	6.28	0.770	- -	-	0.0	2.8	35.0	- 0.561

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	19.09	19.22	0.993	- -	-	14.9	21.2	274.4	- 1.122
ARM B	14.48	15.57	0.930	- -	-	8.4	9.9	139.0	- 0.735
ARM C	4.84	6.11	0.793	- -	-	2.8	3.3	47.3	- 0.736

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	19.09	19.21	0.994	- - -	21.2	25.9	354.5	-	1.391
ARM B	14.48	15.56	0.930	- - -	9.9	10.7	155.7	-	0.788
ARM C	4.84	6.09	0.795	- - -	3.3	3.5	51.8	-	0.769

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	19.09	19.21	0.994	- - -	25.9	29.7	417.3	-	1.599
ARM B	14.48	15.56	0.930	- - -	10.7	11.2	165.0	-	0.817
ARM C	4.84	6.08	0.796	- - -	3.5	3.6	53.8	-	0.784

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	14.9	**********
08.30	21.2	**********
08.45	25.9	**********
09.00	29.7	**********

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	8.4	********
08.30	9.9	**********
08.45	10.7	**********
09.00	11.2	**********

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	2.8	***
08.30	3.3	***
08.45	3.5	****
09.00	3.6	****

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A	1145.4	1145.4	1196.9	1.04	1219.8	1.06
B	868.8	868.8	553.6	0.64	557.7	0.64
C	290.4	290.4	187.8	0.65	188.9	0.65
ALL	2304.6	2304.6	1938.3	0.84	1966.3	0.85

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

_____ A R C A D Y 6 _____

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)
Patch 15 Apr 2011

Adapted from ARCADY/3 which is Crown Copyright
by permission of the controller of HMSO

_____

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"p:\10338\Traffic\Junctions\J4-A1081 jw The Common\
10338-J4 A1081 jw The Common [HL-09] - 2031+Dev Rev3 PM [flat].vai"
(drive-on-the-left) at 10:29:56 on Wednesday, 1 June 2016

FILE PROPERTIES
****

RUN TITLE: 10338-J4 A1081 jw The Common [HL-09] - 2031+Dev Rev3 PM [flat]
LOCATION: Harpenden
DATE: 01/06/16
CLIENT: Commercial Estates Group
ENUMERATOR: sue.tadman [BCL25]
JOB NUMBER: 10338
STATUS: Preliminary
DESCRIPTION: Existing Layout

INPUT DATA
****
ARM A - A1081 (N)
ARM B - A1081 (S)
ARM C - The Common

MINI-ROUNDABOUT GEOMETRIC DATA

JUNCTION IN LONDON
LIGHTING CONDITIONS : NORMAL
ROAD SURFACE CONDITION: NORMAL

T5

ARM	V (M)	E (M)	Lm(M)	Vm(M)	A (M)	K (M)	G (%)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	5.00	5.00	3.50	16.00	14.00	0.00	0.596	16.800
ARM B	3.50	6.00	2.00	3.50	10.00	8.00	0.00	0.555	21.092*
ARM C	3.00	4.00	2.00	3.00	8.00	6.00	0.00	0.524	11.719

V = approach half-width Lm = effective flare length A = distance between arms
E = entry width Vm = minimum approach half-width K= entry corner kerb line G=gradient over 50 m
WARNING One or more intercept values (flagged * in the table)
have been adjusted according to local input values
from a previous run and listed below -

T6

ARM	ADJUSTMENT TO INTERCEPT (PCU/MIN)
B	5.000

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

IARM	FLOW SCALE(%)
A	100
B	100
C	100

TIME PERIOD BEGINS(17.00)AND ENDS(18.00)

LENGTH OF TIME PERIOD -(60) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

DEMAND SET TITLE: as above

DEMAND SET TITLE: as above

TIME	FROM/T	ARM A	ARM B	ARM C
17.00 - 18.00		TURNING PROPORTIONS		
		TURNING COUNTS		
		(PERCENTAGE OF H.V.S)		
	ARM A	0.000	0.978	0.022
		0.0	719.0	16.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.837	0.000	0.163
		865.0	0.0	168.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.047	0.953	0.000
		10.0	202.0	0.0
		(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	12.24	14.92	0.820	- -	-	0.0	4.1	51.5	- 0.315
ARM B	17.22	20.95	0.822	- -	-	0.0	4.2	55.0	- 0.235
ARM C	3.53	4.29	0.823	- -	-	0.0	3.4	38.5	- 0.884

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)		AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	12.24	14.83	0.826	- -	-	4.1	4.4	63.9	- 0.378
ARM B	17.22	20.94	0.822	- -	-	4.2	4.4	65.0	- 0.265
ARM C	3.53	4.17	0.846	- -	-	3.4	4.2	57.7	- 1.292

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45								
ARM A	12.24	14.81	0.827	- - -	4.4	4.5	66.9	0.384
ARM B	17.22	20.94	0.822	- - -	4.4	4.5	66.7	0.267
ARM C	3.53	4.17	0.847	- - -	4.2	4.5	65.8	1.392

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00								
ARM A	12.24	14.80	0.827	- - -	4.5	4.6	68.3	0.386
ARM B	17.22	20.94	0.822	- - -	4.5	4.5	67.4	0.267
ARM C	3.53	4.17	0.847	- - -	4.5	4.8	69.9	1.430

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	4.1	****
17.30	4.4	****
17.45	4.5	*****
18.00	4.6	*****

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	4.2	****
17.30	4.4	****
17.45	4.5	****
18.00	4.5	*****

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	3.4	***
17.30	4.2	****
17.45	4.5	*****
18.00	4.8	*****

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	734.4	734.4	250.7	0.34	251.4	0.34
B	1033.2	1033.2	254.2	0.25	254.7	0.25
C	211.8	211.8	231.8	1.09	234.5	1.11
ALL	1979.4	1979.4	736.7	0.37	740.6	0.37

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

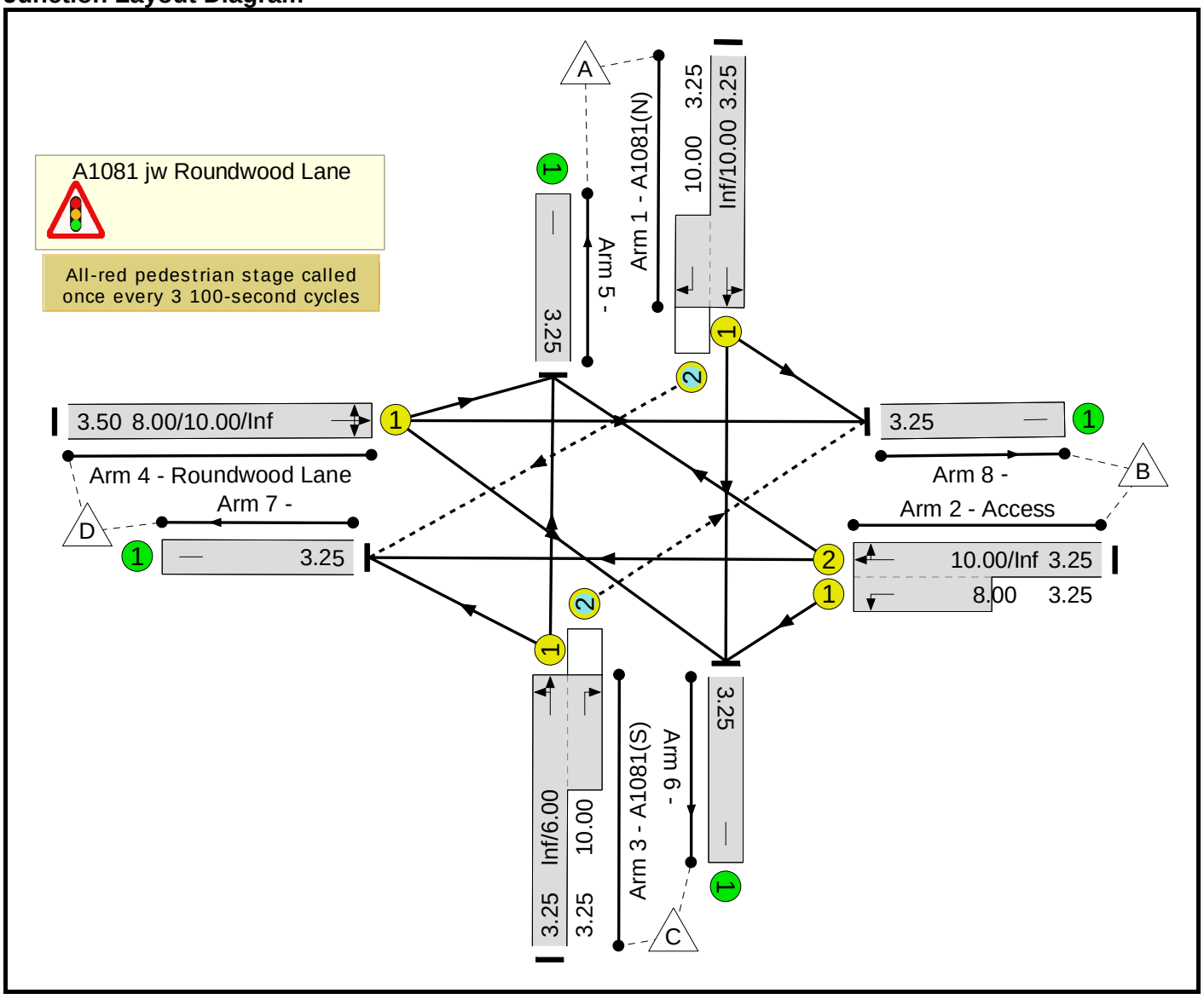
END OF JOB

Linsig Report

User and Project Details

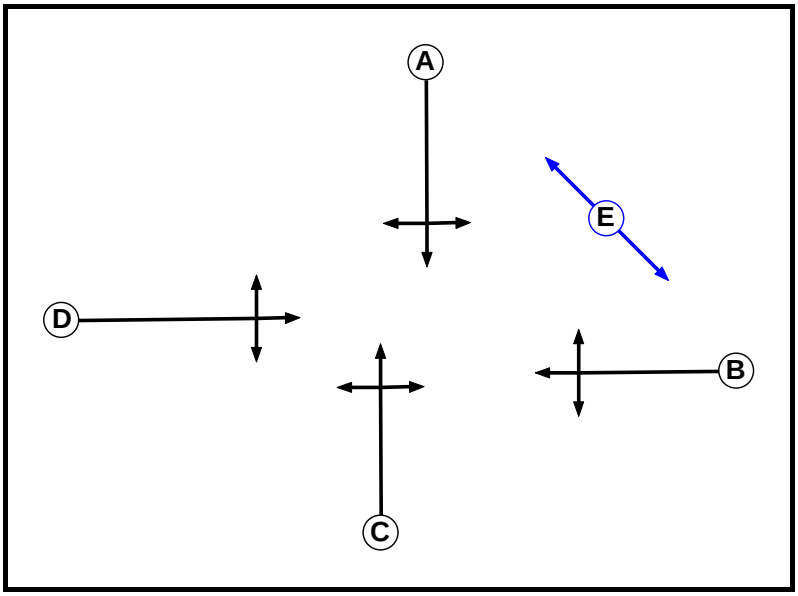
Project:	**Land at Harpenden**
Title:	**Roundwood Lane**
Location:	
File name:	10338-J5 A1081 jw Roundwood Lane and New Access [HL-01].lsg3x
Author:	SMT
Company:	Brookbanks Consulting Ltd

Junction Layout Diagram



Linsig Report
P:\10338\Traffic\Junctions\J5-A1081 jw Roundwood Lane\10338-J5 A1081 jw Roundwood Lane and New Access [HL-01].lsg3x

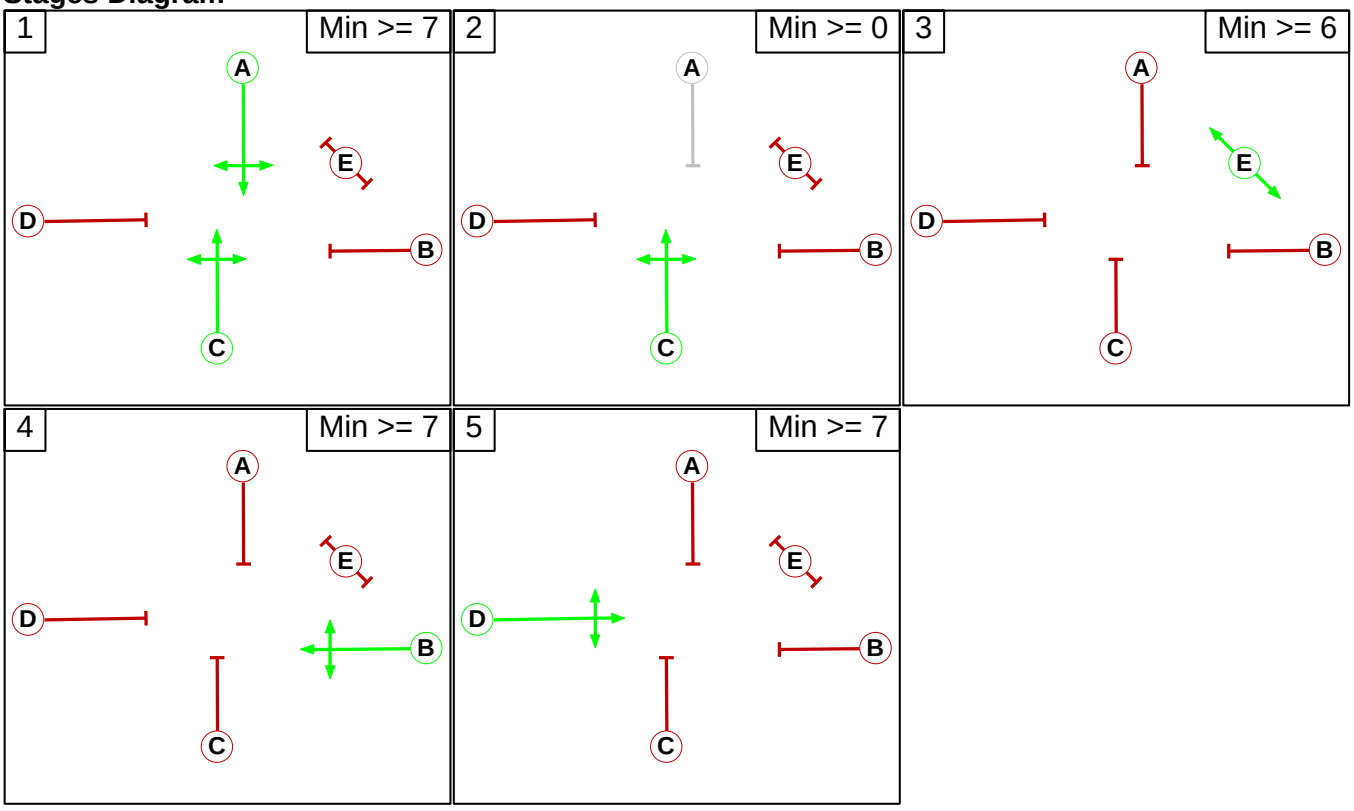
Phase Diagram



Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E
A		6	-	5	8
B	5		5	6	8
C	-	5		5	8
D	5	6	5		8
E	8	8	8	8	

Stages Diagram



Lane Input Data

Junction: A1081 jw Roundwood Lane

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A1081(N))	U	A	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 6 Ahead	Inf
											Arm 8 Left	10.00
1/2 (A1081(N))	O	A	2	3	4.0	Geom	-	3.25	0.00	N	Arm 7 Right	10.00
2/1 (Access)	U	B	2	3	6.0	Geom	-	3.25	0.00	Y	Arm 6 Left	8.00
2/2 (Access)	U	B	2	3	60.0	Geom	-	3.25	0.00	N	Arm 5 Right	10.00
											Arm 7 Ahead	Inf
3/1 (A1081(S))	U	C	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 5 Ahead	Inf
											Arm 7 Left	6.00
3/2 (A1081(S))	O	C	2	3	5.0	Geom	-	3.25	0.00	N	Arm 8 Right	10.00
4/1 (Roundwood Lane)	U	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Left	8.00
											Arm 6 Right	10.00
											Arm 8 Ahead	Inf

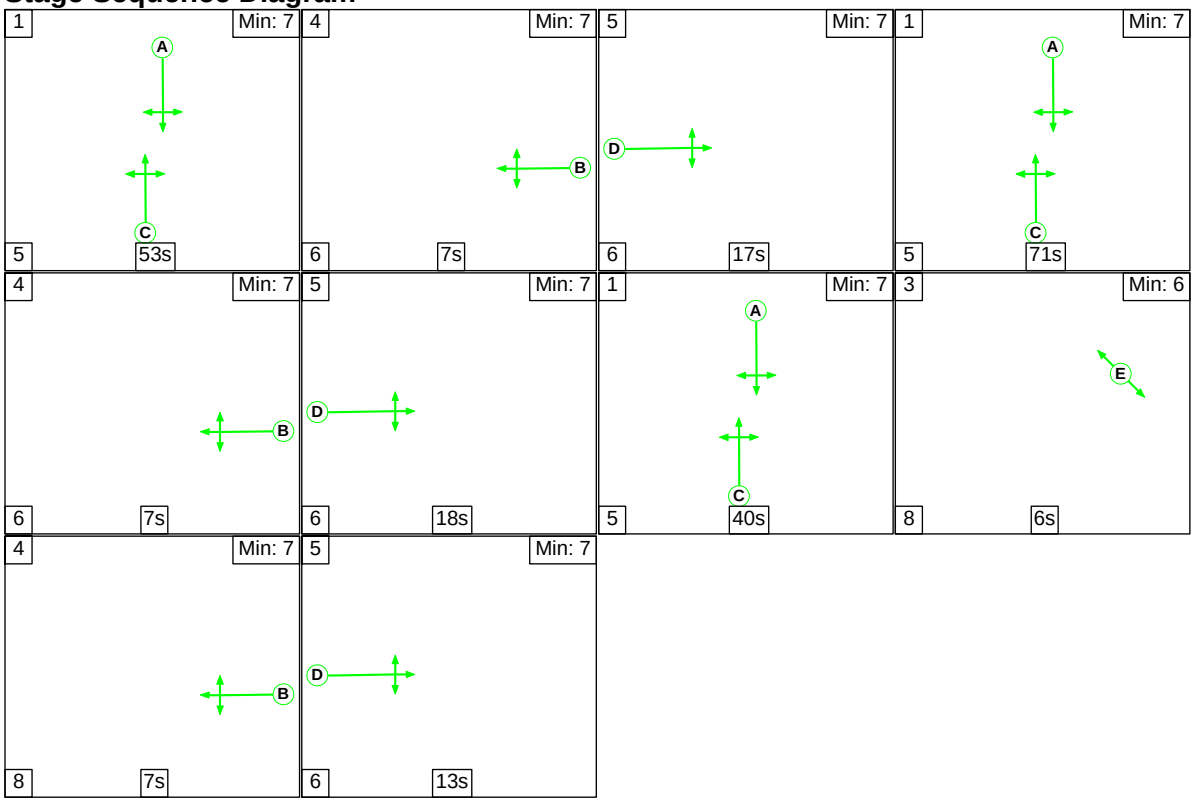
Linsig Report
P:\10338\Traffic\Junctions\J5-A1081 jw Roundwood Lane\10338-J5 A1081 jw Roundwood Lane and New Access [HL-01].lsg3x
Scenario 1: '2031+Dev Rev3 AM' (FG2: '2031+Dev Rev3 PM', Plan 2: 'Proposed AM')

Traffic Flows, Actual

Actual Flow :

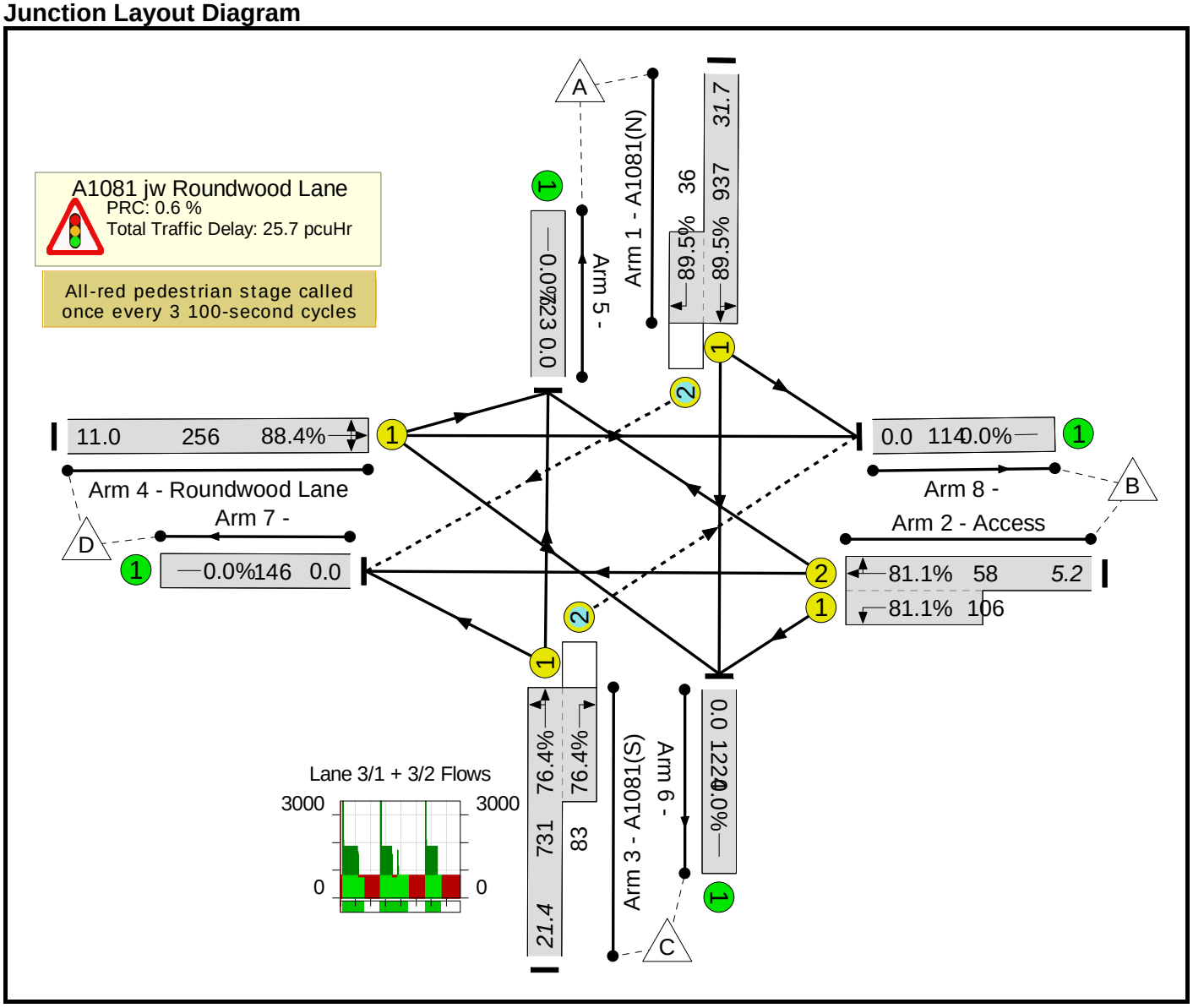
		Destination				
		A	B	C	D	Tot.
Origin	A	0	26	911	36	973
	B	52	0	106	6	164
	C	627	83	0	104	814
	D	44	5	207	0	256
	Tot.	723	114	1224	146	2207

Stage Sequence Diagram



Linsig Report
P:\10338\Traffic\Junctions\J5-A1081 jw Roundwood Lane\10338-J5 A1081 jw Roundwood Lane and New Access [HL-01].lsg3x

Junction Layout Diagram



Linsig Report
P:\10338\Traffic\Junctions\J5-A1081 jw Roundwood Lane\10338-J5 A1081 jw Roundwood Lane and New Access [HL-01].lsg3x

Link Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Roundwood Lane	-	-	-		-	-	-	-	-	-	**89.5%**	**76**	**0**	**43**	**25.7**	-	-
A1081 jw Roundwood Lane	-	-	-		-	-	-	-	-	-	**89.5%**	**76**	**0**	**43**	**25.7**	-	-
1/1+1/2	A1081(N) Ahead Right Left	U+O	A		3	164	-	973	1932:1809	1047+40	89.5 : 89.5%	36	0	0	9.4	34.7	31.7
2/2+2/1	Access Right Left Ahead	U	B		3	21	-	164	1833:1634	72+131	81.1 : 81.1%	-	-	-	4.0	87.9	5.2
3/1+3/2	A1081(S) Ahead Left Right	U+O	C		3	166	-	814	1873:1809	957+109	76.4 : 76.4%	40	0	43	6.2	27.2	21.4
4/1	Roundwood Lane Left Right Ahead	U	D		3	48	-	256	1703	290	88.4%	-	-	-	6.1	86.0	11.0

C1 PRC for Signalled Lanes (%): 0.6 Total Delay for Signalled Lanes (pcuHr): 25.66 Cycle Time (s): 300
PRC Over All Lanes (%): 0.6 Total Delay Over All Lanes(pcuHr): 25.66

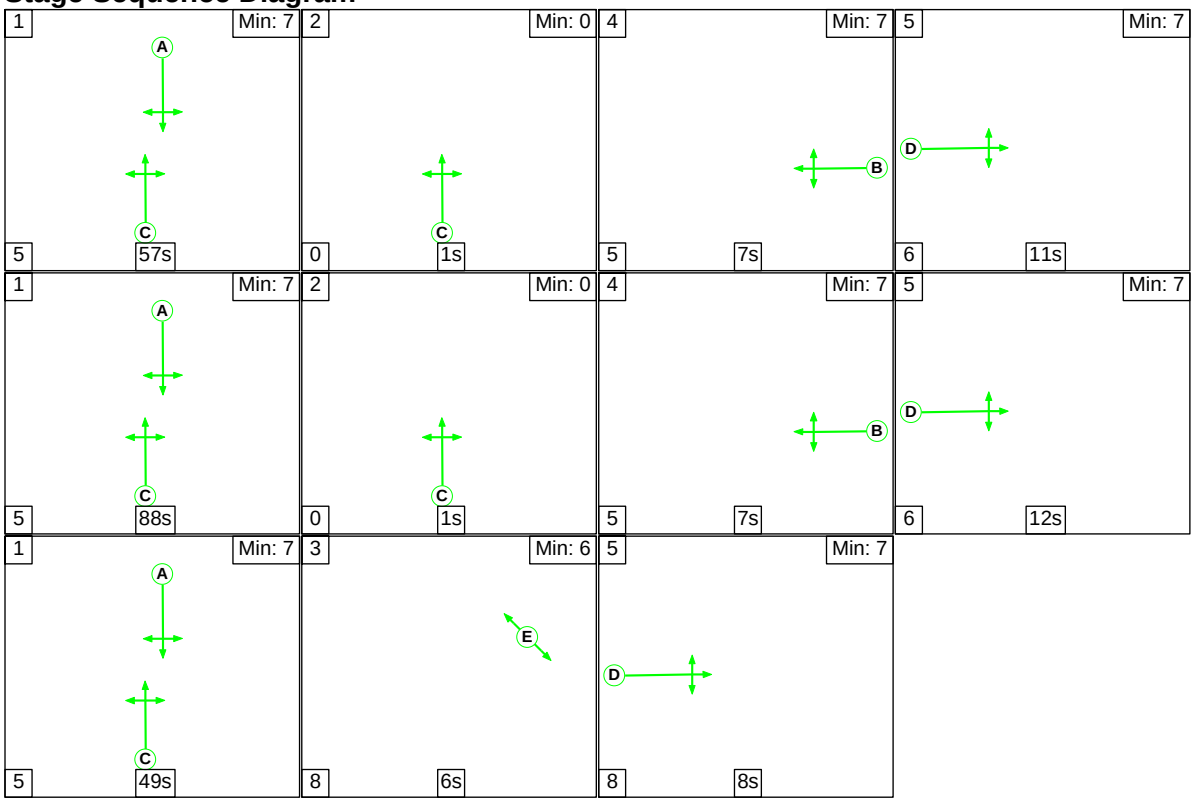
Linsig Report
P:\10338\Traffic\Junctions\J5-A1081 jw Roundwood Lane\10338-J5 A1081 jw Roundwood Lane and New Access [HL-01].lsg3x
Scenario 2: '2031+Dev Rev3 PM' (FG2: '2031+Dev Rev3 PM', Plan 3: 'Proposed PM')

Traffic Flows, Actual

Actual Flow :

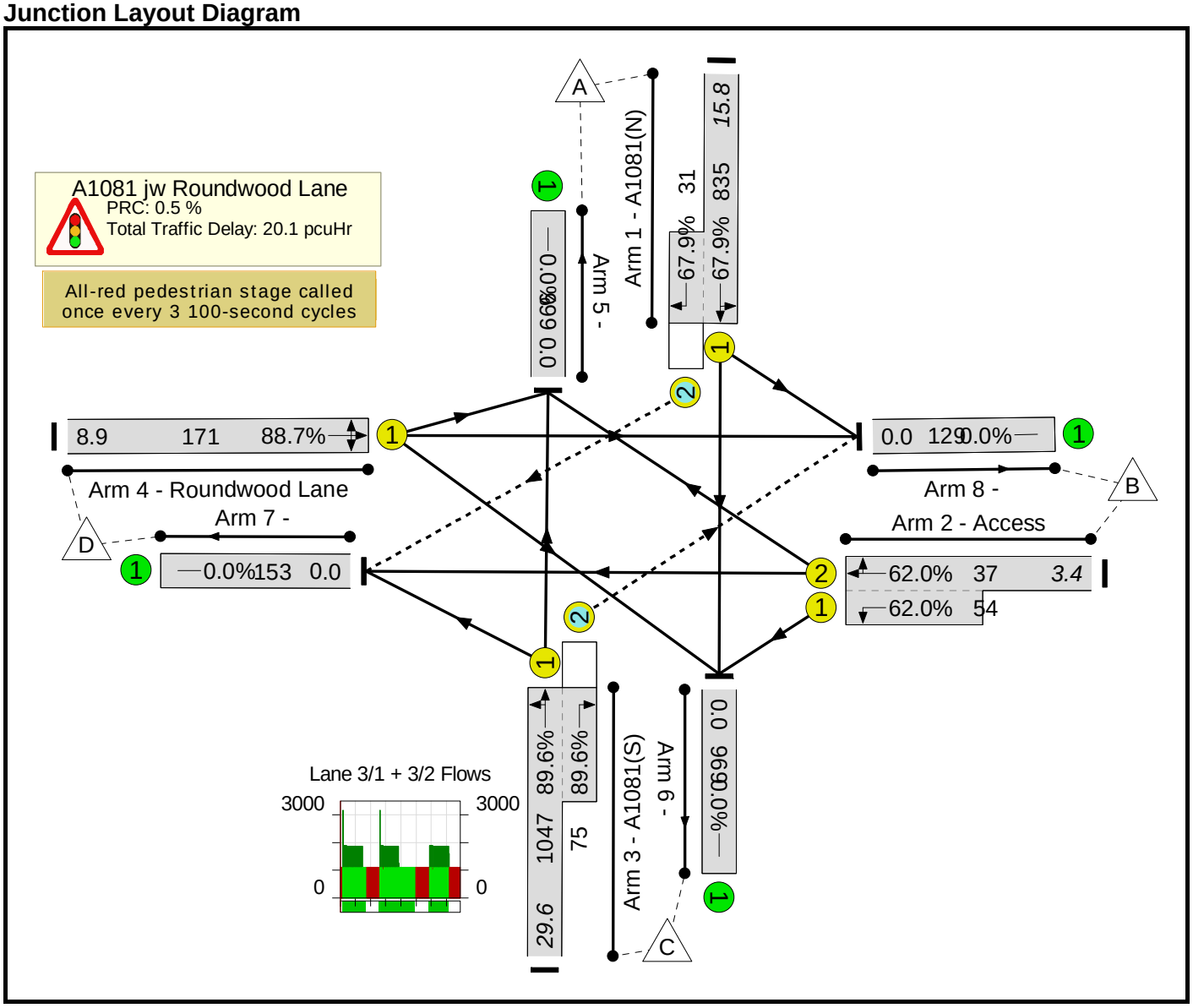
		Destination				
		A	B	C	D	Tot.
Origin	A	0	50	785	31	866
	B	34	0	54	3	91
	C	928	75	0	119	1122
	D	37	4	130	0	171
	Tot.	999	129	969	153	2250

Stage Sequence Diagram



Linsig Report
P:\10338\Traffic\Junctions\J5-A1081 jw Roundwood Lane\10338-J5 A1081 jw Roundwood Lane and New Access [HL-01].lsg3x

Junction Layout Diagram



Linsig Report
P:\10338\Traffic\Junctions\J5-A1081 jw Roundwood Lane\10338-J5 A1081 jw Roundwood Lane and New Access [HL-01].lsg3x

Link Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Roundwood Lane	-	-	-		-	-	-	-	-	-	**89.6%**	**98**	**0**	**8**	**20.1**	-	-
A1081 jw Roundwood Lane	-	-	-		-	-	-	-	-	-	**89.6%**	**98**	**0**	**8**	**20.1**	-	-
1/1+1/2	A1081(N) Ahead Right Left	U+O	A		3	194	-	866	1923:1809	1229+46	67.9 : 67.9%	23	0	8	3.8	15.6	15.8
2/2+2/1	Access Right Left Ahead	U	B		2	14	-	91	1828:1634	60+87	62.0 : 62.0%	-	-	-	2.6	103.0	3.4
3/1+3/2	A1081(S) Ahead Left Right	U+O	C		3	196	-	1122	1886:1809	1169+84	89.6 : 89.6%	74	0	0	8.5	27.4	29.6
4/1	Roundwood Lane Left Right Ahead	U	D		3	31	-	171	1702	193	88.7%	-	-	-	5.2	109.4	8.9

C1 PRC for Signalled Lanes (%): 0.5 Total Delay for Signalled Lanes (pcuHr): 20.10 Cycle Time (s): 300
PRC Over All Lanes (%): 0.5 Total Delay Over All Lanes(pcuHr): 20.10

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 5.0 (JUNE 2010)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE SALES
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: software@trl.co.uk

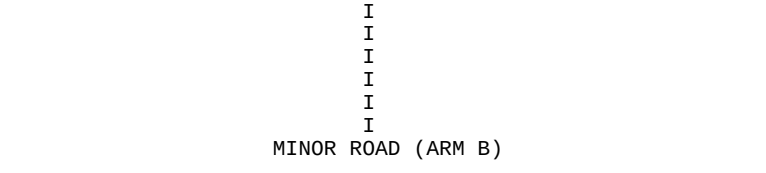
Run with file:-
"C:_SUE\PICADY temp\10338-J6 A1081 jw Cooters End lane - 2015 AM [flat].vpi"
(drive-on-the-left) at 12:29:35 on Thursday, 27 August 2015

RUN INFORMATION

RUN TITLE	: 10338-J6 A1081 jw Cooters End Lane - 2015 AM [flat]
LOCATION	: Harpenden
DATE	: 27/08/15
CLIENT	:
ENUMERATOR	: Sue.tadman [BCL25]
JOB NUMBER	: 10338
STATUS	: Preliminary
DESCRIPTION	: Existing Layout

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS A1081 (N)
ARM B IS Cooters End lane
ARM C IS A1081 (S)

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C
ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 3.50 M.
- VISIBILITY	(VC-B)120.00 M.
- BLOCKS TRAFFIC (SPACES)	NO (0)
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 90.0 M.
- VISIBILITY TO RIGHT	(VB-A) 90.0 M.
- LANE 1 WIDTH	(WB-C) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
680.59	0.25	0.10

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
552.17	0.24	0.10	0.15	0.35

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
734.50	0.27	0.27

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: as above

TIME PERIOD BEGINS 08.00 AND ENDS 09.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

Demand set: as above

TIME	FROM/TO	ARM A	ARM B	ARM C
08.00 - 09.00				
	ARM A	0.000	0.009	0.991
		0.0	10.0	1082.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.091	0.000	0.909
		10.0	0.0	100.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.930	0.070	0.000
		660.0	50.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-AC	1.83	6.02	0.304		0.00	0.43	6.0		0.24
C-A	11.00								
C-B	0.83	7.29	0.114		0.00	0.13	1.8		0.15
A-B	0.17								
A-C	18.03								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-AC	1.83	6.01	0.304		0.43	0.43	6.5		0.24
C-A	11.00								
C-B	0.83	7.29	0.114		0.13	0.13	1.9		0.15
A-B	0.17								
A-C	18.03								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-AC	1.83	6.01	0.304		0.43	0.43	6.5		0.24
C-A	11.00								
C-B	0.83	7.29	0.114		0.13	0.13	1.9		0.15
A-B	0.17								
A-C	18.03								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-AC	1.83	6.01	0.304		0.43	0.43	6.5		0.24
C-A	11.00								
C-B	0.83	7.29	0.114		0.13	0.13	1.9		0.15
A-B	0.17								
A-C	18.03								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.4
08.30	0.4
08.45	0.4
09.00	0.4

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	109.8	109.8	25.5	0.23	25.5	0.23
C-A	659.8	659.8				
C-B	50.0	50.0	7.6	0.15	7.6	0.15
A-B	10.0	10.0				
A-C	1082.0	1082.0				
ALL	1911.6	1911.6	33.1	0.02	33.1	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

========== end of file ==========

Printed at 16:01:54 on 01/06/2016]

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 5.0 (JUNE 2010)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE SALES
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: software@trl.co.uk

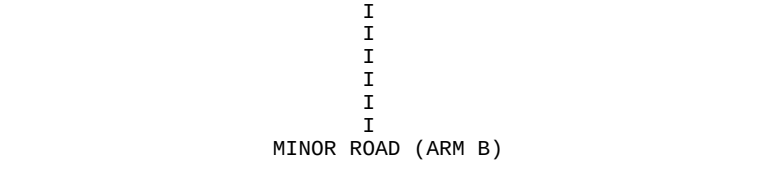
Run with file:-
"C:_SUE\PICADY temp\10338-J6 A1081 jw Cooters End lane - 2015 PM [flat].vpi"
(drive-on-the-left) at 12:30:33 on Thursday, 27 August 2015

RUN INFORMATION

RUN TITLE	: 10338-J6 A1081 jw Cooters End Lane - 2015 PM [flat]
LOCATION	: Harpenden
DATE	: 27/08/15
CLIENT	:
ENUMERATOR	: Sue.tadman [BCL25]
JOB NUMBER	: 10338
STATUS	: Preliminary
DESCRIPTION	: Existing Layout

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS A1081 (N)
ARM B IS Cooters End lane
ARM C IS A1081 (S)

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C
ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 3.50 M.
- VISIBILITY	(VC-B)120.00 M.
- BLOCKS TRAFFIC (SPACES)	NO (0)
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 90.0 M.
- VISIBILITY TO RIGHT	(VB-A) 90.0 M.
- LANE 1 WIDTH	(WB-C) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
680.59	0.25	0.10

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
552.17	0.24	0.10	0.15	0.35

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
734.50	0.27	0.27

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: as above

TIME PERIOD BEGINS 17.00 AND ENDS 18.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

Demand set: as above

TIME	FROM/TO	ARM A	ARM B	ARM C
17.00 - 18.00				
	ARM A	0.000	0.014	0.986
		0.0	10.0	703.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.167	0.000	0.833
		10.0	0.0	50.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.890	0.110	0.000
		811.0	100.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-AC	1.00	6.91	0.145		0.00	0.17	2.4		
C-A	13.51								
C-B	1.67	9.01	0.185		0.00	0.22	3.2		
A-B	0.17								
A-C	11.71								
17.15-17.30									
B-AC	1.00	6.91	0.145		0.17	0.17	2.5		
C-A	13.51								
C-B	1.67	9.01	0.185		0.22	0.23	3.4		
A-B	0.17								
A-C	11.71								
17.30-17.45									
B-AC	1.00	6.91	0.145		0.17	0.17	2.5		
C-A	13.51								
C-B	1.67	9.01	0.185		0.23	0.23	3.4		
A-B	0.17								
A-C	11.71								
17.45-18.00									
B-AC	1.00	6.91	0.145		0.17	0.17	2.5		
C-A	13.51								
C-B	1.67	9.01	0.185		0.23	0.23	3.4		
A-B	0.17								
A-C	11.71								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	60.0	60.0	10.0	0.17	10.0	0.17
C-A	810.8	810.8				
C-B	100.0	100.0	13.4	0.13	13.4	0.13
A-B	10.0	10.0				
A-C	702.8	702.8				
ALL	1683.6	1683.6	23.4	0.01	23.4	0.01

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

****** PICADY 5 run completed.
========== end of file ==========

Printed at 16:02:06 on 01/06/2016]

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 5.0 (JUNE 2010)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE SALES
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: software@trl.co.uk

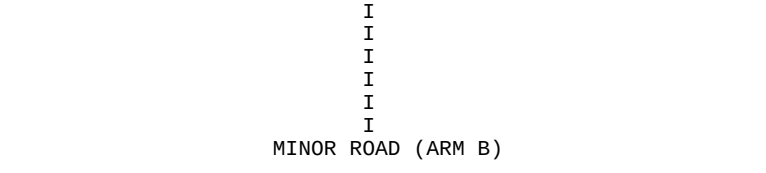
Run with file:-
"C:_SUE\PICADY temp\10338-J6 A1081 jw Cooters End lane - 2031 AM [flat].vpi"
(drive-on-the-left) at 12:26:34 on Wednesday, 25 May 2016

RUN INFORMATION

RUN TITLE	: 10338-J6 A1081 jw Cooters End Lane - 2031 AM [flat]
LOCATION	: Harpenden
DATE	: 25/05/16
CLIENT	:
ENUMERATOR	: Sue.tadman [BCL25]
JOB NUMBER	: 10338
STATUS	: Preliminary
DESCRIPTION	: Existing Layout

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS A1081 (N)
ARM B IS Cooters End lane
ARM C IS A1081 (S)

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C
ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 3.50 M.
- VISIBILITY	(VC-B)120.00 M.
- BLOCKS TRAFFIC (SPACES)	NO (0)
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 90.0 M.
- VISIBILITY TO RIGHT	(VB-A) 90.0 M.
- LANE 1 WIDTH	(WB-C) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
680.59	0.25	0.10

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
552.17	0.24	0.10	0.15	0.35

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
734.50	0.27	0.27

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: as above

TIME PERIOD BEGINS 08.00 AND ENDS 09.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

Demand set: as above

TIME	FROM/TO	ARM A	ARM B	ARM C
08.00 - 09.00				
	ARM A	0.000	0.009	0.991
		0.0	12.0	1312.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.090	0.000	0.910
		12.0	0.0	121.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.929	0.071	0.000
		800.0	61.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-AC	2.22	4.59	0.484		0.00	0.89	12.0		0.40
C-A	13.33								
C-B	1.02	6.23	0.163		0.00	0.19	2.7		0.19
A-B	0.20								
A-C	21.87								
08.15-08.30									
B-AC	2.22	4.59	0.484		0.89	0.91	13.6		0.42
C-A	13.33								
C-B	1.02	6.23	0.163		0.19	0.19	2.9		0.19
A-B	0.20								
A-C	21.87								
08.30-08.45									
B-AC	2.22	4.59	0.484		0.91	0.92	13.8		0.42
C-A	13.33								
C-B	1.02	6.23	0.163		0.19	0.19	2.9		0.19
A-B	0.20								
A-C	21.87								
08.45-09.00									
B-AC	2.22	4.59	0.484		0.92	0.93	13.9		0.42
C-A	13.33								
C-B	1.02	6.23	0.163		0.19	0.19	2.9		0.19
A-B	0.20								
A-C	21.87								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.9	*
08.30	0.9	*
08.45	0.9	*
09.00	0.9	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.2
08.45	0.2
09.00	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	133.2	133.2	53.2	0.40	53.2	0.40
C-A	800.0	800.0				
C-B	61.0	61.0	11.4	0.19	11.4	0.19
A-B	12.0	12.0				
A-C	1312.2	1312.2				
ALL	2318.4	2318.4	64.6	0.03	64.7	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

========== end of file ==========

Printed at 11:47:21 on 01/06/2016]

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 5.0 (JUNE 2010)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE SALES
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: software@trl.co.uk

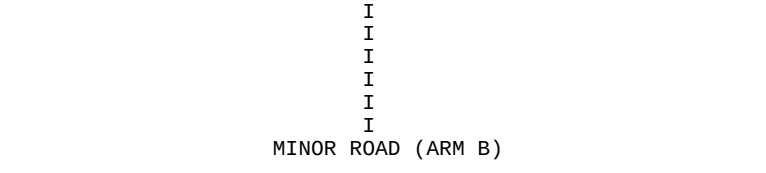
Run with file:-
"C:_SUE\PICADY temp\10338-J6 A1081 jw Cooters End lane - 2031 PM [flat].vpi"
(drive-on-the-left) at 12:26:40 on Wednesday, 25 May 2016

RUN INFORMATION

RUN TITLE	: 10338-J6 A1081 jw Cooters End Lane - 2031 PM [flat]
LOCATION	: Harpenden
DATE	: 25/05/16
CLIENT	:
ENUMERATOR	: Sue.tadman [BCL25]
JOB NUMBER	: 10338
STATUS	: Preliminary
DESCRIPTION	: Existing Layout

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS A1081 (N)
ARM B IS Cooters End lane
ARM C IS A1081 (S)

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C
ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 3.50 M.
- VISIBILITY	(VC-B)120.00 M.
- BLOCKS TRAFFIC (SPACES)	NO (0)
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 90.0 M.
- VISIBILITY TO RIGHT	(VB-A) 90.0 M.
- LANE 1 WIDTH	(WB-C) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
680.59	0.25	0.10

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
552.17	0.24	0.10	0.15	0.35

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
734.50	0.27	0.27

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: as above

TIME PERIOD BEGINS 17.00 AND ENDS 18.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

Demand set: as above

TIME	FROM/TO	ARM A	ARM B	ARM C
17.00 - 18.00				
	ARM A	0.000	0.014	0.986
		0.0	12.0	852.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.164	0.000	0.836
		12.0	0.0	61.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.890	0.110	0.000
		983.0	121.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-AC	1.21	5.77	0.210		0.00	0.26	3.7		0.22
C-A	16.39								
C-B	2.02	8.32	0.243		0.00	0.32	4.5		0.16
A-B	0.20								
A-C	14.21								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-AC	1.21	5.77	0.210		0.26	0.26	3.9		0.22
C-A	16.39								
C-B	2.02	8.32	0.243		0.32	0.32	4.8		0.16
A-B	0.20								
A-C	14.21								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-AC	1.21	5.77	0.210		0.26	0.26	4.0		0.22
C-A	16.39								
C-B	2.02	8.32	0.243		0.32	0.32	4.8		0.16
A-B	0.20								
A-C	14.21								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-AC	1.21	5.77	0.210		0.26	0.26	4.0		0.22
C-A	16.39								
C-B	2.02	8.32	0.243		0.32	0.32	4.8		0.16
A-B	0.20								
A-C	14.21								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.3
17.30	0.3
17.45	0.3
18.00	0.3

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.3
17.30	0.3
17.45	0.3
18.00	0.3

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	72.6	72.6	15.5	0.21	15.5	0.21
C-A	983.5	983.5				
C-B	121.1	121.1	18.8	0.16	18.8	0.16
A-B	12.0	12.0				
A-C	852.6	852.6				
ALL	2041.8	2041.8	34.4	0.02	34.4	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

========== end of file ==========

Printed at 11:46:56 on 01/06/2016]

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 5.0 (JUNE 2010)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE SALES
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: software@trl.co.uk

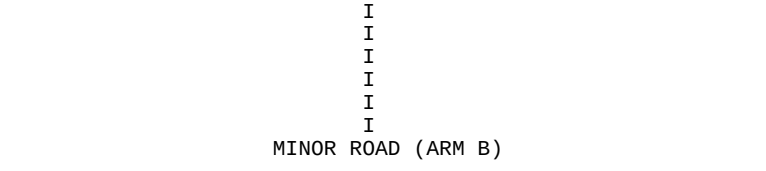
Run with file:-
"C:_SUE\PICADY temp\10338-J6 A1081 jw Cooters End lane - 2031+Dev Rev3 AM [flat].vpi"
(drive-on-the-left) at 10:52:13 on Wednesday, 1 June 2016

RUN INFORMATION

RUN TITLE	: 10338-J6 A1081 jw Cooters End Lane - 2031+Dev AM [flat]
LOCATION	: Harpenden
DATE	: 25/05/16
CLIENT	:
ENUMERATOR	: Sue.tadman [BCL25]
JOB NUMBER	: 10338
STATUS	: Preliminary
DESCRIPTION	: Existing Layout

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS A1081 (N)
ARM B IS Cooters End lane
ARM C IS A1081 (S)

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C
ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 3.50 M.
- VISIBILITY	(VC-B)120.00 M.
- BLOCKS TRAFFIC (SPACES)	NO (0)
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 90.0 M.
- VISIBILITY TO RIGHT	(VB-A) 90.0 M.
- LANE 1 WIDTH	(WB-C) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
680.59	0.25	0.10

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
552.17	0.24	0.10	0.15	0.35

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
734.50	0.27	0.27

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: as above

TIME PERIOD BEGINS 08.00 AND ENDS 09.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

Demand set: as above

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 09.00	ARM A	0.000	0.010	0.990
		0.0	14.0	1327.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.121	0.000	0.879
		19.0	0.0	138.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.924	0.076	0.000
		835.0	69.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-AC	2.62	4.03	0.650		0.00	1.65	20.8		0.62
C-A	13.91								
C-B	1.15	6.16	0.187		0.00	0.23	3.2		0.20
A-B	0.23								
A-C	22.12								
08.15-08.30									
B-AC	2.62	4.03	0.651		1.65	1.75	25.6		0.70
C-A	13.91								
C-B	1.15	6.16	0.187		0.23	0.23	3.4		0.20
A-B	0.23								
A-C	22.12								
08.30-08.45									
B-AC	2.62	4.03	0.651		1.75	1.78	26.5		0.70
C-A	13.91								
C-B	1.15	6.16	0.187		0.23	0.23	3.4		0.20
A-B	0.23								
A-C	22.12								
08.45-09.00									
B-AC	2.62	4.03	0.651		1.78	1.80	26.9		0.71
C-A	13.91								
C-B	1.15	6.16	0.187		0.23	0.23	3.4		0.20
A-B	0.23								
A-C	22.12								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	1.6	**
08.30	1.7	**
08.45	1.8	**
09.00	1.8	**

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.2
08.45	0.2
09.00	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	157.2	157.2	99.8	0.63	100.2	0.64
C-A	834.6	834.6				
C-B	69.0	69.0	13.5	0.20	13.5	0.20
A-B	14.0	14.0				
A-C	1327.0	1327.0				
ALL	2401.8	2401.8	113.3	0.05	113.7	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

========== end of file ==========

Printed at 11:46:15 on 01/06/2016]

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 5.0 (JUNE 2010)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE SALES
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: software@trl.co.uk

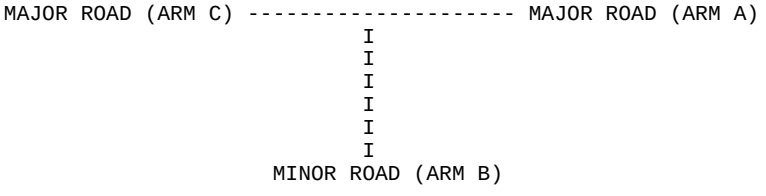
Run with file:-
"C:_SUE\PICADY temp\10338-J6 A1081 jw Cooters End lane - 2031+Dev Rev3 PM [flat].vpi"
(drive-on-the-left) at 10:52:19 on Wednesday, 1 June 2016

RUN INFORMATION

RUN TITLE	: 10338-J6 A1081 jw Cooters End Lane - 2031+Dev PM [flat]
LOCATION	: Harpenden
DATE	: 25/05/16
CLIENT	:
ENUMERATOR	: Sue.tadman [BCL25]
JOB NUMBER	: 10338
STATUS	: Preliminary
DESCRIPTION	: Existing Layout

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS A1081 (N)
ARM B IS Cooters End lane
ARM C IS A1081 (S)

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C
ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 3.50 M.
- VISIBILITY	(VC-B)120.00 M.
- BLOCKS TRAFFIC (SPACES)	NO (0)
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 90.0 M.
- VISIBILITY TO RIGHT	(VB-A) 90.0 M.
- LANE 1 WIDTH	(WB-C) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
680.59	0.25	0.10

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
552.17	0.24	0.10	0.15	0.35

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
734.50	0.27	0.27

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: as above

TIME PERIOD BEGINS 17.00 AND ENDS 18.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

Demand set: as above

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
17.00 - 18.00	ARM A	0.000 0.0 (0.0)	0.023 21.0 (0.0)	0.977 889.0 (0.0)
	ARM B	0.189 17.0 (0.0)	0.000 0.0 (0.0)	0.811 73.0 (0.0)
	ARM C	0.879 1006.0 (0.0)	0.121 138.0 (0.0)	0.000 0.0 (0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-AC	1.51	5.18	0.291		0.00	0.40	5.6		0.27
C-A	16.77								
C-B	2.30	8.11	0.284		0.00	0.39	5.6		0.17
A-B	0.35								
A-C	14.82								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-AC	1.51	5.17	0.292		0.40	0.41	6.1		0.27
C-A	16.77								
C-B	2.30	8.11	0.284		0.39	0.39	5.9		0.17
A-B	0.35								
A-C	14.82								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-AC	1.51	5.17	0.292		0.41	0.41	6.1		0.27
C-A	16.77								
C-B	2.30	8.11	0.284		0.39	0.39	5.9		0.17
A-B	0.35								
A-C	14.82								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-AC	1.51	5.17	0.292		0.41	0.41	6.1		0.27
C-A	16.77								
C-B	2.30	8.11	0.284		0.39	0.39	5.9		0.17
A-B	0.35								
A-C	14.82								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.4
17.30	0.4
17.45	0.4
18.00	0.4

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.4
17.30	0.4
17.45	0.4
18.00	0.4

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	90.6	90.6	23.9	0.26	23.9	0.26
C-A	1006.2	1006.2				
C-B	138.0	138.0	23.2	0.17	23.2	0.17
A-B	21.0	21.0				
A-C	889.2	889.2				
ALL	2145.0	2145.0	47.2	0.02	47.2	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

========== end of file ==========

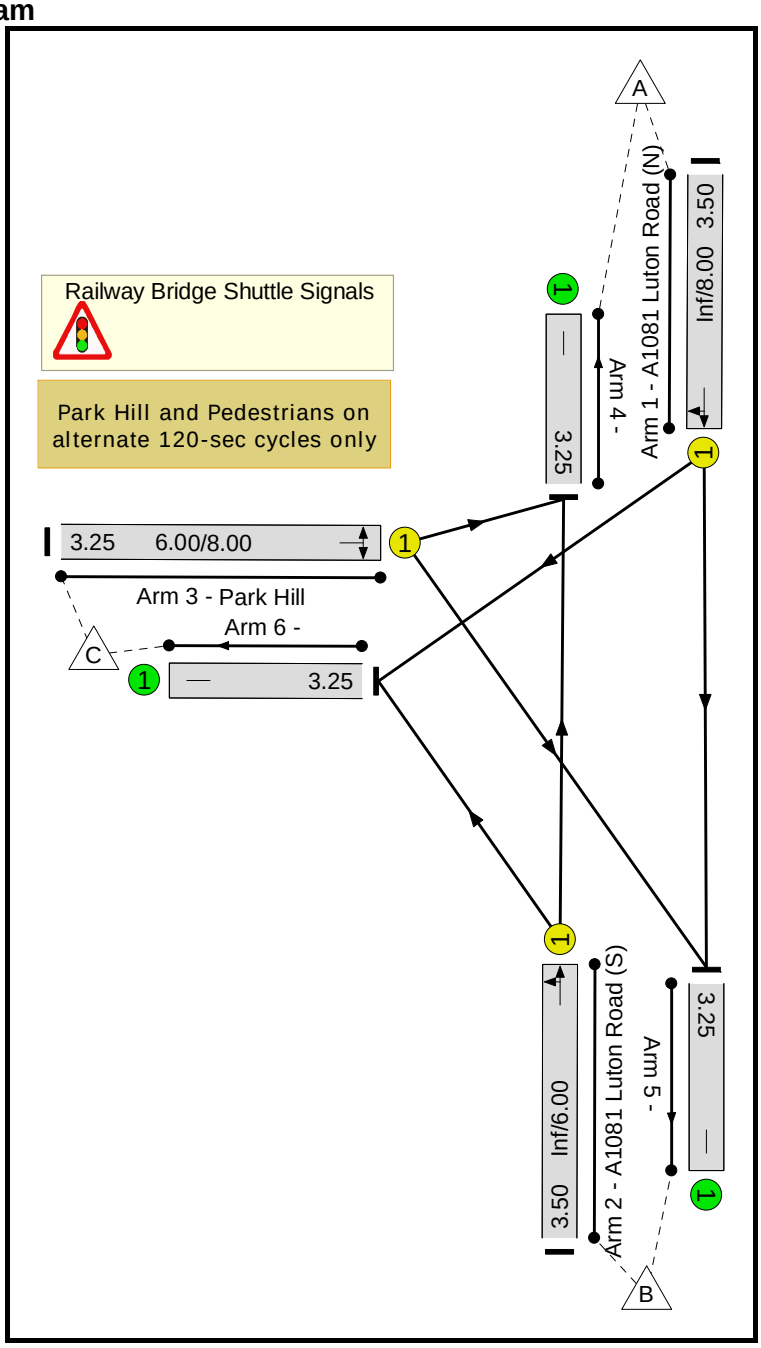
Printed at 11:46:03 on 01/06/2016]

Linsig Report

User and Project Details

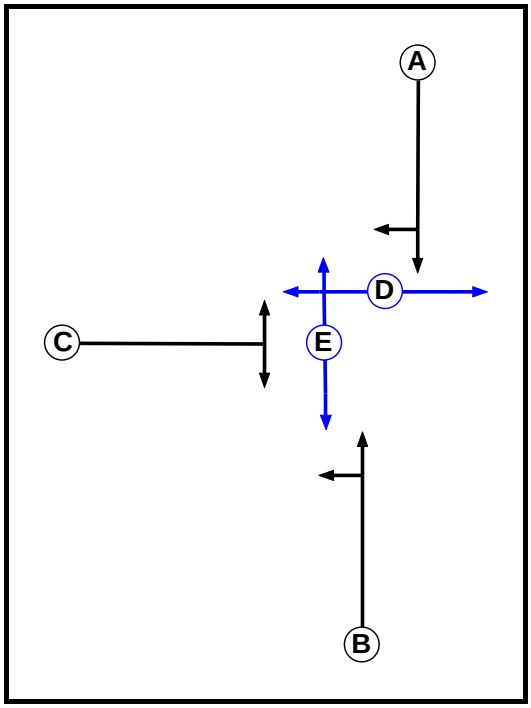
Project:	**Land at Harpenden**
Title:	**A1081 jw Park Hill**
Location:	
File name:	10338-J7 A1081 jw Park Hill.lsg3x
Author:	SMT
Company:	Brookbanks Consulting Ltd

Junction Layout Diagram



Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x

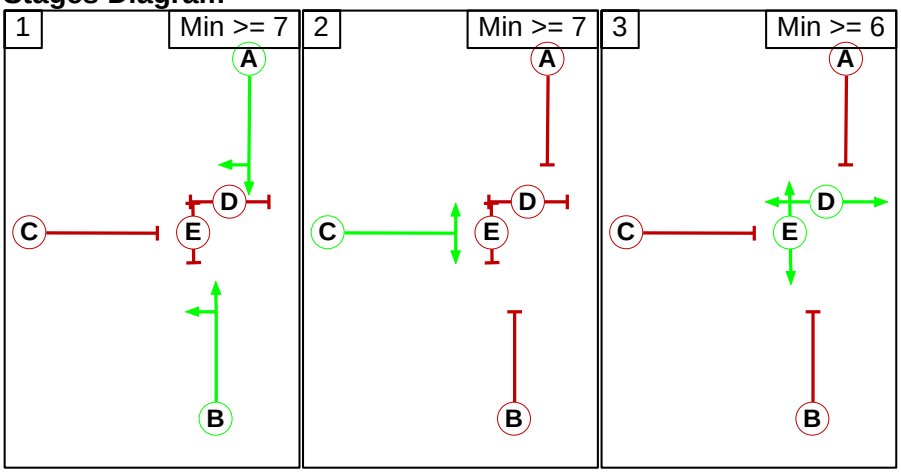
Phase Diagram



Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E
A		-	5	5	6
B	-		5	5	5
C	5	5		6	5
D	8	8	8		-
E	8	8	8	-	

Stages Diagram



Lane Input Data

Junction: Railway Bridge Shuttle Signals

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A1081 Luton Road (N))	U	A	2	3	60.0	Geom	-	3.50	0.00	N	Arm 5 Ahead	Inf
											Arm 6 Right	8.00
2/1 (A1081 Luton Road (S))	U	B	2	3	60.0	Geom	-	3.50	0.00	N	Arm 4 Ahead	Inf
											Arm 6 Left	6.00
3/1 (Park Hill)	U	C	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 4 Left	6.00
											Arm 5 Right	8.00

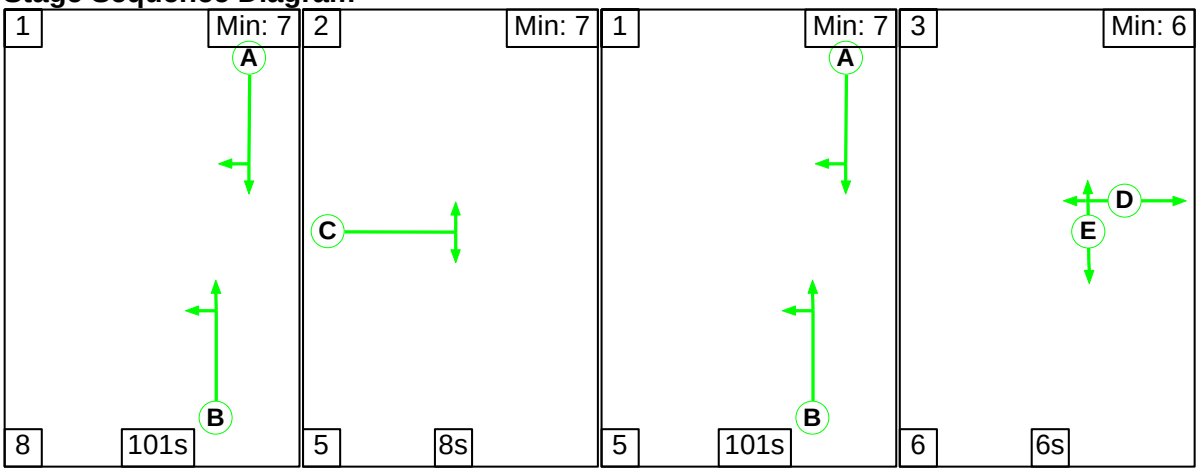
Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x
Scenario 1: '2015 AM' (FG1: '2015 AM', Plan 1: 'Peds Park Hill (+Peds) 1 in 4')

Traffic Flows, Actual

Actual Flow :

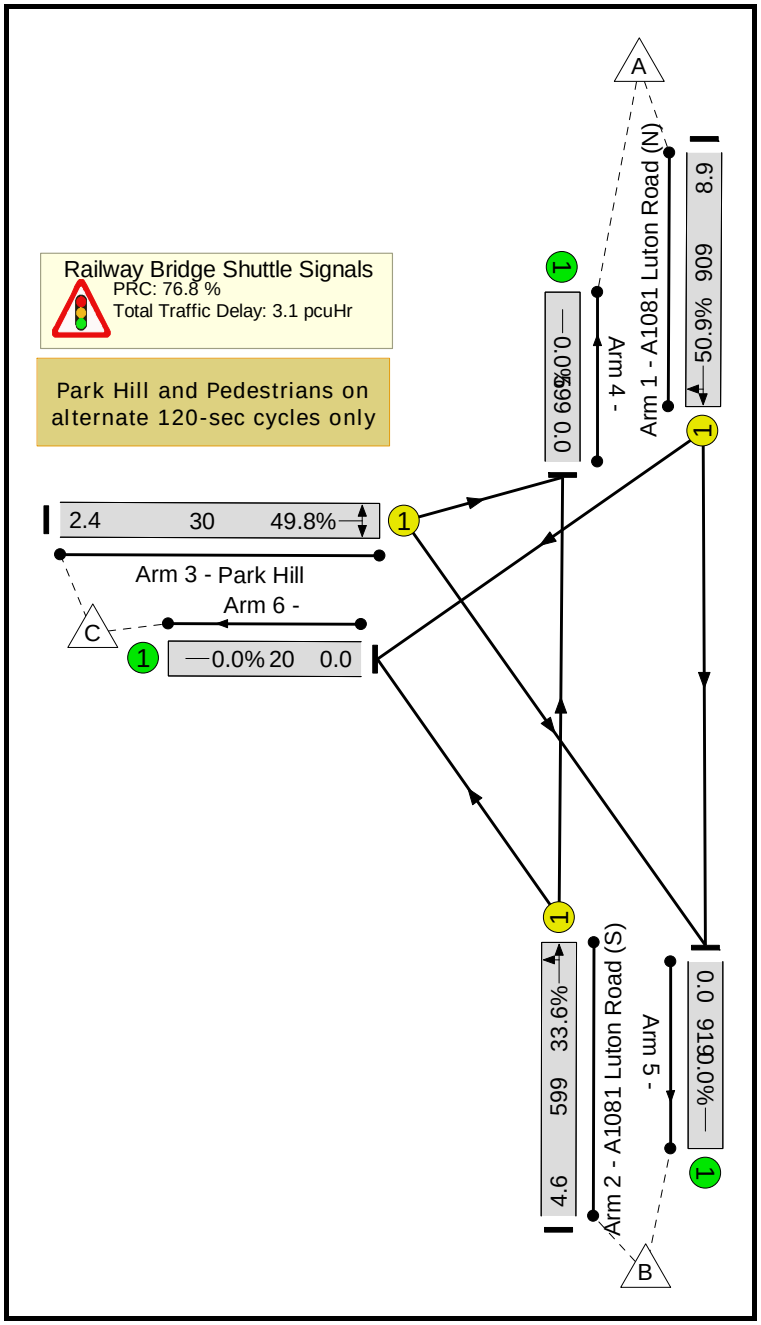
		Destination			
		A	B	C	Tot.
Origin	A	0	899	10	909
	B	589	0	10	599
	C	10	20	0	30
	Tot.	599	919	20	1538

Stage Sequence Diagram



Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x

Junction Layout Diagram



Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x

Link Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A1081 jw Park Hill	-	-	-		-	-	-	-	-	-	**50.9%**	**0**	**0**	**0**	**3.1**	-	-
Railway Bridge Shuttle Signals	-	-	-		-	-	-	-	-	-	**50.9%**	**0**	**0**	**0**	**3.1**	-	-
1/1	A1081 Luton Road (N) Ahead Right	U	A		2	202	-	909	2101	1786	50.9%	-	-	-	1.1	4.4	8.9
2/1	A1081 Luton Road (S) Ahead Left	U	B		2	202	-	599	2096	1782	33.6%	-	-	-	0.6	3.4	4.6
3/1	Park Hill Left Right	U	C		1	8	-	30	1606	60	49.8%	-	-	-	1.4	171.0	2.4

C1 PRC for Signalled Lanes (%): 76.8 Total Delay for Signalled Lanes (pcuHr): 3.11 Cycle Time (s): 240
PRC Over All Lanes (%): 76.8 Total Delay Over All Lanes(pcuHr): 3.11

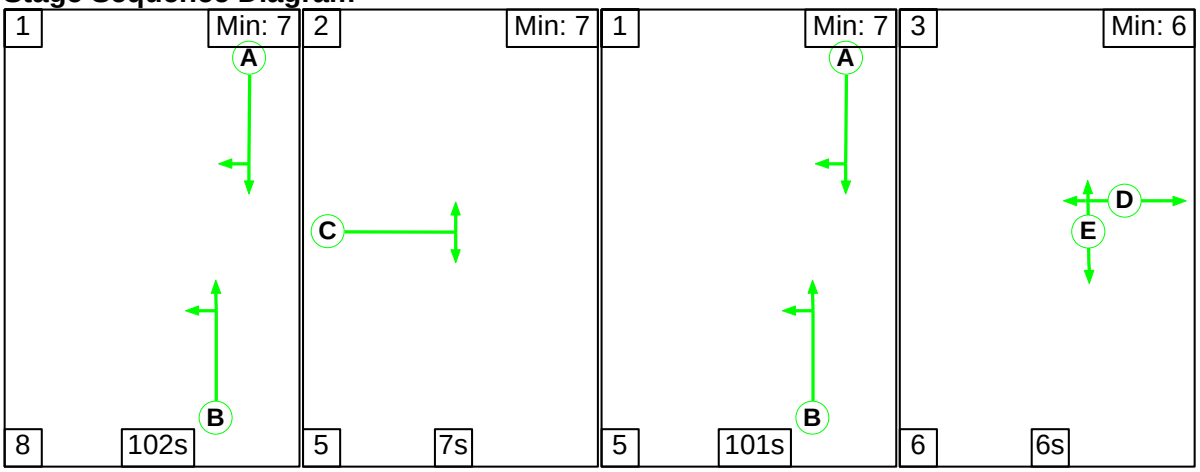
Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x
Scenario 2: '2015 PM' (FG2: '2015 PM', Plan 1: 'Peds Park Hill (+Peds) 1 in 4')

Traffic Flows, Actual

Actual Flow :

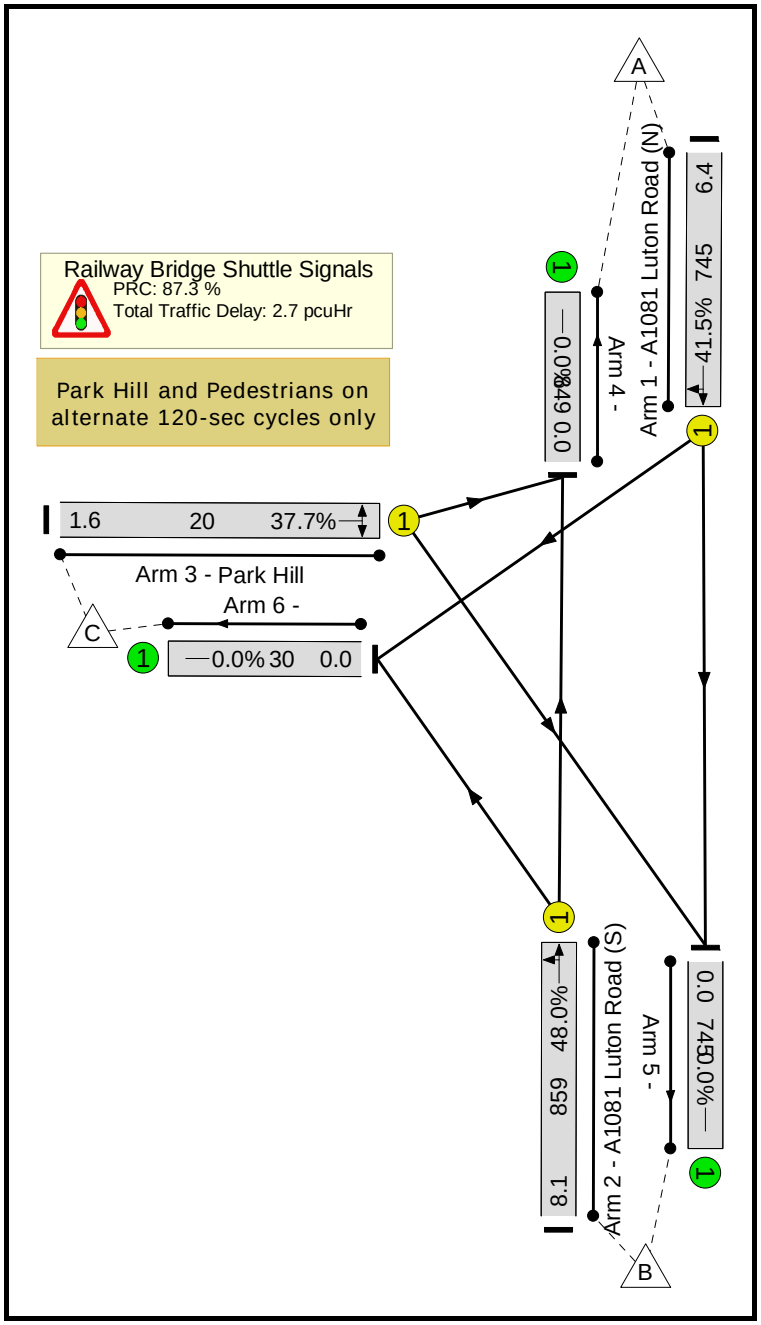
		Destination			
		A	B	C	Tot.
Origin	A	0	735	10	745
	B	839	0	20	859
	C	10	10	0	20
	Tot.	849	745	30	1624

Stage Sequence Diagram



Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x

Junction Layout Diagram



Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x

Link Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A1081 jw Park Hill	-	-	-		-	-	-	-	-	-	**48.0%**	**0**	**0**	**0**	**2.7**	-	-
Railway Bridge Shuttle Signals	-	-	-		-	-	-	-	-	-	**48.0%**	**0**	**0**	**0**	**2.7**	-	-
1/1	A1081 Luton Road (N) Ahead Right	U	A		2	203	-	745	2100	1794	41.5%	-	-	-	0.8	3.7	6.4
2/1	A1081 Luton Road (S) Ahead Left	U	B		2	203	-	859	2093	1788	48.0%	-	-	-	1.0	4.1	8.1
3/1	Park Hill Left Right	U	C		1	7	-	20	1592	53	37.7%	-	-	-	0.9	167.0	1.6

C1 PRC for Signalled Lanes (%): 87.3 Total Delay for Signalled Lanes (pcuHr): 2.68 Cycle Time (s): 240
PRC Over All Lanes (%): 87.3 Total Delay Over All Lanes(pcuHr): 2.68

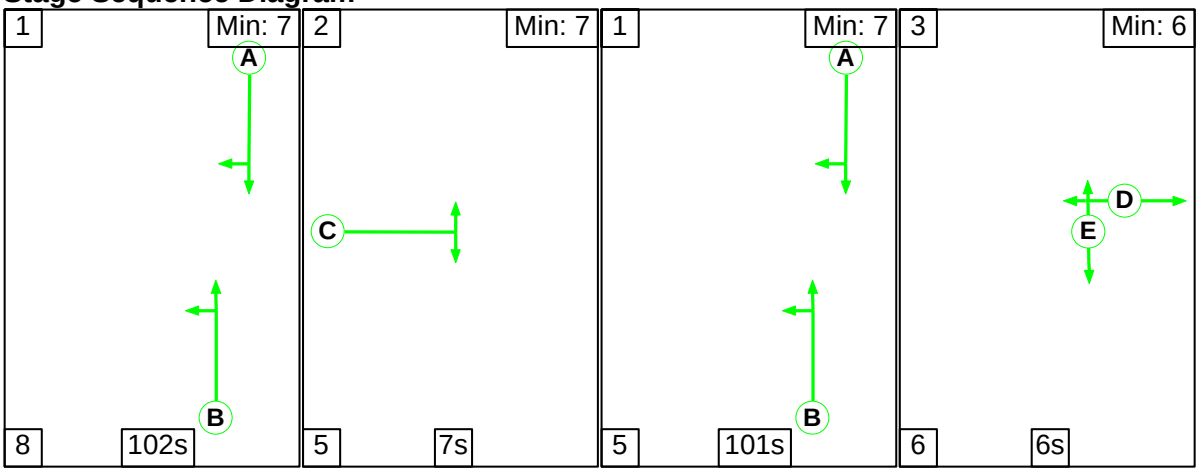
Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x
Scenario 3: '2031 AM' (FG3: '2031 AM', Plan 1: 'Peds Park Hill (+Peds) 1 in 4')

Traffic Flows, Actual

Actual Flow :

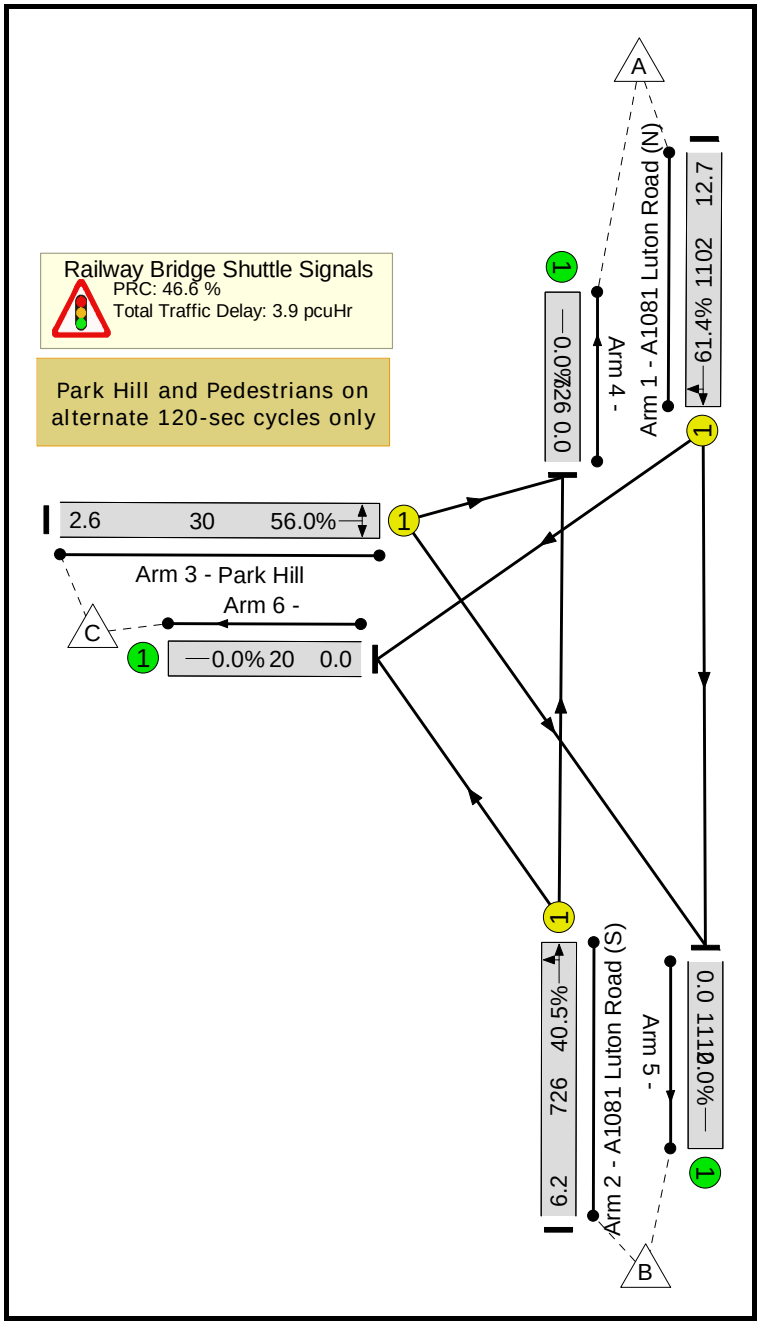
		Destination			
		A	B	C	Tot.
Origin	A	0	1092	10	1102
	B	716	0	10	726
	C	10	20	0	30
	Tot.	726	1112	20	1858

Stage Sequence Diagram



Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x

Junction Layout Diagram



Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x

Link Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A1081 jw Park Hill	-	-	-		-	-	-	-	-	-	**61.4%**	**0**	**0**	**0**	**3.9**	-	-
Railway Bridge Shuttle Signals	-	-	-		-	-	-	-	-	-	**61.4%**	**0**	**0**	**0**	**3.9**	-	-
1/1	A1081 Luton Road (N) Ahead Right	U	A		2	203	-	1102	2101	1795	61.4%	-	-	-	1.6	5.3	12.7
2/1	A1081 Luton Road (S) Ahead Left	U	B		2	203	-	726	2098	1792	40.5%	-	-	-	0.7	3.7	6.2
3/1	Park Hill Left Right	U	C		1	7	-	30	1606	54	56.0%	-	-	-	1.6	187.0	2.6

C1 PRC for Signalled Lanes (%): 46.6 Total Delay for Signalled Lanes (pcuHr): 3.92 Cycle Time (s): 240
PRC Over All Lanes (%): 46.6 Total Delay Over All Lanes(pcuHr): 3.92

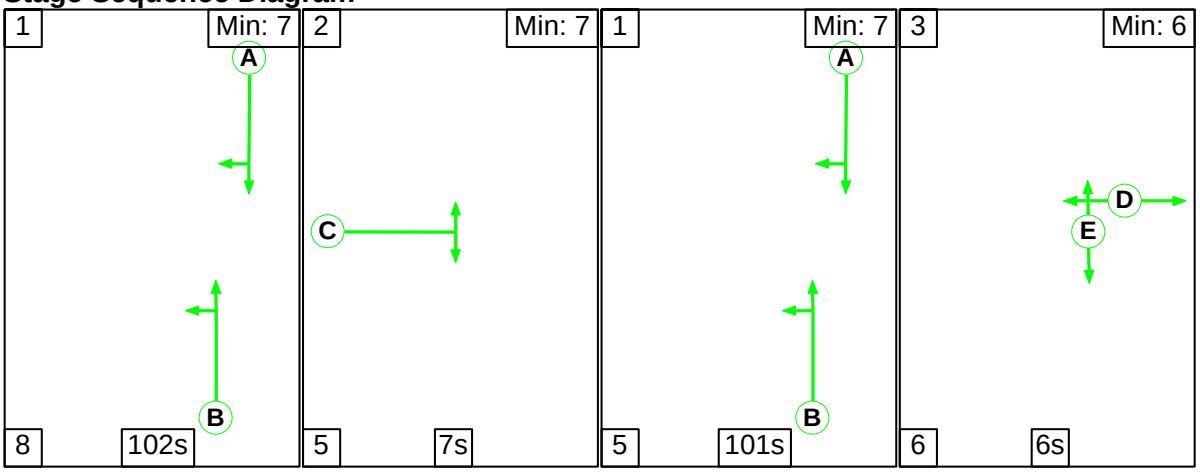
Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x
Scenario 4: '2031 PM' (FG4: '2031 PM', Plan 1: 'Peds Park Hill (+Peds) 1 in 4')

Traffic Flows, Actual

Actual Flow :

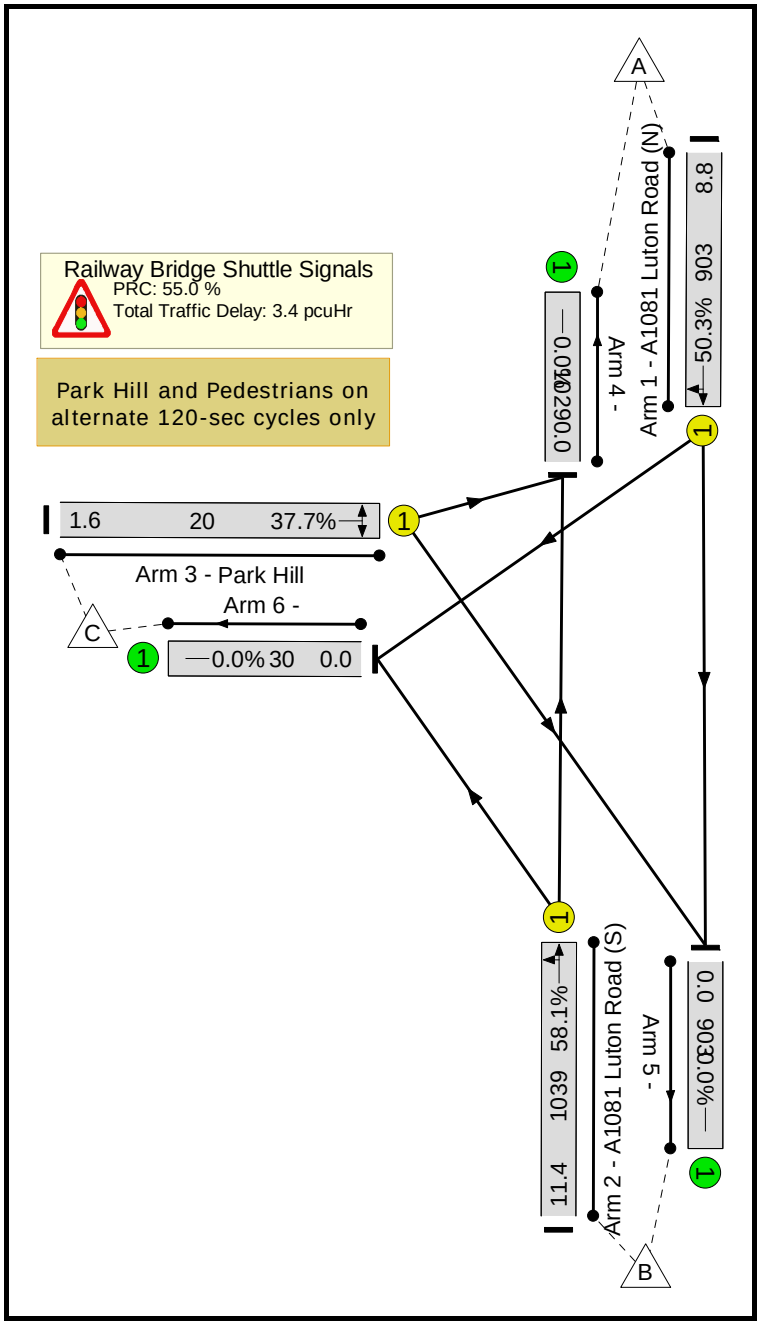
		Destination			
		A	B	C	Tot.
Origin	A	0	893	10	903
	B	1019	0	20	1039
	C	10	10	0	20
	Tot.	1029	903	30	1962

Stage Sequence Diagram



Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x

Junction Layout Diagram



Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x

Link Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A1081 jw Park Hill	-	-	-		-	-	-	-	-	-	**58.1%**	**0**	**0**	**0**	**3.4**	-	-
Railway Bridge Shuttle Signals	-	-	-		-	-	-	-	-	-	**58.1%**	**0**	**0**	**0**	**3.4**	-	-
1/1	A1081 Luton Road (N) Ahead Right	U	A		2	203	-	903	2101	1795	50.3%	-	-	-	1.1	4.3	8.8
2/1	A1081 Luton Road (S) Ahead Left	U	B		2	203	-	1039	2095	1789	58.1%	-	-	-	1.4	4.9	11.4
3/1	Park Hill Left Right	U	C		1	7	-	20	1592	53	37.7%	-	-	-	0.9	167.0	1.6

C1 PRC for Signalled Lanes (%): 55.0 Total Delay for Signalled Lanes (pcuHr): 3.43 Cycle Time (s): 240
PRC Over All Lanes (%): 55.0 Total Delay Over All Lanes(pcuHr): 3.43

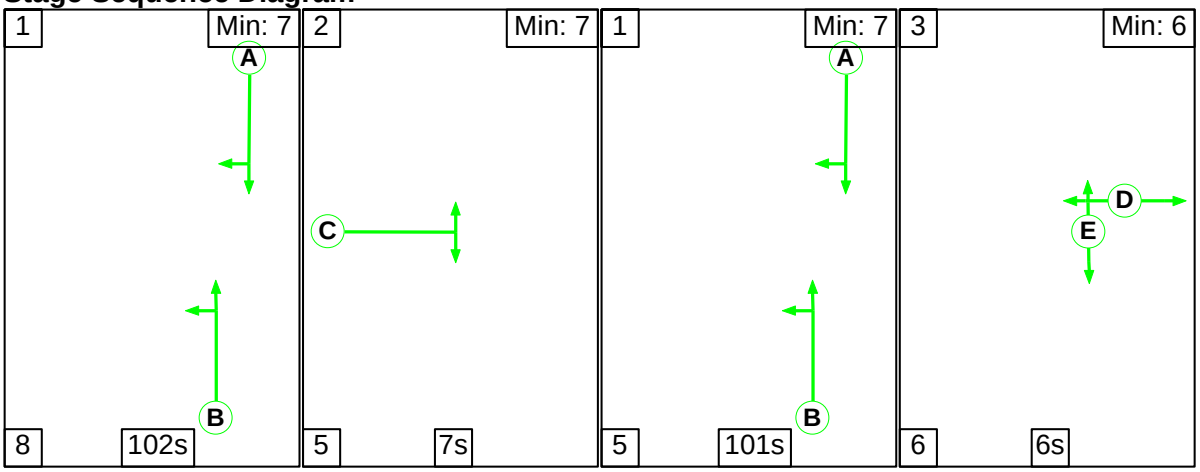
Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x
Scenario 5: '2031+Dev Rev3 AM' (FG5: '2031+Dev Rev3 AM', Plan 1: 'Peds Park Hill (+Peds) 1 in 4')

Traffic Flows, Actual

Actual Flow :

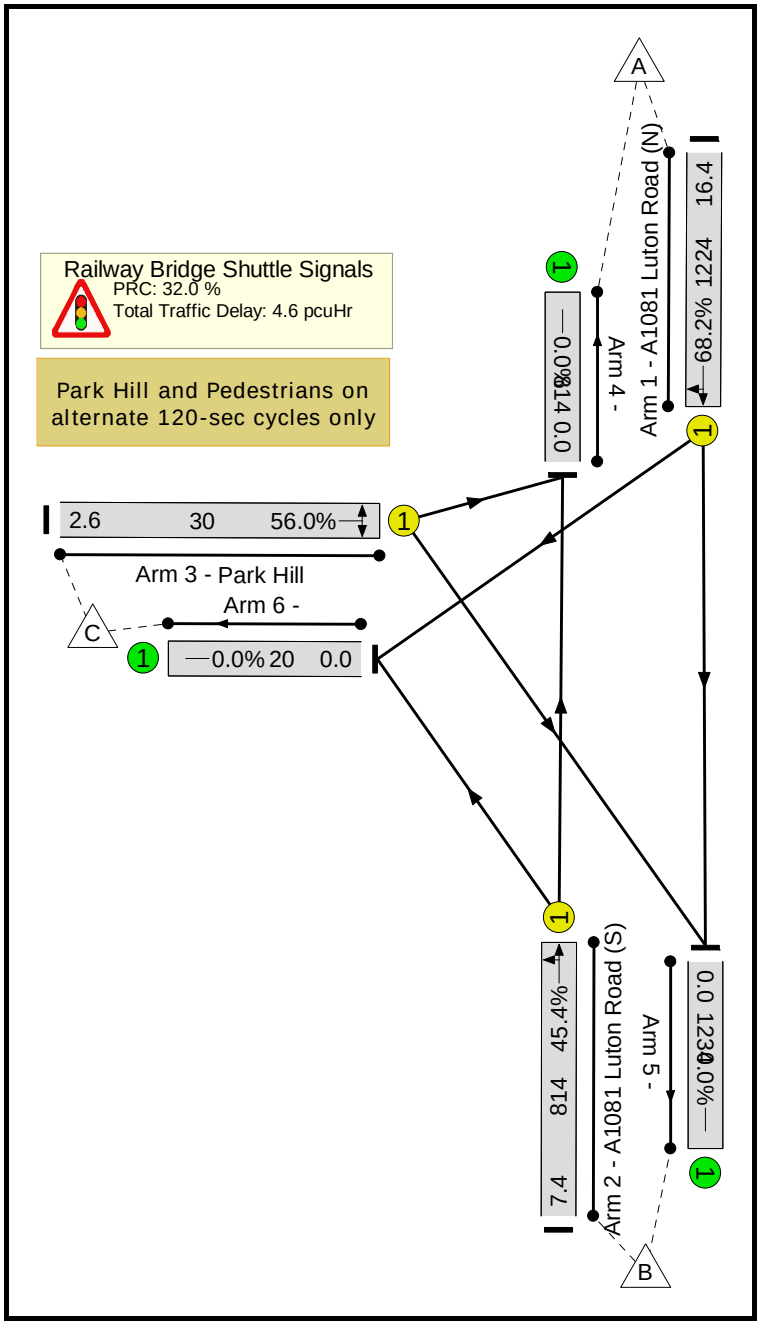
		Destination			
		A	B	C	Tot.
Origin	A	0	1214	10	1224
	B	804	0	10	814
	C	10	20	0	30
	Tot.	814	1234	20	2068

Stage Sequence Diagram



Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x

Junction Layout Diagram



Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x

Link Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A1081 jw Park Hill	-	-	-		-	-	-	-	-	-	**68.2%**	**0**	**0**	**0**	**4.6**	-	-
Railway Bridge Shuttle Signals	-	-	-		-	-	-	-	-	-	**68.2%**	**0**	**0**	**0**	**4.6**	-	-
1/1	A1081 Luton Road (N) Ahead Right	U	A		2	203	-	1224	2102	1795	68.2%	-	-	-	2.1	6.2	16.4
2/1	A1081 Luton Road (S) Ahead Left	U	B		2	203	-	814	2099	1793	45.4%	-	-	-	0.9	3.9	7.4
3/1	Park Hill Left Right	U	C		1	7	-	30	1606	54	56.0%	-	-	-	1.6	187.0	2.6

C1 PRC for Signalled Lanes (%): 32.0 Total Delay for Signalled Lanes (pcuHr): 4.56 Cycle Time (s): 240
PRC Over All Lanes (%): 32.0 Total Delay Over All Lanes(pcuHr): 4.56

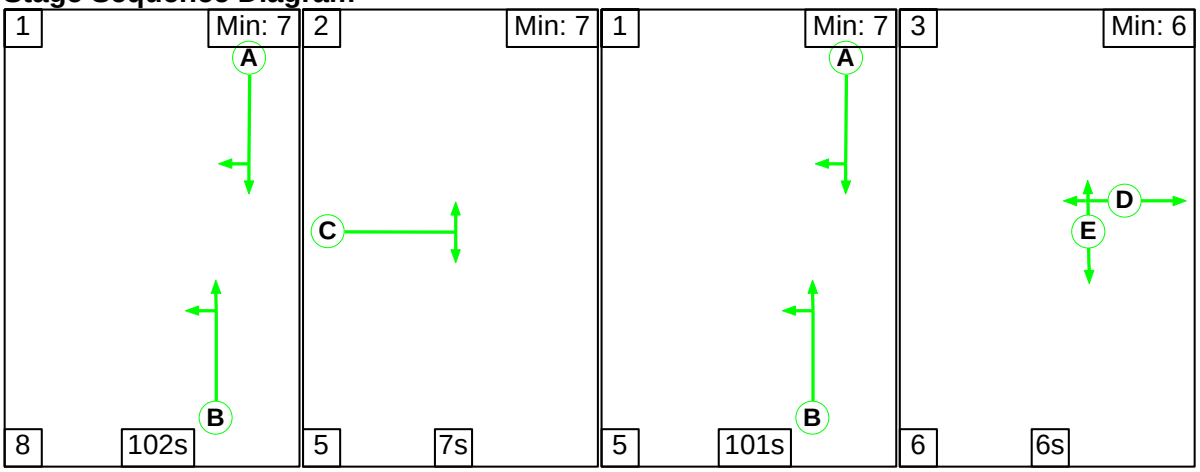
Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x
Scenario 6: '2031+Dev Rev3 PM' (FG6: '2031+Dev Rev3 PM', Plan 1: 'Peds Park Hill (+Peds) 1 in 4')

Traffic Flows, Actual

Actual Flow :

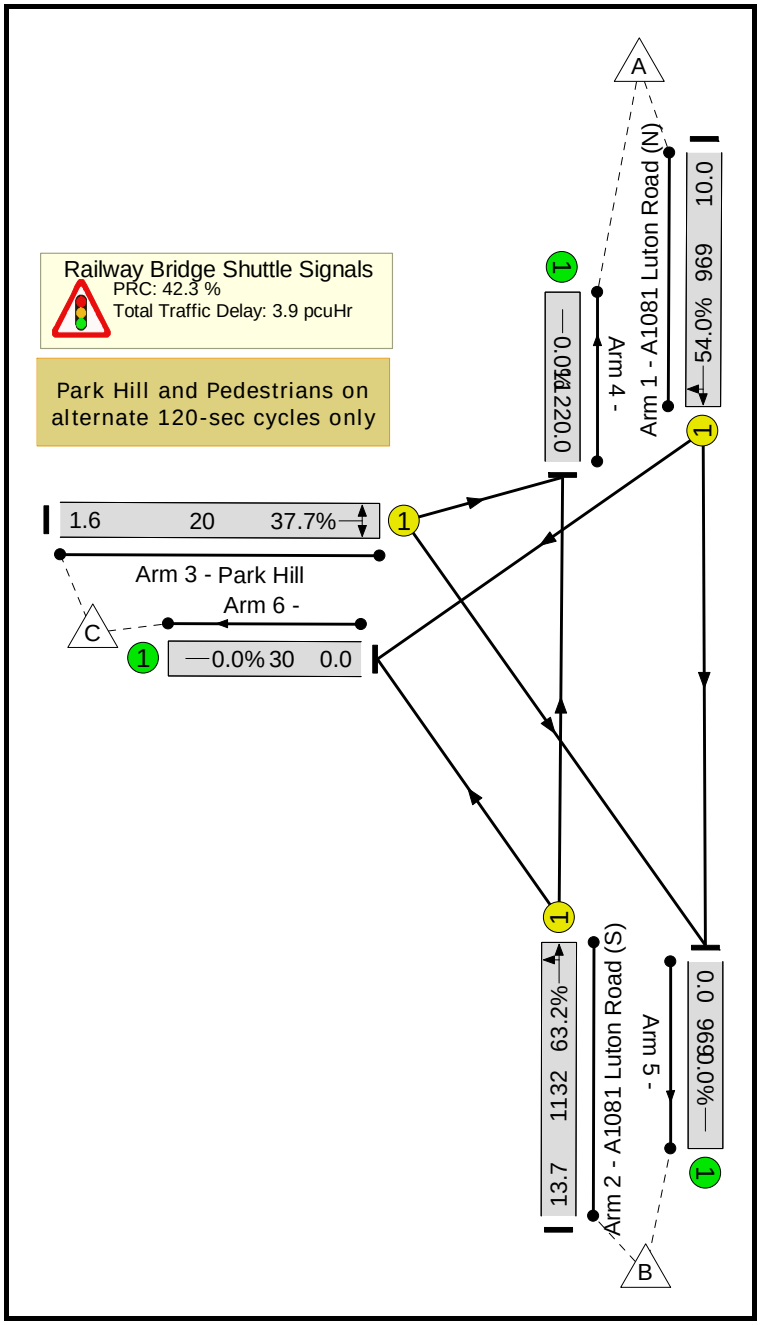
		Destination			
		A	B	C	Tot.
Origin	A	0	959	10	969
	B	1112	0	20	1132
	C	10	10	0	20
	Tot.	1122	969	30	2121

Stage Sequence Diagram



Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x

Junction Layout Diagram



Linsig Report
P:\10338\Traffic\Junctions\J7-Shuttle Signals at Railway Bridge\10338-J7 A1081 jw Park Hill.lsg3x

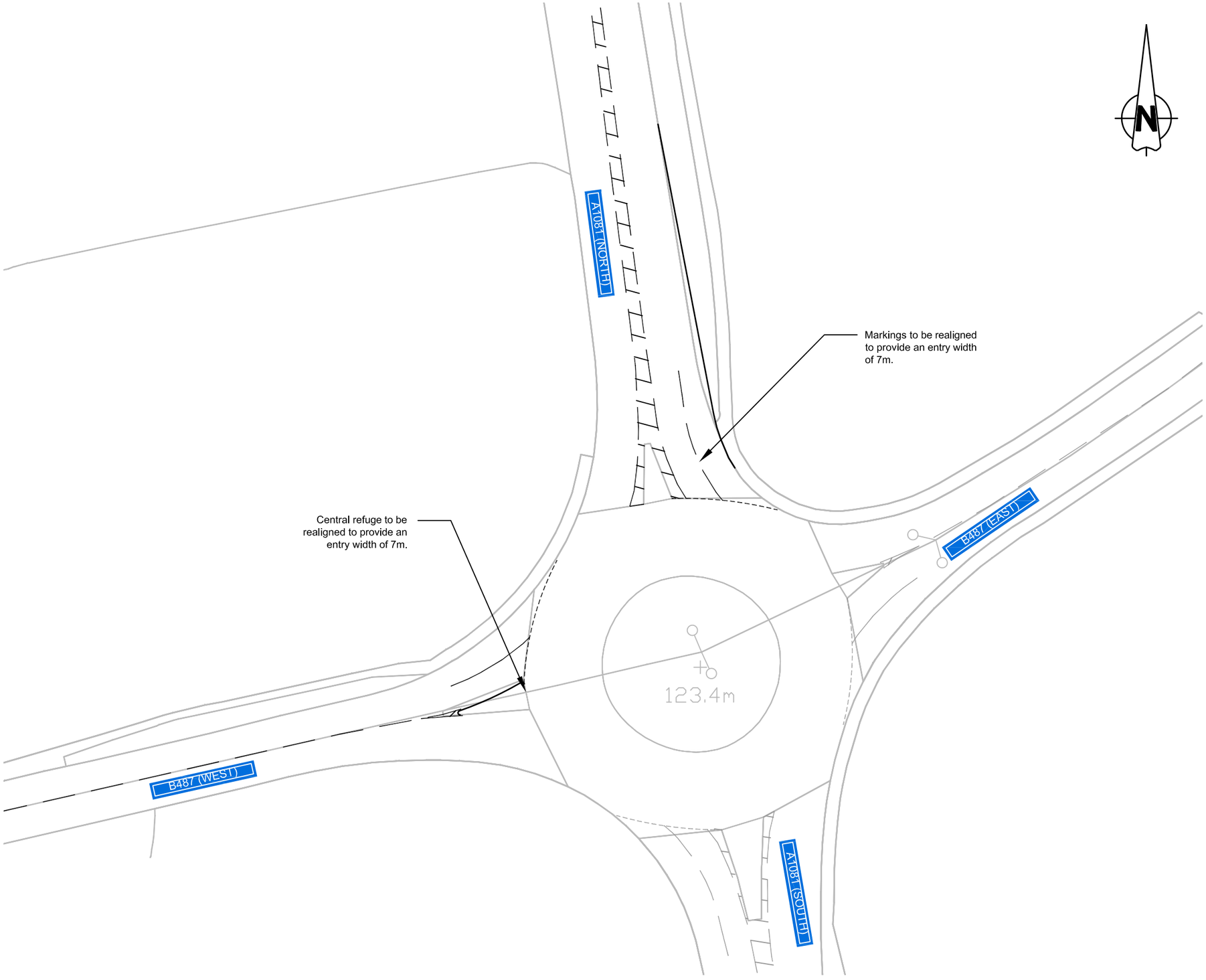
Link Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A1081 jw Park Hill	-	-	-		-	-	-	-	-	-	**63.2%**	**0**	**0**	**0**	**3.9**	-	-
Railway Bridge Shuttle Signals	-	-	-		-	-	-	-	-	-	**63.2%**	**0**	**0**	**0**	**3.9**	-	-
1/1	A1081 Luton Road (N) Ahead Right	U	A		2	203	-	969	2101	1795	54.0%	-	-	-	1.2	4.6	10.0
2/1	A1081 Luton Road (S) Ahead Left	U	B		2	203	-	1132	2096	1790	63.2%	-	-	-	1.7	5.5	13.7
3/1	Park Hill Left Right	U	C		1	7	-	20	1592	53	37.7%	-	-	-	0.9	167.0	1.6

C1 PRC for Signalled Lanes (%): 42.3 Total Delay for Signalled Lanes (pcuHr): 3.89 Cycle Time (s): 240
PRC Over All Lanes (%): 42.3 Total Delay Over All Lanes(pcuHr): 3.89

Appendix D – Highway Improvements

Original Drawing Size A3



Construction Design and Management (CDM) Key Residual Risks

Contractors entering the site should gain permission from the relevant land owners and/or principle contractor working on site at the time of entry. Contractors shall be responsible for carrying out their own risk assessments and for liaising with the relevant services companies and authorities. Listed below are Site Specific key risks associated with the project.

1) Overhead and underground services
2) Street Lighting Cables
3) Working adjacent to water courses and flood plain
4) Soft ground conditions
5) Working adjacent to live highways and railway line
6) Unchartered services
7) Existing buildings with potential asbestos hazards

NOTES:

1. Do not scale from this drawing
2. All dimensions are in metres unless otherwise stated.
3. Brookbanks Consulting Ltd has prepared this drawing for the sole use of the client. The drawing may not be relied upon by any other party without the express agreement of the client and Brookbanks Consulting Ltd. Where any data supplied by the client or from other sources has been used, it has been assumed that the information is correct. No responsibility can be accepted by Brookbanks Consulting Ltd for inaccuracies in the data supplied by any other party. The drawing has been produced based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.
4. No part of this drawing may be copied or duplicated without the express permission of Brookbanks Consulting.
5. The markings have been designed and positioned in accordance with the Traffic Signs Manual Chapter 5.
6. The road signs have been designed and positioned in accordance with the Traffic Signs Manual Chapter 3.
7. The alignment has been designed in accordance with the following standards:
   - TD 9/93 Highway Link Design
   - TD 16/07 The Geometric Design of Roundabouts

0 10 20 30 40
METRES

- First Issue	- - -	10.05.16
Status		Status Date
For Comment		10.05.16
Drawn	Checked	Date
MDM	AE	MAY 2016
Scale	Number	Rev
1:500	10338-HL-07	-

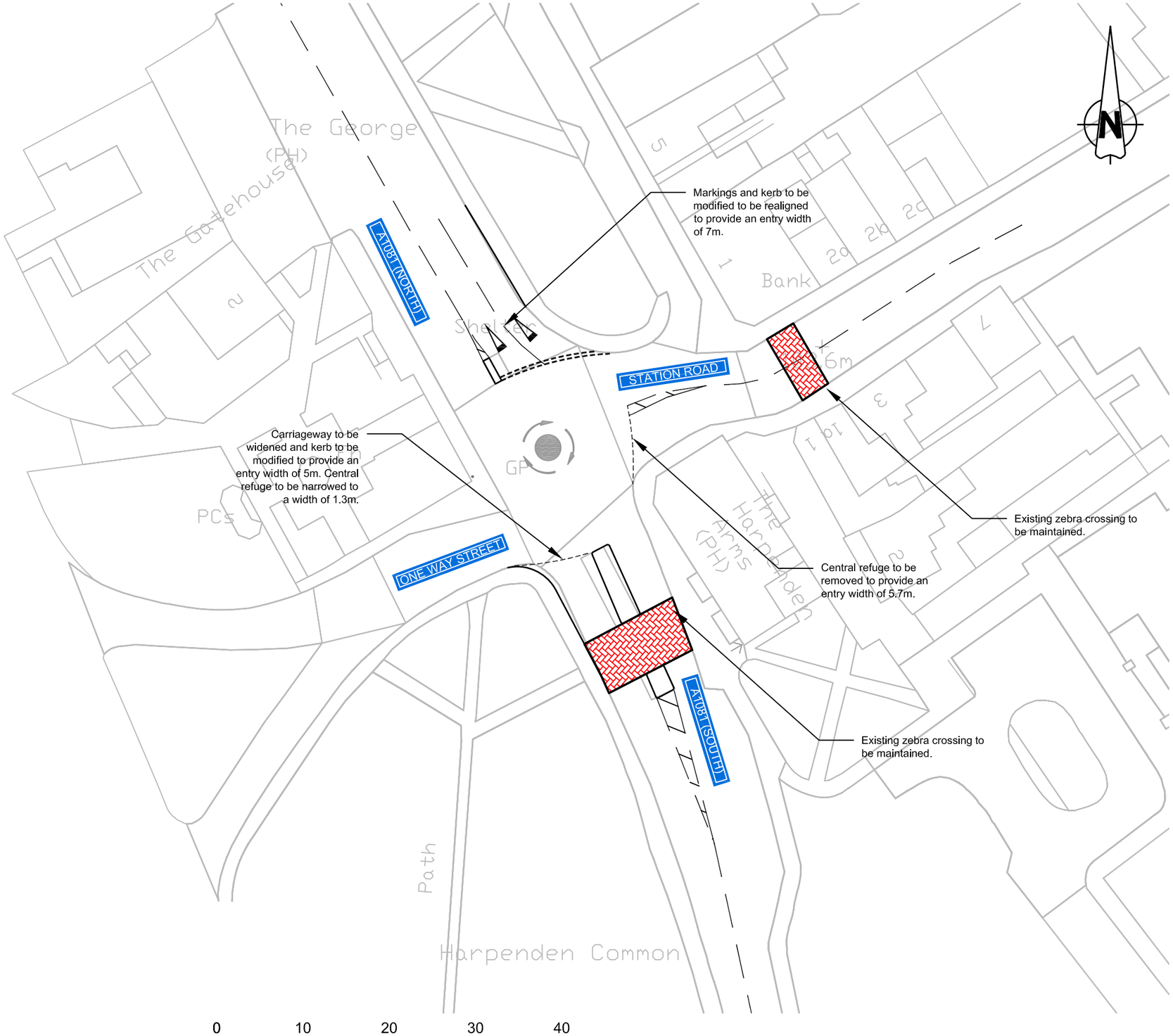
DRAFT

Proposed Development
Luton Road, Harpenden

Off-site Highway Mitigation - Roundabout
between the A1081 and B487

Brookbanks
6150 Knights Court Solihull Parkway Birmingham B37 7WY
Tel (0121) 329 4330 Fax (0121) 329 4331
www.brookbanks.com

Original Drawing Size A3



0 10 20 30 40

METRES

Construction Design and Management (CDM) Key Residual Risks

Contractors entering the site should gain permission from the relevant land owners and/or principle contractor working on site at the time of entry. Contractors shall be responsible for carrying out their own risk assessments and for liaising with the relevant services companies and authorities. Listed below are Site Specific key risks associated with the project.

1) Overhead and underground services
2) Street Lighting Cables
3) Working adjacent to water courses and flood plain
4) Soft ground conditions
5) Working adjacent to live highways and railway line
6) Unchartered services
7) Existing buildings with potential asbestos hazards

NOTES:

1. Do not scale from this drawing
2. All dimensions are in metres unless otherwise stated.
3. Brookbanks Consulting Ltd has prepared this drawing for the sole use of the client. The drawing may not be relied upon by any other party without the express agreement of the client and Brookbanks Consulting Ltd. Where any data supplied by the client or from other sources has been used, it has been assumed that the information is correct. No responsibility can be accepted by Brookbanks Consulting Ltd for inaccuracies in the data supplied by any other party. The drawing has been produced based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.
4. No part of this drawing may be copied or duplicated without the express permission of Brookbanks Consulting.
5. The markings have been designed and positioned in accordance with the Traffic Signs Manual Chapter 5.
6. The road signs have been designed and positioned in accordance with the Traffic Signs Manual Chapter 3.
7. The alignment has been designed in accordance with the following standards:
   - TD 9/93 Highway Link Design
   - TD 16/07 The Geometric Design of Roundabouts
   - Manual for Streets

- First Issue	- - -	10.05.16

Status		Status Date
For Comment		10.05.16
Drawn	**Checked**	**Date**
MDM	AE	MAY 2016
Scale	**Number**	**Rev**
1:500	10338-HL-08	-

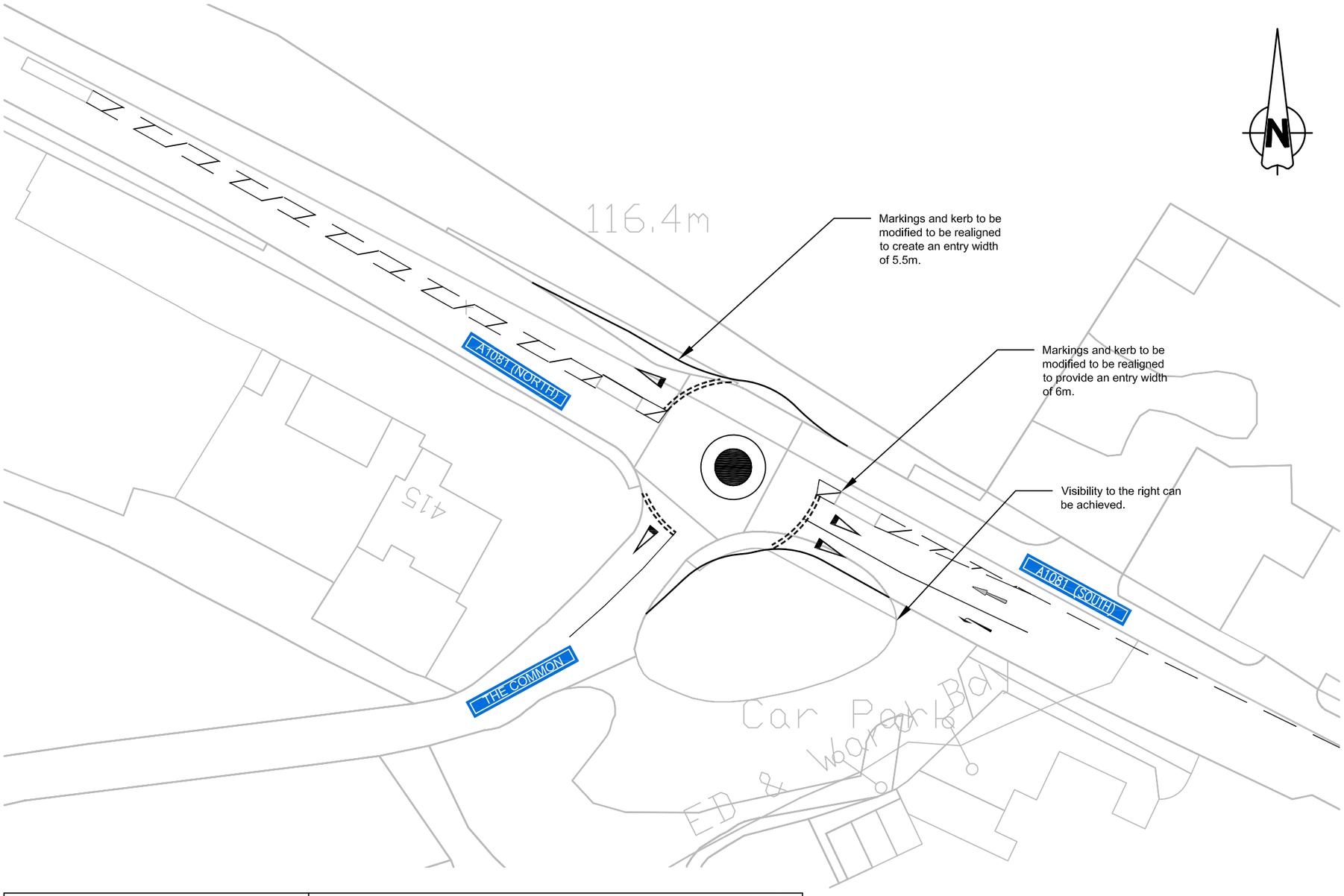
DRAFT

Proposed Development
Luton Road, Harpenden

Off-site Highway Mitigation
Mini Roundabout between the A1081 and Station Road

Brookbanks
6150 Knights Court Solihull Parkway Birmingham B37 7WY
Tel (0121) 329 4330 Fax (0121) 329 4331
www.brookbanks.com

Original Drawing Size A3



Construction Design and Management (CDM) Key Residual Risks

Contractors entering the site should gain permission from the relevant land owners and/or principle contractor working on site at the time of entry. Contractors shall be responsible for carrying out their own risk assessments and for liaising with the relevant services companies and authorities. Listed below are Site Specific key risks associated with the project.

1) Overhead and underground services
2) Street Lighting Cables
3) Working adjacent to water courses and flood plain
4) Soft ground conditions
5) Working adjacent to live highways and railway line
6) Unchartered services
7) Existing buildings with potential asbestos hazards

NOTES:

1. Do not scale from this drawing
2. All dimensions are in metres unless otherwise stated.
3. Brookbanks Consulting Ltd has prepared this drawing for the sole use of the client. The drawing may not be relied upon by any other party without the express agreement of the client and Brookbanks Consulting Ltd. Where any data supplied by the client or from other sources has been used, it has been assumed that the information is correct. No responsibility can be accepted by Brookbanks Consulting Ltd for inaccuracies in the data supplied by any other party. The drawing has been produced based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.
4. No part of this drawing may be copied or duplicated without the express permission of Brookbanks Consulting.
5. The markings have been designed and positioned in accordance with the Traffic Signs Manual Chapter 5.
6. The road signs have been designed and positioned in accordance with the Traffic Signs Manual Chapter 3.
7. The alignment has been designed in accordance with the following standards:
   - TD 9/93 Highway Link Design
   - TD 16/07 The Geometric Design of Roundabouts
   - Manual for Streets

Arm	PROPOSED MINI ROUNDABOUT: DMRB COMPLIANCE					
	Entry Radius Into Rotary (m)	Exit Radius From Rotary (m)	Stopping Sight Distance (m)	Entry Angle (°)	Exit Design Speed (mph)	Approx ICD Across Arm (m)
A1081 (North)	30	7	80	27	30	20
The Common	7	10	43 (MfS)	37	30	20
A1081 (South)	10	26	80	34	30	20

0 10 20 30 40
METRES

- First Issue	- - -	10.05.16
Status		Status Date
For Comment		10.05.16
Drawn	Checked	Date
MDM	AE	MAY 2016
Scale	Number	Rev
1:500	10338-HL-09	-

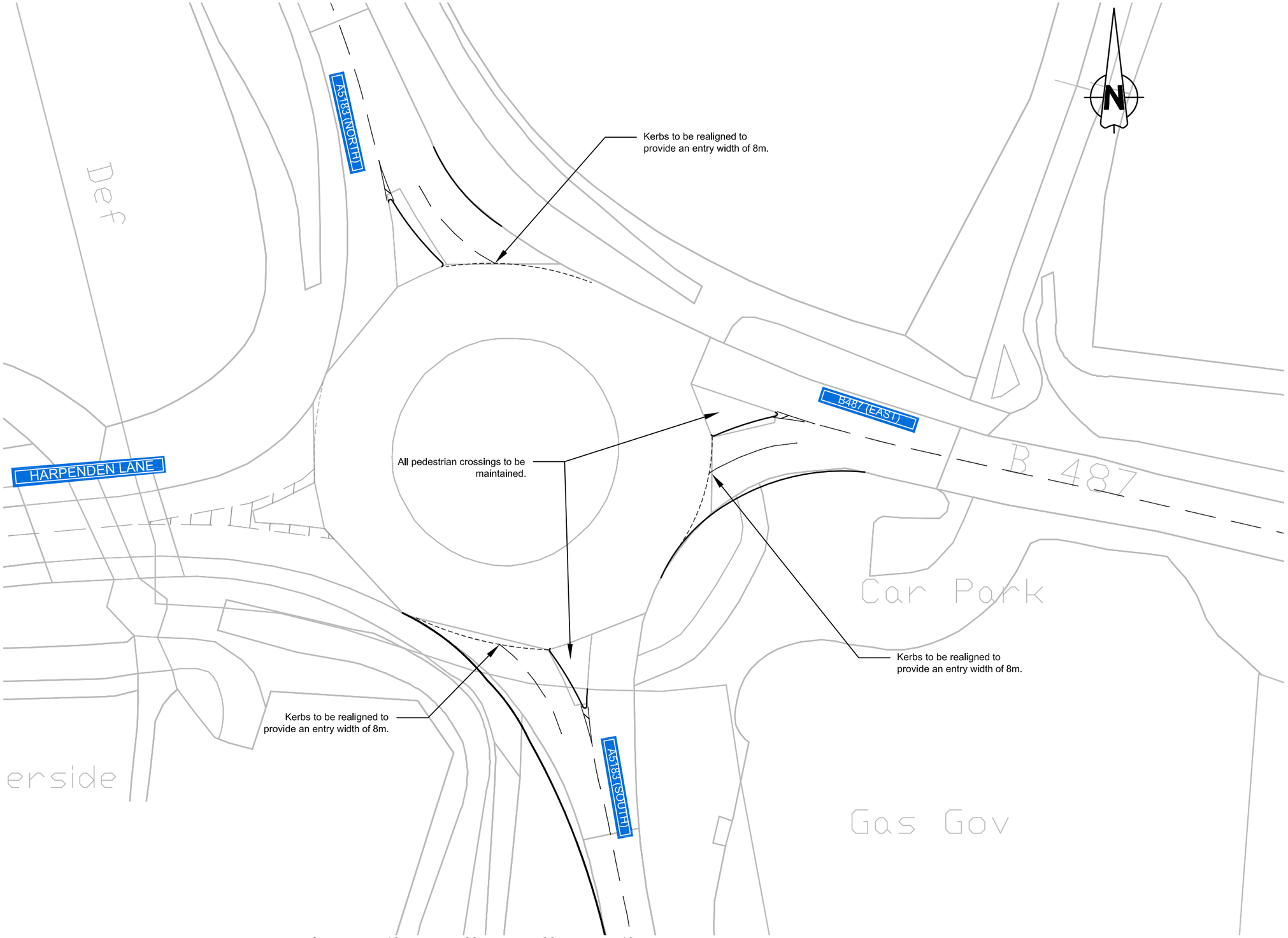
DRAFT

Proposed Development
Luton Road, Harpenden

Off-site Highway Mitigation - T-junction
between the A1081 and The Common

Brookbanks
6150 Knights Court Solihull Parkway Birmingham B37 7WY
Tel (0121) 329 4330 Fax (0121) 329 4331
www.brookbanks.com

Original Drawing Size A3



Construction Design and Management (CDM) Key Residual Risks

Contractors entering the site should gain permission from the relevant land owners and/or principle contractor working on site at the time of entry. Contractors shall be responsible for carrying out their own risk assessments and for liaising with the relevant services companies and authorities. Listed below are Site Specific key risks associated with the project.

1) Overhead and underground services
2) Street Lighting Cables
3) Working adjacent to water courses and flood plain
4) Soft ground conditions
5) Working adjacent to live highways and railway line
6) Unchartered services
7) Existing buildings with potential asbestos hazards

NOTES:

1. Do not scale from this drawing
2. All dimensions are in metres unless otherwise stated.
3. Brookbanks Consulting Ltd has prepared this drawing for the sole use of the client. The drawing may not be relied upon by any other party without the express agreement of the client and Brookbanks Consulting Ltd. Where any data supplied by the client or from other sources has been used, it has been assumed that the information is correct. No responsibility can be accepted by Brookbanks Consulting Ltd for inaccuracies in the data supplied by any other party. The drawing has been produced based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.
4. No part of this drawing may be copied or duplicated without the express permission of Brookbanks Consulting.
5. The markings have been designed and positioned in accordance with the Traffic Signs Manual Chapter 5.
6. The road signs have been designed and positioned in accordance with the Traffic Signs Manual Chapter 3.
7. The alignment has been designed in accordance with the following standards:
   - TD 9/93 Highway Link Design
   - TD 16/07 The Geometric Design of Roundabouts

DRAFT

- First Issue	- - -	26.05.16
Status		Status Date
For Comment		26.05.16
Drawn	Checked	Date
MDM	AE	MAY 2016
Scale	Number	Rev
1:500	10338-HL-10	-

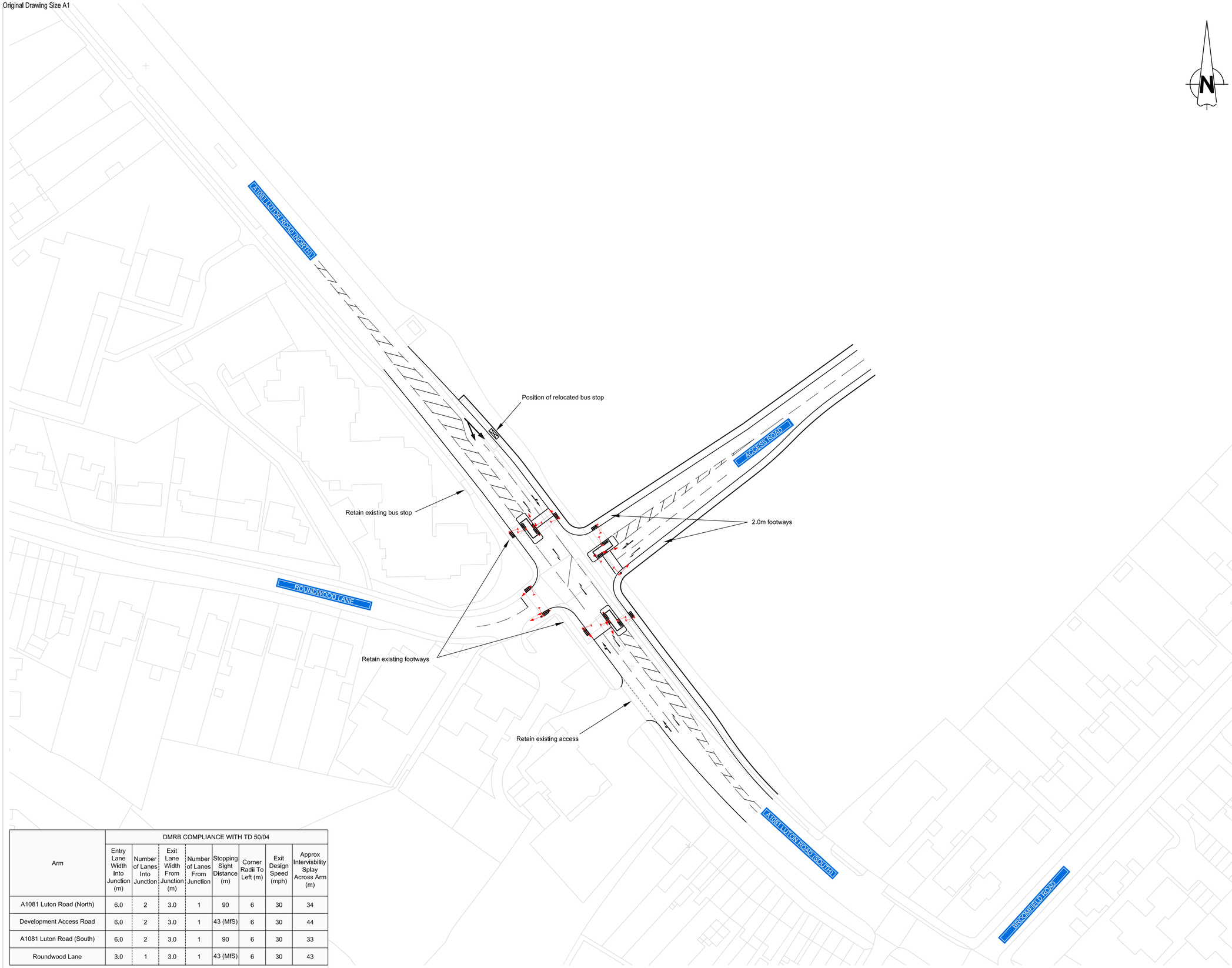
Proposed Development
Luton Road, Harpenden

Off-site Highway Mitigation - Roundabout
between the A1583 and B487

Brookbanks
6150 Knights Court Solihull Parkway Birmingham B37 7WY
Tel (0121) 329 4330 Fax (0121) 329 4331
www.brookbanks.com

Appendix E – Access Drawings

Original Drawing Size A1



Arm	DMRB COMPLIANCE WITH TD 50/04							
	Entry Lane Width Into Junction (m)	Number of Lanes Into Junction	Exit Lane Width From Junction (m)	Number of Lanes From Junction	Stopping Sight Distance (m)	Corner Radii To Left (m)	Exit Design Speed (mph)	Approx Intervisbility Splay Across Arm (m)
A1081 Luton Road (North)	6.0	2	3.0	1	90	6	30	34
Development Access Road	6.0	2	3.0	1	43 (MfS)	6	30	44
A1081 Luton Road (South)	6.0	2	3.0	1	90	6	30	33
Roundwood Lane	3.0	1	3.0	1	43 (MfS)	6	30	43

Construction Design and Management (CDM)
Key Residual Risks

Contractors entering the site should gain permission from the relevant land owners and/or principle contractor working on site at the time of entry. Contractors shall be responsible for carrying out their own risk assessments and for liaising with the relevant services companies and authorities. Listed below are Site Specific key risks associated with the project.

1) Overhead and underground services
2) Street Lighting Cables
3) Working adjacent to water courses and flood plain
4) Soft ground conditions
5) Working adjacent to live highways and railway line
6) Unchartered services
7) Existing buildings with potential asbestos hazards

NOTES:

1. Do not scale from this drawing.
2. All dimensions are in metres unless otherwise stated.
3. Brookbanks Consulting Ltd has prepared this drawing for the sole use of the client. The drawing may not be relied upon by any other party without the express agreement of the client and Brookbanks Consulting Ltd. Where any data supplied by the client or from other sources has been used, it has been assumed that the information is correct. No responsibility can be accepted by Brookbanks Consulting Ltd for inaccuracies in the data supplied by any other party. The drawing has been produced based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.
4. No part of this drawing may be copied or duplicated without the express permission of Brookbanks Consulting.
5. The highway alignment has been designed in accordance with Manual for Streets 1 and 2.
6. Earthworks are for indicative purposes only.

UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT LOCAL AUTHORITIES, IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ARE ISSUED AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR COMMENCE SITE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT HIS OWN RISK.

A	Improvement to drawing details	MDM	AE	PAB 25.05.16
-	First Issue	-	-	- 01.11.14

Brookbanks
6150 Knights Court Solihull Parkway Birmingham B37 7WY
Tel (0121) 329 4330 Fax (0121) 329 4331
www.brookbanks.com

ceg

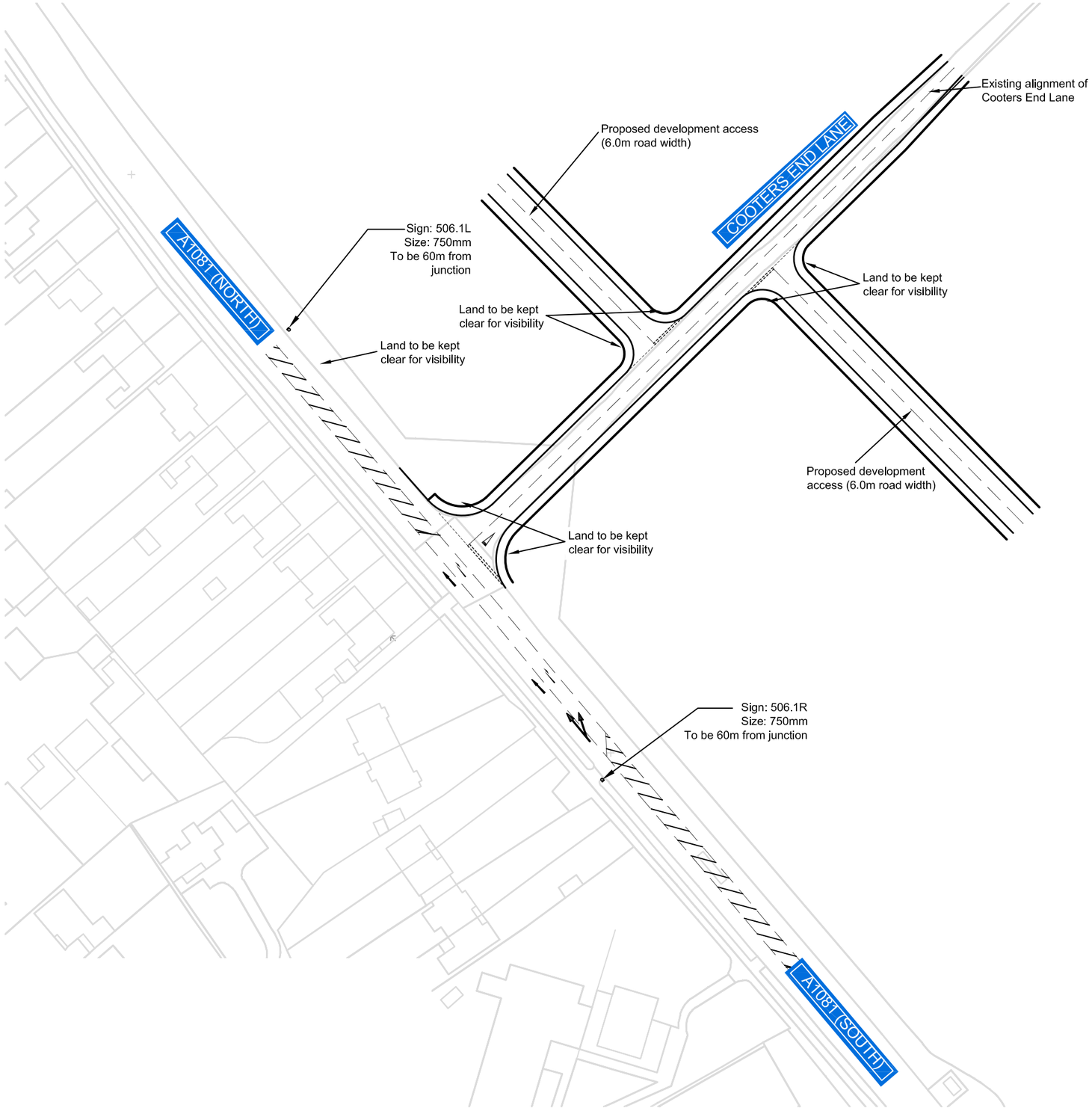
Proposed Development, Luton Road, Harpenden

Highway Access Plan
Option 1 (Signalised Junction)

Status	Status Date
For Comment	November 2014
Drawn	**Checked**	**Date**
MDM	AE	01.11.2014
Scale	**Number**	**Rev**
1:500	10338-HL-01	A

0 10 20 30 40 50
METRES

Original Drawing Size A3



Construction Design and Management (CDM) Key Residual Risks

Contractors entering the site should gain permission from the relevant land owners and/or principle contractor working on site at the time of entry. Contractors shall be responsible for carrying out their own risk assessments and for liaising with the relevant services companies and authorities. Listed below are Site Specific key risks associated with the project.

1) Overhead and underground services
2) Street Lighting Cables
3) Working adjacent to water courses and flood plain
4) Soft ground conditions
5) Working adjacent to live highways and railway line
6) Unchartered services
7) Existing buildings with potential asbestos hazards

NOTES:

1. Do not scale from this drawing
2. All dimensions are in metres unless otherwise stated.
3. Brookbanks Consulting Ltd has prepared this drawing for the sole use of the client. The drawing may not be relied upon by any other party without the express agreement of the client and Brookbanks Consulting Ltd. Where any data supplied by the client or from other sources has been used, it has been assumed that the information is correct. No responsibility can be accepted by Brookbanks Consulting Ltd for inaccuracies in the data supplied by any other party. The drawing has been produced based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.
4. No part of this drawing may be copied or duplicated without the express permission of Brookbanks Consulting.
5. The markings have been designed and positioned in accordance with the Traffic Signs Manual Chapter 5.
6. The road signs have been designed and positioned in accordance with the Traffic Signs Manual Chapter 3.
7. The alignment has been designed in accordance with the following standards:
   - TD 9/93 Highway Link Design
   - TD 42/95 The Geometric Design of Major-Minor Priority Junctions
   - Manual for Streets

- First Issue		- - -	24.05.16
Status			Status Date
For Comment			24.05.16
Drawn	Checked		Date
MDM	AE		MAY 2016
Scale	Number		Rev
1:1000	10338-HL-11		-

DRAFT

Proposed Development
Luton Road, Harpenden

Highway Access Strategy - T-junction
between the A1081 and Cooters End Lane

Brookbanks
6150 Knights Court Solihull Parkway Birmingham B37 7WY
Tel (0121) 329 4330 Fax (0121) 329 4331
www.brookbanks.com

East St Albans

Appendix 9: Transport Extract of East St Albans Landowner/Developer Engagement Stage 2 Presentations and follow up report (PPC Nov 2015)

OAKLANDS COLLEGE
STRATEGIC LOCAL PLAN

Discussion with landowners on possible development sites in the Metropolitan Green Belt.

Stage 2 - Submissions' Meeting

OAKLANDS COLLEGE

St Albans City & District Council

VRG planning

AECOM

Lambert Smith Hampton

DLA ARCHITECTURE

15-10-2015 - [2015-195]

The Masterplan must work on many levels; It must be functional and provide efficient access for vehicles and people across the site. It must enable and encourage interaction between people to help create a sense of community and avoid isolation.

It must provide people not only with a home in which to live, but a place which they can enjoy throughout the year. It must provide a range of outside spaces, shared by the community, for all people to appreciate.

It must be rich in character, distinctive and memorable.

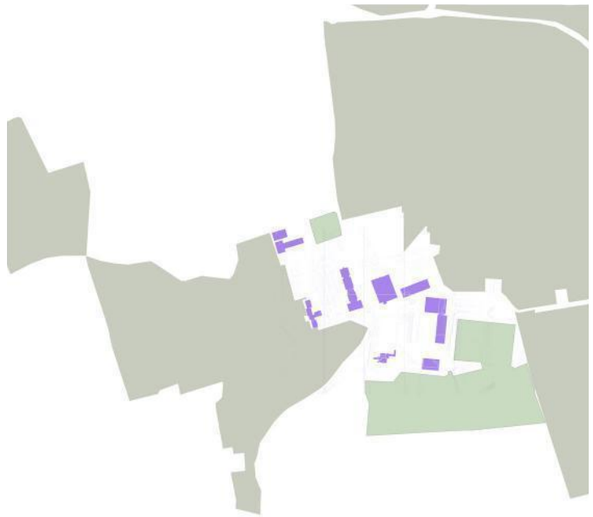
STRUCTURE, LAYERS & TEXTURES 01

1. Site Character and Densities
Oaklands Village: a solution unique to St Albans to create a sense of place and appealing to a wide demographic.

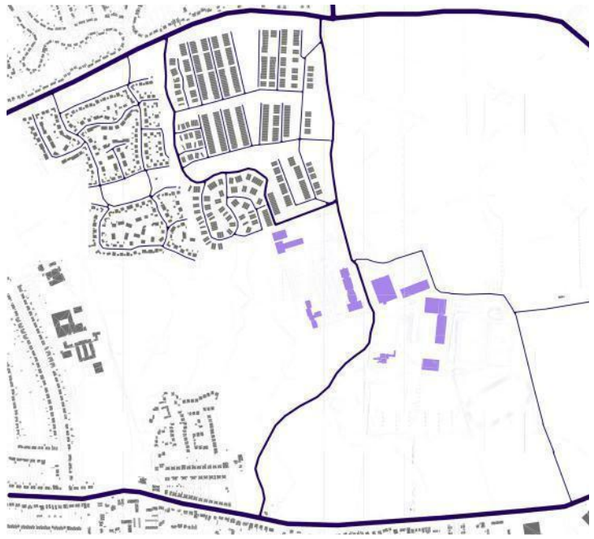
2. Public Open Space and Recreation
Accessible and inviting open spaces across the site alongside sport and recreation facilitate community cohesion.

3. Framework of Garden Spaces
Invigorating open public green spaces with shared allotments, alongside private gardens and woodland areas.

4. Pedestrian, Cycle and Jogging Routes
Clear and legible routes which promote cycling and walking providing easy access to all areas.



5. Education
Proximity and connectivity to a modern, progressive learning environmentsl – opportunities for live-work.



6. Highways
Improved connections between existing infrastructure as well as complementary integrated, sustainable travel provision.

St Albans City & District Council

OAKLANDS COLLEGE

VRG planning

DLA ARCHITECTURE

PROPOSED MASTERPLAN 01

Large areas of residential amenity space with wide habitat corridors

A Combined Heat and Power facility at the centre of the scheme

Sustainable drainage integrated into the masterplan through swales and reed beds

A new two form entry Primary school able to link with other schools in the area but also with the college

Comprehensive new road junction improvements

A mix of high quality designed homes

40% affordable housing in line with the requirements of the local community

Invigorating open public green spaces with shared allotments, alongside private gardens and woodland areas

Self-build Code Level 6 experimental homes which would also be used as a teaching tool for the College

College Square – as part of the current masterplan.

The College at the heart of the community and community education

Improved public access to college sports facilities

St Albans City & District Council

OAKLANDS COLLEGE

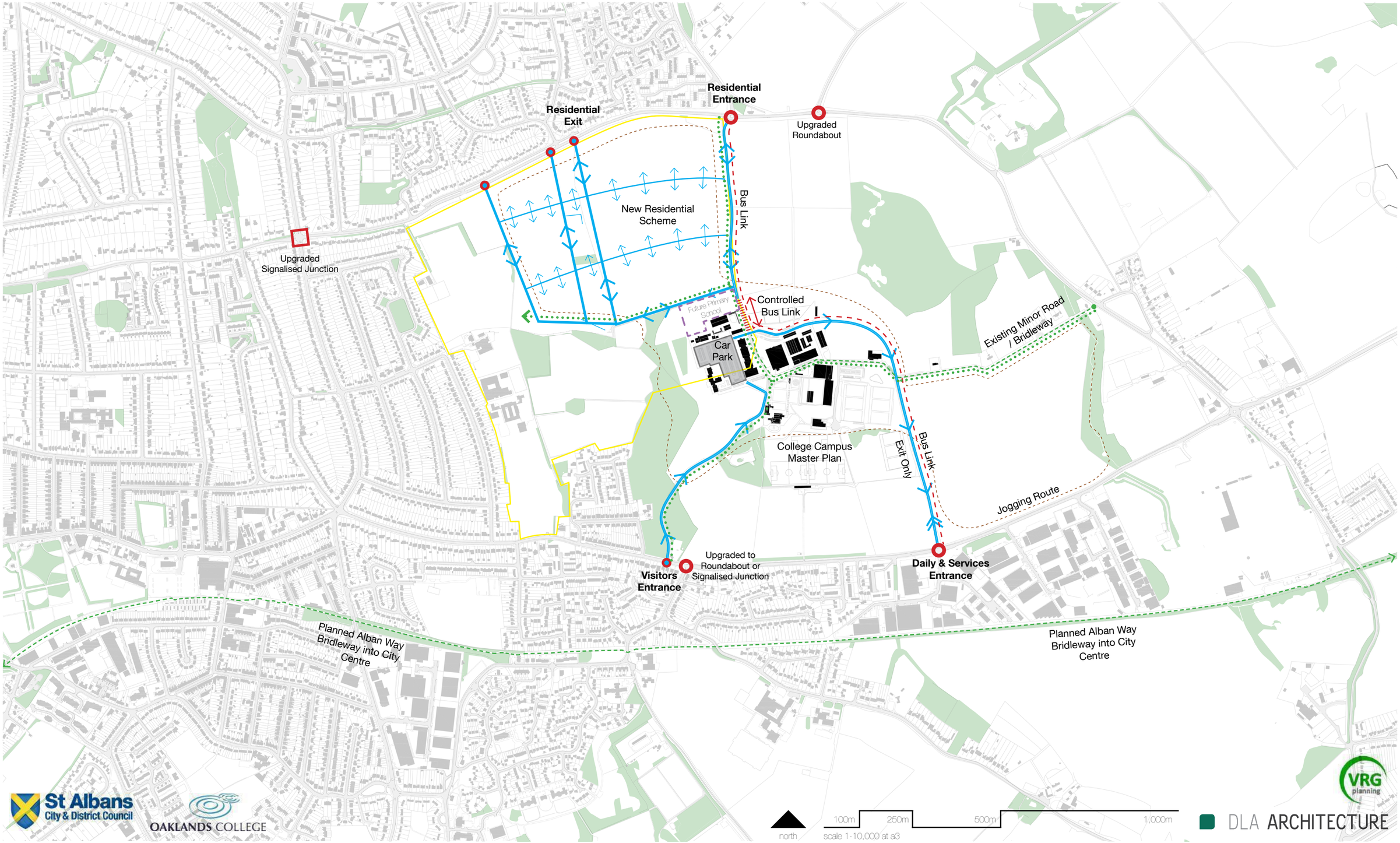
VRG planning

DLA ARCHITECTURE

TRANSPORT NETWORK & SERVICE IMPROVEMENTS 06

KEY TO DIAGRAM:

- Potential Green Belt Release Land
- New Main Road
- New Primary Access Road
- New Secondary Access Road
- Existing Minor Road / Bridleway
- New Footpath
- New Jogging Route
- Bus Link
- New Controlled Road / Bus Link to
- New & Upgraded Connection
- New & Upgraded Roundabout
- New & Upgraded Signalised Junction



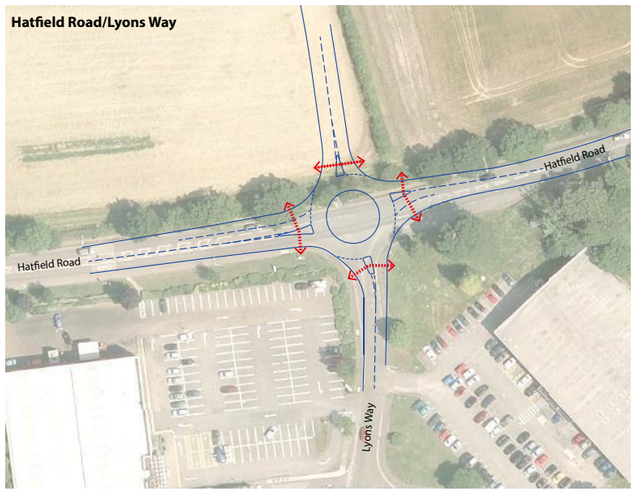
St Albans City & District Council

OAKLANDS COLLEGE

VRG planning

DLA ARCHITECTURE

TRANSPORT NETWORK & SERVICE IMPROVEMENTS 06



Hatfield Road / Lyons Way

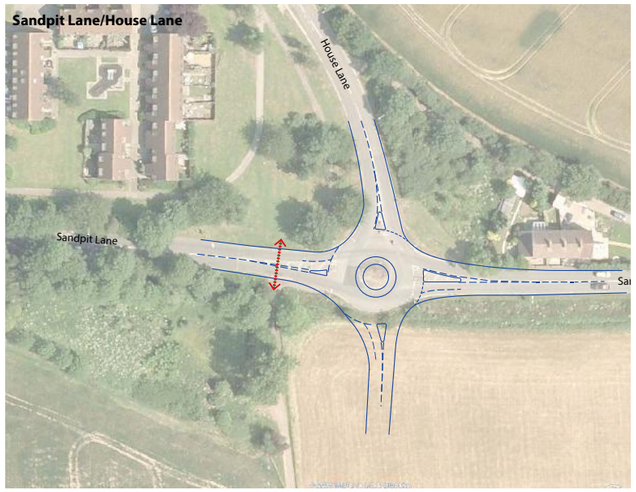
We have prepared an option showing the existing priority T-junction arrangement replaced by a 4-arm roundabout, with the northern arm serving as the new access to the College from Hatfield Road. Again, this layout is consistent with the scheme agreed for the Hub scheme, so has previously been seen and approved by Hertfordshire.

Hatfield Road / Colney Heath Lane

We have prepared two options for this junction. The first option shows the existing priority T-junction arrangement replaced by a 3 arm roundabout. This layout is consistent with the scheme agreed for the Hub scheme, so has previously been seen and approved by Hertfordshire. The second option shows the existing priority T-junction converted to a signalised junction. We did look at this as part of the Phase 2 application but couldn't get it to work due to the interaction with South Way. However, in both options we have assumed that South Way becomes entry only, therefore the signalised option may be worthy of further investigation as it requires significantly less land and allows pedestrian crossing facilities to be integrated into the junction.

Sandpit Lane / Coopers Green Lane

We have shown an enlarged 3-arm roundabout, which would provide additional capacity and also improve the safety of the junction by increasing deflection which would slow approach speeds.



Sandpit Lane / House Lane

We have prepared an option showing the existing 3-arm roundabout replaced by a larger 4-arm roundabout, with the new southern arm serving as an access to the residential development

Sandpit Lane / Marshalswick Lane

Improvements are proposed at this junction as part of the Phase 2 application – these are shown in grey in the sketch. The only option we can see for further improvement to this junction is to widen the eastern approach by taking land from the verges to the north and south. This would address the existing pinch point, although is unlikely to substantially improve capacity over and above the Phase 2 scheme. Consideration could be given to introducing advanced cycle stop lines at this junction to encourage cycling, however, Hertfordshire have previously indicated that traffic capacity is the overriding concern at this junction.

Oaklands College - Indicative Viability Assessment

REVENUE

	sqm	Gross Sales (m)
House/ Flat Sales	c. 81,000	£ 397.6
TOTAL REVENUE		£ 397.6

COSTS

	Costs (m)
Residential Construction	£ 119.9
Ground Works	£ 6.0
Transport - roads, sustrans, Stat/ LA	£ 15.1
Landscaping - hard/ soft	£ 8.5
Primary School - 2FE	£ 7.5
CHP	£ 2.0
Developers Profit	£ 70.1
Fees - Professional, Disposal, Finance	£ 48.9
TOTAL COSTS	£ 278.0
RESIDUAL LAND VALUE	£ 119.6
less costs	£ 6.5
NET RESIDUAL LAND VALUE	£ 113.1

Viability Assessment Assumptions:

a. Based on very limited information other than considering scheme outputs.
b. No benefit of any site investigations, surveys or schematics.
c. The scheme will have the feel of high quality suburban schemes such as the award winning Accordia development in Cambridge.
d. Having regard to the above the advice provided must be considered as indicative only.

APPRAISAL APPROACH & VIABILITY ASSESSMENT 11

Development Approach

The College will be seeking developer partners for the Masterplan along with existing partner TW. To meet the Council's need to ensure that the shared vision for high quality designed sustainable homes is realised the College intends to:

- Seek developers through a procurement competition to attract the best partners;
- Run a procurement programme that enshrines the requirements into a contract that commits the developer to the scheme with a retainer mechanism;
- Manage the development closely to monitor the progress against the vision.

The College also feels that the Council will have the opportunity to encourage the vision by adopting planning which describes the vision for high quality designed homes.

Lambert Smith Hampton states that with the indicative residual land value that is shown there is no impediment to delivery. Also on the basis of the indicative Viability Assessment we can be absolutely confident about deliverability on the Oaklands College site.

The site has been subject to a great deal of site specific technical work, done in the context of the recent planning application. This assists greatly in terms of the deliverability and understanding of the proposals.

OAKLANDS COLLEGE
STRATEGIC LOCAL PLAN

Discussion with landowners on possible development sites in the Metropolitan Green Belt. Stage 2 - Submissions' Meeting

OAKLANDS COLLEGE

St Albans City & District Council

16-10-2015 - [2015.195]

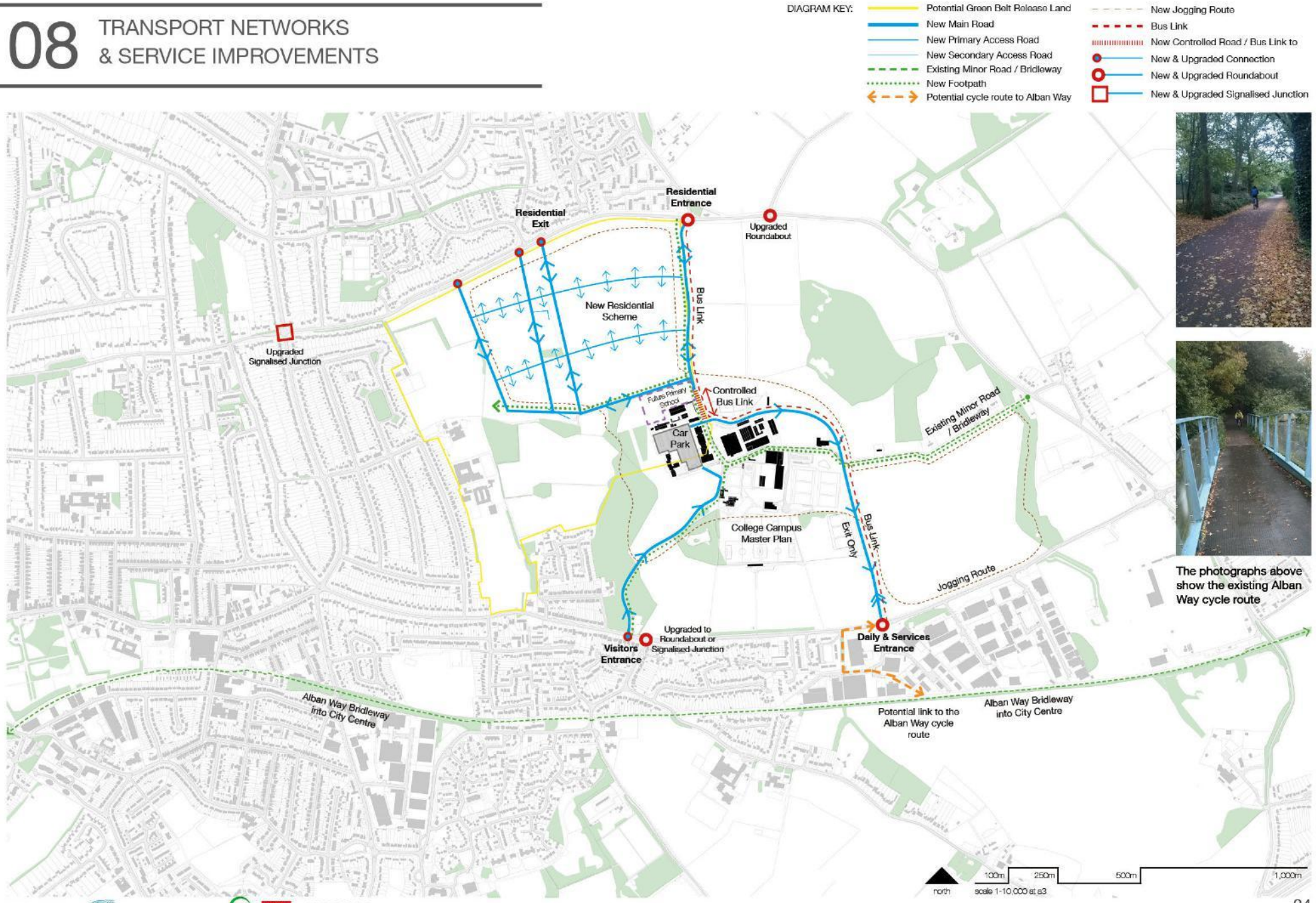
VRG planning

AECOM

Lambert Smith Hampton

DLA ARCHITECTURE

08 TRANSPORT NETWORKS & SERVICE IMPROVEMENTS



The photographs above show the existing Alban Way cycle route

St Albans City & District Council · Oaklands College · DLA Architecture · VRG · Lambert Smith Hampton · AECOM

08 TRANSPORT NETWORKS & SERVICE IMPROVEMENTS

THE BENEFITS OF THE PROPOSED TRANSPORT AND SERVICE IMPROVEMENTS INCLUDE:

- REDUCED TRAFFIC PROBLEMS AT THE JUNCTION OF SOUTH DRIVE / HATFIELD ROAD / COLNEY HEATH LANE
- A FREQUENT BUS SERVICE ACCESSING THE COLLEGE & RESIDENTIAL DEVELOPMENT
- BUS SERVICE DRECTLY SERVING THE COLLEGE, REMOVING THE NEED FOR STUDENTS TO WALK TO AND CONGREGATE ON HATIFLED ROAD AND AVOIDING DELAYS ASSOCIATED WITH BUSES PULLING IN / OUT
- LESS PRESSURE ON HATFIELD ROAD AS STAFF ACCOMMODATION WITHIN RESIDENTIAL DEVELOPMENT

THE EXISTING COLLEGE ENTRANCE:

HATFIELD ROAD / COLNEY HEATH LANE:

- OPTION 1:
- NEW 3 ARM ROUNDABOUT
- ACCESS ONLY THEREBY SOLVING EXIT ISSUES

- OPTION 2:
- NEW SIGNALISED JUNCTION
- ACCESS ONLY THEREBY SOLVING EXIT ISSUES

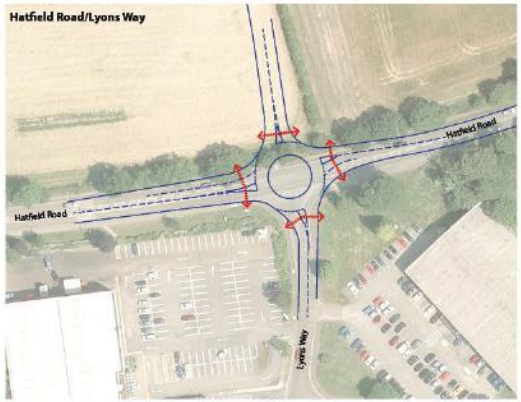
Hatfield Road / Colney Heath Lane

We have prepared two options for this junction. The first option shows the existing priority T-junction arrangement replaced by a 3 arm roundabout. This layout is consistent with the scheme agreed for the Hub scheme, so has previously been seen and approved by Hertfordshire. The second option shows the existing priority T-junction converted to a signalised junction. We did look at this as part of the Phase 2 application but couldn't get it to work due to the interaction with South Way. However, in both options we have assumed that South Way becomes entry only, therefore the signalised option may be worthy of further investigation as it requires significantly less land and allows pedestrian crossing facilities to be integrated into the junction.

NEW COLLEGE ENTRANCE / EXIT:

HATFIELD ROAD / LYONS WAY:

- NEW MAIN ENTRANCE / EXIT TO THE COLLEGE
- RELIEVING TRAFFIC PRESSURE
- PREVIOUSLY AGREED BY HIGHWAYS



Hatfield Road / Lyons Way

We have prepared an option showing the existing priority T-junction arrangement replaced by a 4-arm roundabout, with the northern arm serving as the new access to the College from Hatfield Road. Again, this layout is consistent with the scheme agreed for the Hub scheme, so has previously been seen and approved by Hertfordshire.

08 TRANSPORT NETWORKS & SERVICE IMPROVEMENTS

THE BENEFITS OF THE PROPOSED TRANSPORT AND SERVICE IMPROVEMENTS INCLUDE:

- INCREASED CAPACITY AT COOPERS GREEN AND SANDPIT LANE/MARSHALSWICK LANE
- SAFETY IMPROVEMENTS UNDERTAKEN

SANDPIT LANE / MARSHALSWICK LANE:

- WIDEN THE EASTERN APPROACH
- RELIEVING THE PINCH POINTS
- ADVANCED CYCLE STOPS

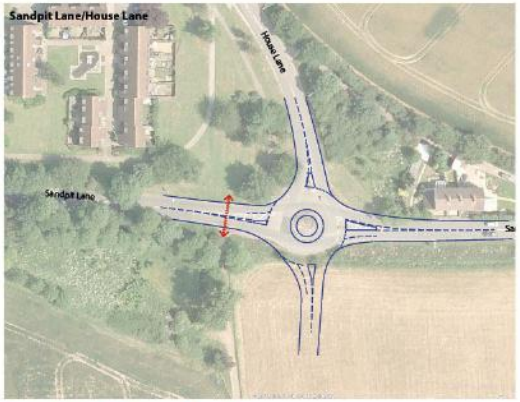
Sandpit Lane / Marshalswick Lane

Improvements are proposed at this junction as part of the Phase 2 application – these are shown in grey in the sketch. The only option we can see for further improvement to this junction is to widen the eastern approach by taking land from the verges to the north and south. The potential for two separate left hand turn lanes will be explored. Consideration could be given to introducing advanced cycle stop lines at this junction to encourage cycling.

NEW RESIDENTIAL ACCESS:

SANDPIT LANE / HOUSE LANE:

- NEW 4 ARM ROUNDABOUT
- RESIDENTIAL ENTRANCE / EXIT



Sandpit Lane / House Lane

We have prepared an option showing the existing 3-arm roundabout replaced by a larger 4-arm roundabout, with the new southern arm serving as an access to the residential development

SANDPIT LANE / COOPERS GREEN LANE:

- ENLARGED 3 ARM ROUNDABOUT
- ADDITIONAL CAPACITY
- IMPROVED SAFETY

Sandpit Lane / Coopers Green Lane

We have shown an enlarged 3-arm roundabout, which would provide additional capacity and also improve the safety of the junction by increasing deflection which would slow approach speeds.