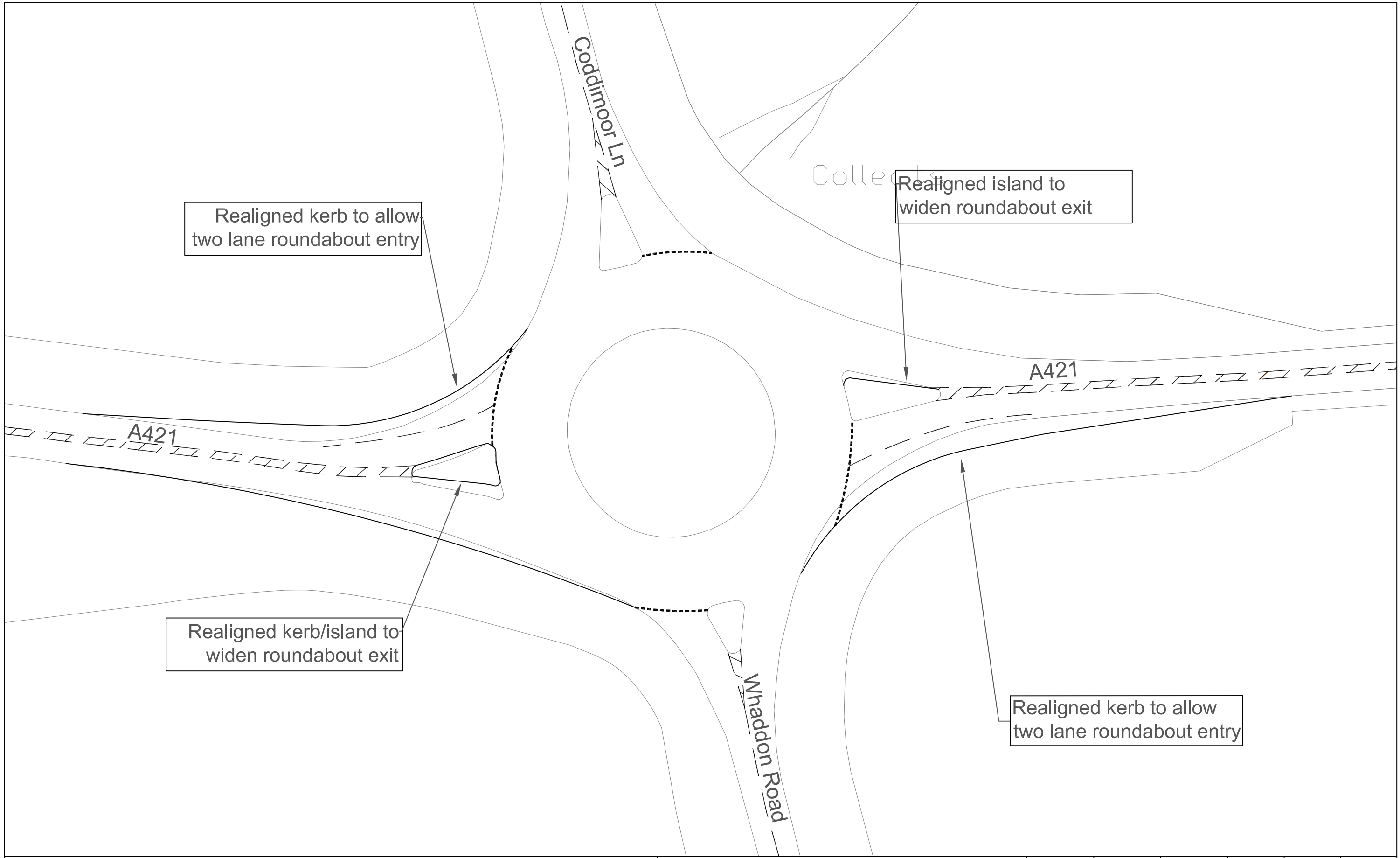


At original drawing size (A3) this line measures 50mm

Notes

PRELIMINARY FOR APPROVAL

Rev.	Amendment	By	Chkd.	Date	Appd.
B	Kerb/Island Amendments	SH	SH	12/07/2016	SH
A	Kerb and marking amendments	CEW	SH	21/03/2016	MP

Cad Ref. No. L:\106xxx\1067760 South West Milton Keynes\09 Docs

Drawn	Date	Checked	Date	Approved	Date
FSC	15-03-16	SH	16-03-16	MP	16-03-16

Project: SOUTH WEST MILTON KEYNES

Title: Whaddon Crossroads Potential Mitigation Scheme

mouchel
Export House
Woking, Surrey. GU21 6QX
Tel: +44 (0)1483 731000
Fax: +44 (0)1483 731010

Scale: 1:500@A3

Job No.: 1067760

Client: SWMK Consortium

Drawing No.: D019

Rev.: B

South West Milton Keynes

Stage 1 Road Safety Audit

August 2016

Produced for

SWMK Consortium

Prepared by:

Lyn Turner
Mouchel Consulting
The Business and Technology Centre
Bessemer Drive
Stevenage
SG1 2DX

T +44 (0)7753 951471

Document Control Sheet

Project Title South West Milton Keynes

Report Title Stage 1 Road Safety Audit

Revision

Status Final

Control Date August 2016

Record of Issue

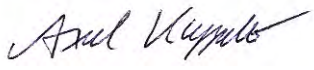
Issue	Status	Author	Date	Check	Date	Authorised	Date
A	Draft	L Turner	07/06/16	D Minshall	13/06/16	A. Kappeler	13/06/16
B	Final	L Turner	04/08/16	D Minshall	04/08/16	A Kappeler	04/08/16

Copy no. 1	Issued electronically only

Distribution

Organisation	Contact	Copies
Mouchel Consulting	Stephanie Howard	1

Approval

Name	Title	Signature	Date
Lyn Salmon Mouchel Consulting	Principal Consultant		04/08/16
David Minshall Mouchel Consulting	Principal Engineer		04/08/16
Axel Kappeler Mouchel Consulting	Technical Manager		04/08/16

Contents

1 Introduction

1.1 This report results from a Stage 1 Road Safety Audit carried out on the South West Milton Keynes project at the request of Stephanie Howard of Mouchel Consulting, on behalf of SWMK Consortium. The Road Safety Audit was carried out during 6th June 2016.

1.2 The Road Safety Audit Team membership approved by Stephanie Howard of Mouchel Consulting was as follows:

Lyn Salmon	FIHE, RegRSA (IHE), MSoRSA Mouchel Consulting, Stevenage (Certificate of Competency in Road Safety Audit gained in April 2014)
David Minshall	IEng MICE MCIHT MSoRSA IMaPS Mouchel Consulting, Bristol

1.3 The Road Safety Audit took place at the Stevenage Office of Mouchel Limited on 6th June 2016. The Road Safety Audit was undertaken in accordance with the Road Safety Audit Brief provided by Stephanie Howard of Mouchel Consulting. The Road Safety Audit comprised an examination of the documents provided and these are listed in the Annex. The documents consisted of a complete set of the preliminary design drawings and A3 plan for the Road Safety Audit Team's use. The Audit Team visited together the sites of the proposed highway works on the morning of the 6th June 2016 between 10:30 and 11:45. During the site visit the weather was fine and sunny and the existing road surface was dry. Traffic conditions were free flowing.

1.4. The terms of reference of the Road Safety Audit are as described in HD 19/15. The Road Safety Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

1.5. All comments and recommendations are referenced to the preliminary design drawings and the locations have been indicated on the A3 plan supplied with the Road Safety Audit Brief.

1.6. The scope of the works includes proposals for localised highway widening at Whaddon Crossroads roundabout, proposed roundabout on Buckingham road with associated NMU facilities, a left in only access from A421 Standing Way and a ghost right turn facility on Whaddon Road into a new localised access.

The audit brief did not include any details of Signing, Lighting, Pavements, Footways, Geometry, cross sections, proposed speed limits or Vehicle Restraint System (VRS) at this Stage 1 audit – these should be assessed at the detailed design stage.

1.7 Audit administration

It is the Audit Project Sponsor's responsibility to advise the Audit Team Leader if any Problem or Recommendation is not accepted. A copy of every signed Exception Report is required by the Audit Team Leader from the Audit Project Sponsor for attachment to the master copy of the Final Audit Report.

Safety issues identified during the audit and site inspection which the Terms of Reference exclude from this report, but which the audit team wishes to draw to the attention of the Audit Project Sponsor, will be set out in a separate letter. These issues could include maintenance items and operational issues.

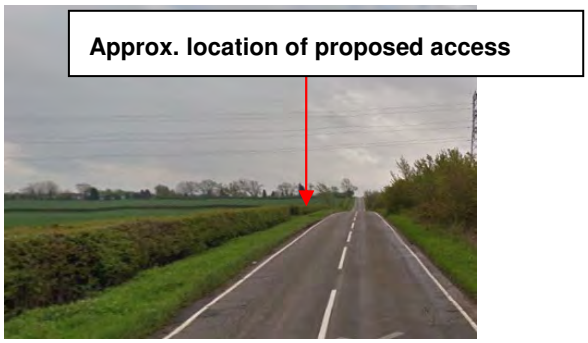
2 Items Raised in this Stage 1 Road Safety Audit

2.1.1 Problem

Location A: Whaddon Road – proposed new access

Summary: Short ghost islands could lead to head on type incidents

Detail: As you approach the proposed new access from Bottledump Roundabout the horizontal and vertical alignment of the road makes the new access appear to be in a dip. Whilst the design team have demonstrated that the required visibility to Manual for Streets has been achieved, the audit team are concerned that motorist may not appreciate that the road moves to the left with the proposed widening and with the short ghost island end up head on with a car waiting to turn right into the new access. (MfS Table 10.1 refers to DMRB TD9/93 for deceleration where speeds are over 60kph). It is noted that the tapers east and west of the junction differ in length.



RECOMMENDATION

Provide visibility and ghost island tapers appropriate to the Whaddon Road speed limit and in accordance with DMRB TD42/95

2.1.2 Problem

Location B: Whaddon Road – proposed new access

Summary: Visibility from access could lead to queuing vehicles taking chances resulting in conflict.

Detail: Visibility from the access has been designed to Manual for Streets, giving the visibility splay of 2.4m by 159m. (MfS para.10.5.6 states 'An X distance of 2.4m should normally be used in most built up situations). The audit team feel that given Whaddon Road is subject to the National Speed Limit, 60mph, and not in a built up location, the visibility splay out of the junction should be increased to allow for visibility for the second car in the queue. (No details of posted speed limits have been submitted with the audit brief). This would give motorists better opportunity to pull out onto the Whaddon Road which at the time of the site visit, had a steady stream of cars. If queuing traffic occurs it could to lead to frustration, in turn leading to motorist taking chances by pulling out in gaps that are too short, which results in side swipe, rear end shunt or head on type collisions.

RECOMMENDATION

Provide sufficient visibility to the whole of the junction arrangement in order to avoid motorist frustration/risk taking.

2.1.3 Problem

Location C: Whaddon Crossroads roundabout

Summary: Widening roundabout entries to two lane could lead to increased collisions on exit.

Detail: At this junction, it is proposed to widen the entry to the roundabout to two lanes from both A421 approaches, however the exits off the roundabout to the A421 are still only one lane with no room for vehicles to merge. This could lead to an increase in rear end shunt and side-swipe type incidents on the exits from the roundabout. Also entry deflection may be reduced to an inappropriate level such that there is an increase in speed of vehicles entering the circulatory carriageway. This may increase risk of collision.

RECOMMENDATION

Provide sufficient carriageway widths on the exit of the roundabout to allow for vehicles to merge safely if the widening is required.

2.1.4 Problem

Location D: A421 Standing Way Proposed Access Only Junction

Summary: Layout of junction could lead to loss of control collisions.

Detail: The scheme proposes to construct an access only junction off the A421 Standing Way which is subject to the national speed limit of 70mph. This junction consists of a deceleration lane and a left hand bend situated amongst existing trees. The audit team have not been given any details with regards to vehicle restraint systems or proposed speed limits and are concerned that there will be an increase in loss of control incidents at this location, potential leading to a higher severity injury due to the trees.

RECOMMENDATION

Install VRS to protect the motorist from losing control into the trees to help reduce the severity of the collision.

2.1.5 Problem

Location E: New Roundabout on Buckingham Road

Summary: New shared footway/cycleway are minimal width which could lead to conflict

Detail: The new shared footway/cycle way is being proposed as 3m wide, LTN1/12 states a preferred minimum effective width of 3m, which should be the actual width of the route, where the route is not bounded by vertical features. The width of the shared use facility strongly influences the quality of the shared routes and with insufficient widths tending to reduce user comfort and therefore increase the potential for conflict between pedestrians and cyclists.

No details have been given with regards to the locations of the lighting column and signs and therefore where sign posts or lamp columns are present, they should be located outside the effective width zone where possible.

RECOMMENDATION

Widen the shared footway/cycleway facility to ensure that the effective width is maintained through-out the route to reduce the potential for conflict between pedestrians/cyclists and vehicles. NB. LTN1/12 provides guidance of additional width requirements dependent on the edge constraint (e.g. kerb upstand)

2.1.6 Problem

Location E: New Roundabout on Buckingham Road

Summary: New shared footway/cycleway crossing points could mislead partially sighted people.

Detail: On the drawings submitted for road safety audit, three locations have been identified as formal crossing points by way of Toucan crossings. The audit team have not received any pavement drawings, but the tail ends of the red tactile paving should extend to the back of the highway boundary to ensure all users, especially those users that are partially sighted, are guided to a safe crossing point. If users miss these safe crossing points, they could be vulnerable when attempting to cross the road elsewhere. Corduroy paving should also be considered to warn NMU's of the shared facilitates and to reduce the number of pedestrian/cyclist conflicts.

RECOMMENDATION

Extend the tactile paving to the back of the highway boundary and install corduroy paving where a footway joins a shared route.

End of list of Problems identified and Recommendations offered in this Stage 1 Audit

3 Audit Team Statement

We certify that this Road Safety Audit has been carried out in accordance with HD 19/15.

AUDIT TEAM LEADER –

Lyn Turner FIHE, RegRSA (IHE), MSoRSA
ITS Principal Consultant,
Mouchel Consulting
The Business and Technology Centre
Bessemer Drive
Stevenage
SG1 2DX

Signed: 

Date: 04/08/16

AUDIT TEAM MEMBER -

David Minshall IEng MICE MCIHT MSoRSA IMaPS
Principal Engineer
Mouchel Consulting
Severn House
Lime Kiln Close
Stoke Gifford
Bristol
BS34 8SQ

Signed: 

Date: 04/08/16

4 Appendix A

Documents Forming the Audit Brief

Drawings:

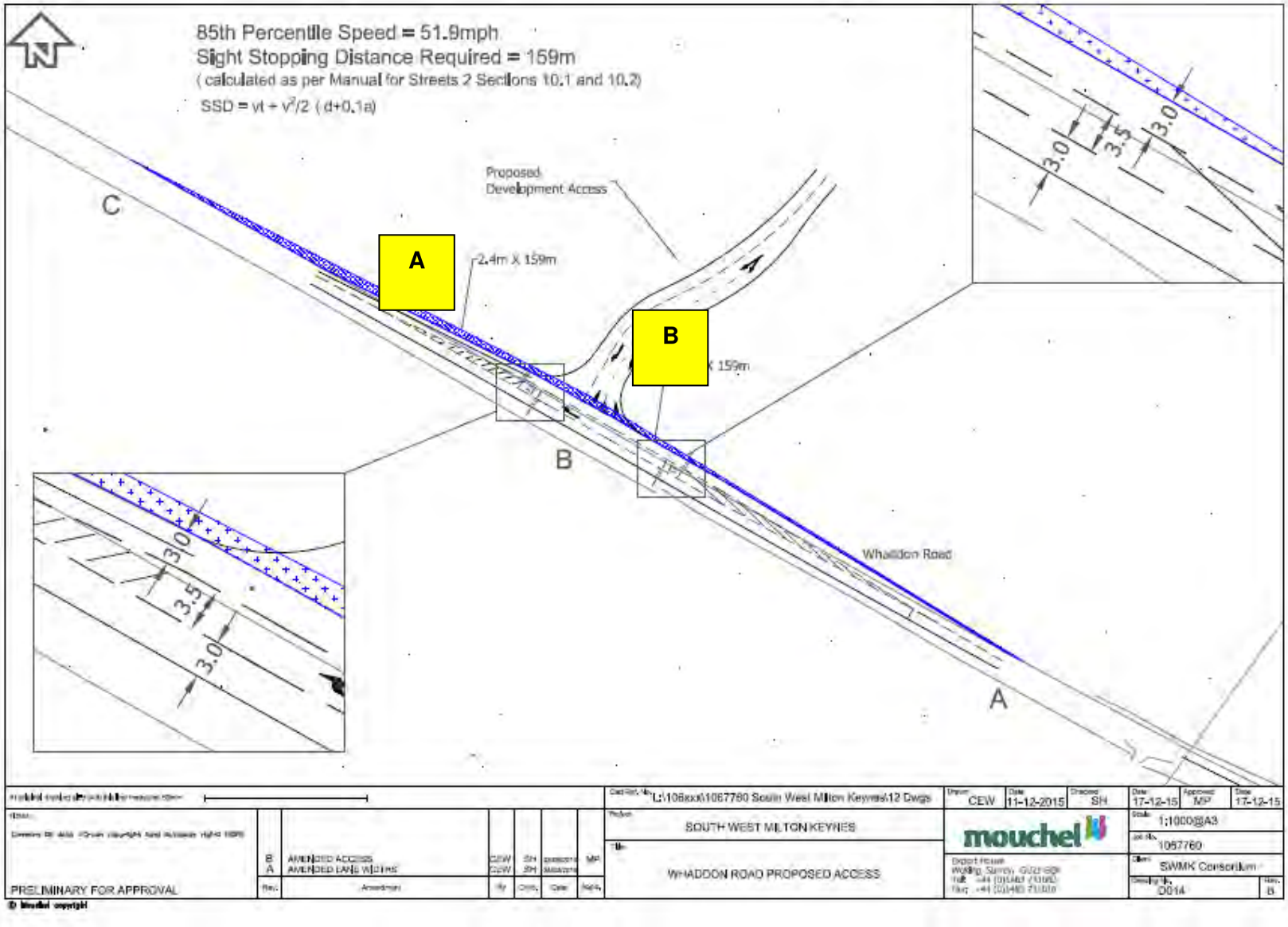
1067760/ D007A	Whaddon Road Proposed Access Vertical Visibility Envelope
1067760/ D013 A	A421 Proposed Access – Access Only Junction
1067760/ D014B	Whaddon Road Proposed Access
1067760/ D016	Buckingham Road Proposed Access Alternative Junction Arrangement
1067760/ D017	Buckingham Road Proposed Access Alternative Junction Arrangement
1067760/ D019	Whaddon Crossroads Potential Mitigation Scheme

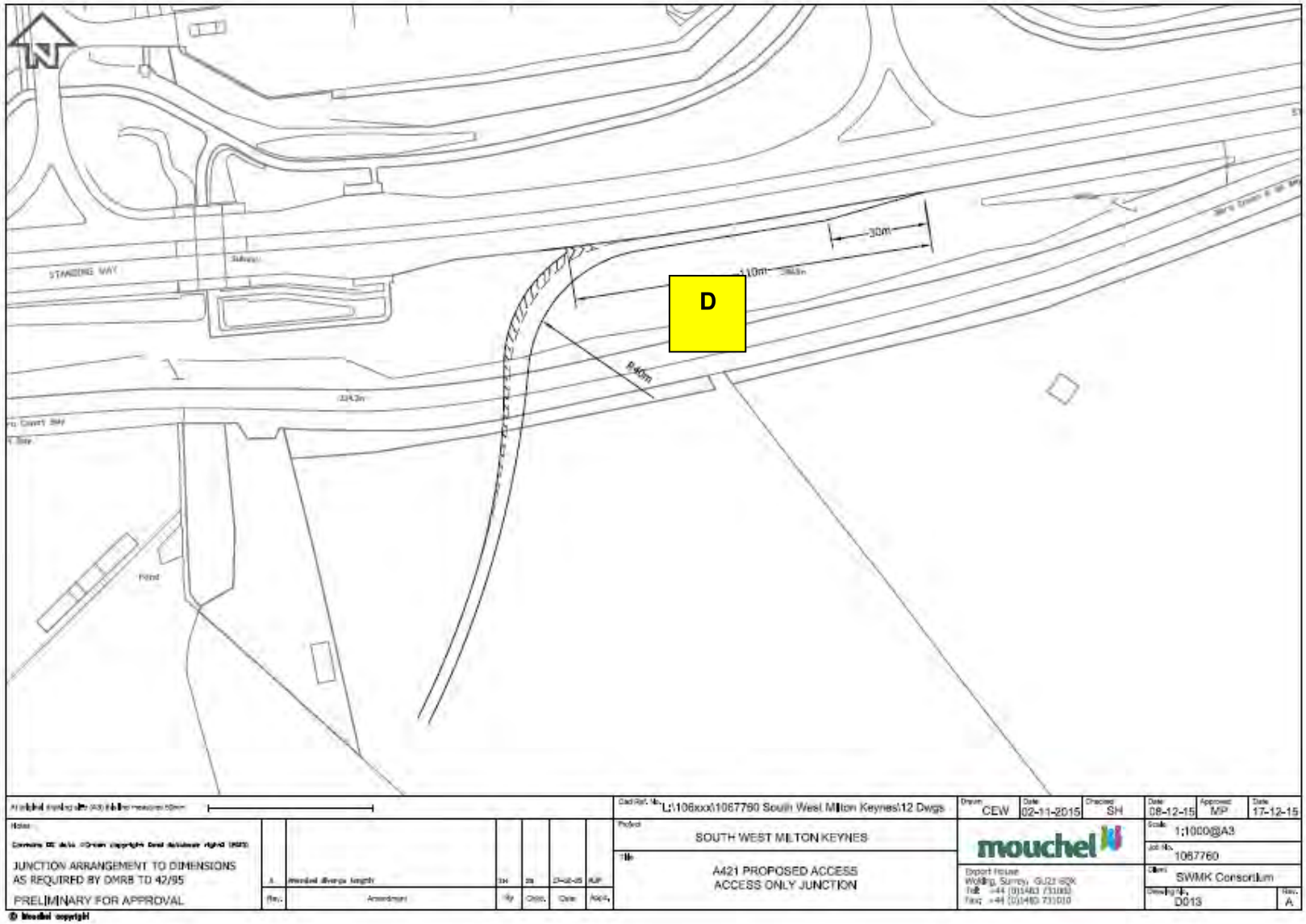
Documents:

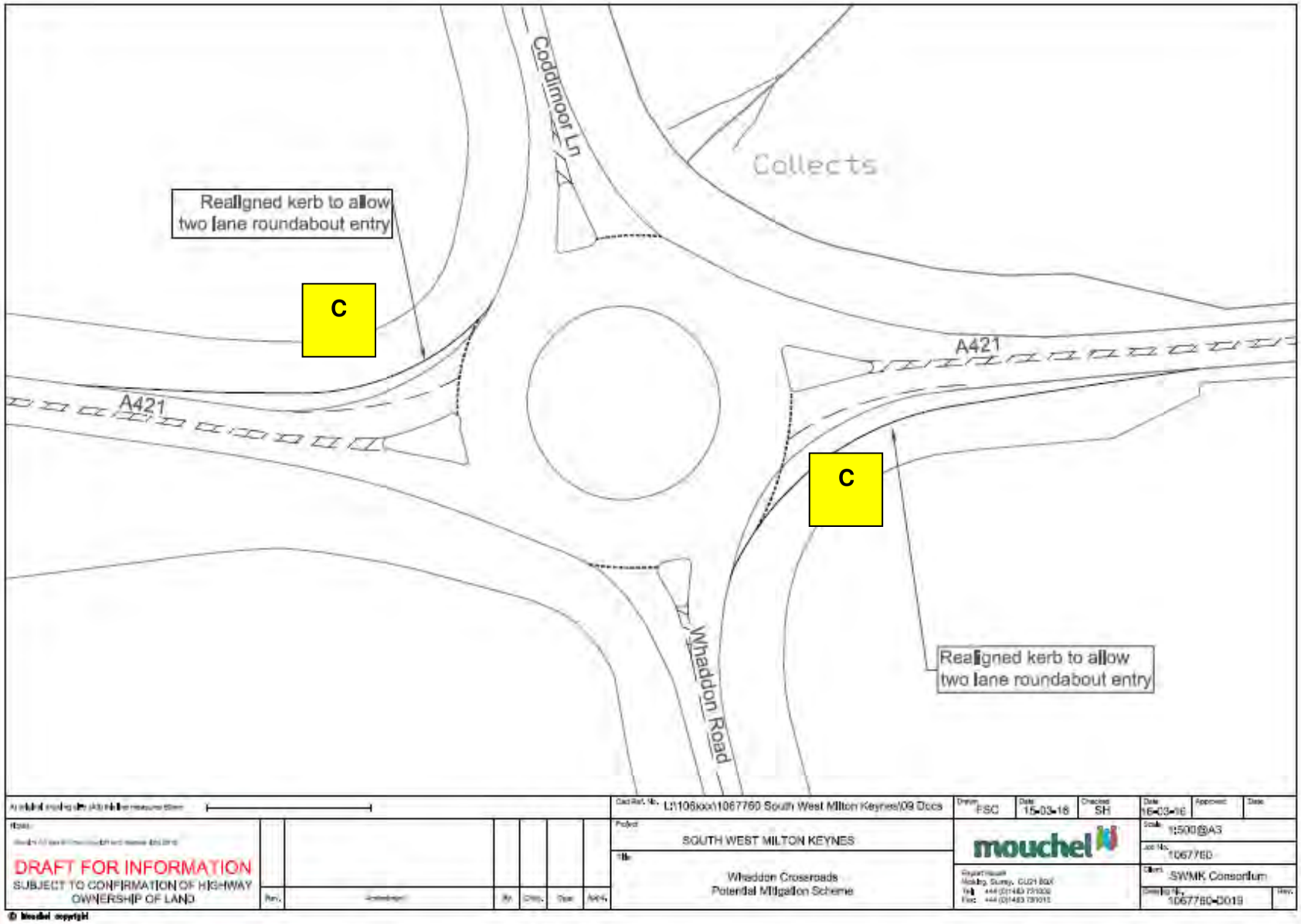
Google map images of site access locations and Whaddon Crossroad Roundabout
Google satellite map of the Whaddon Road Junction location

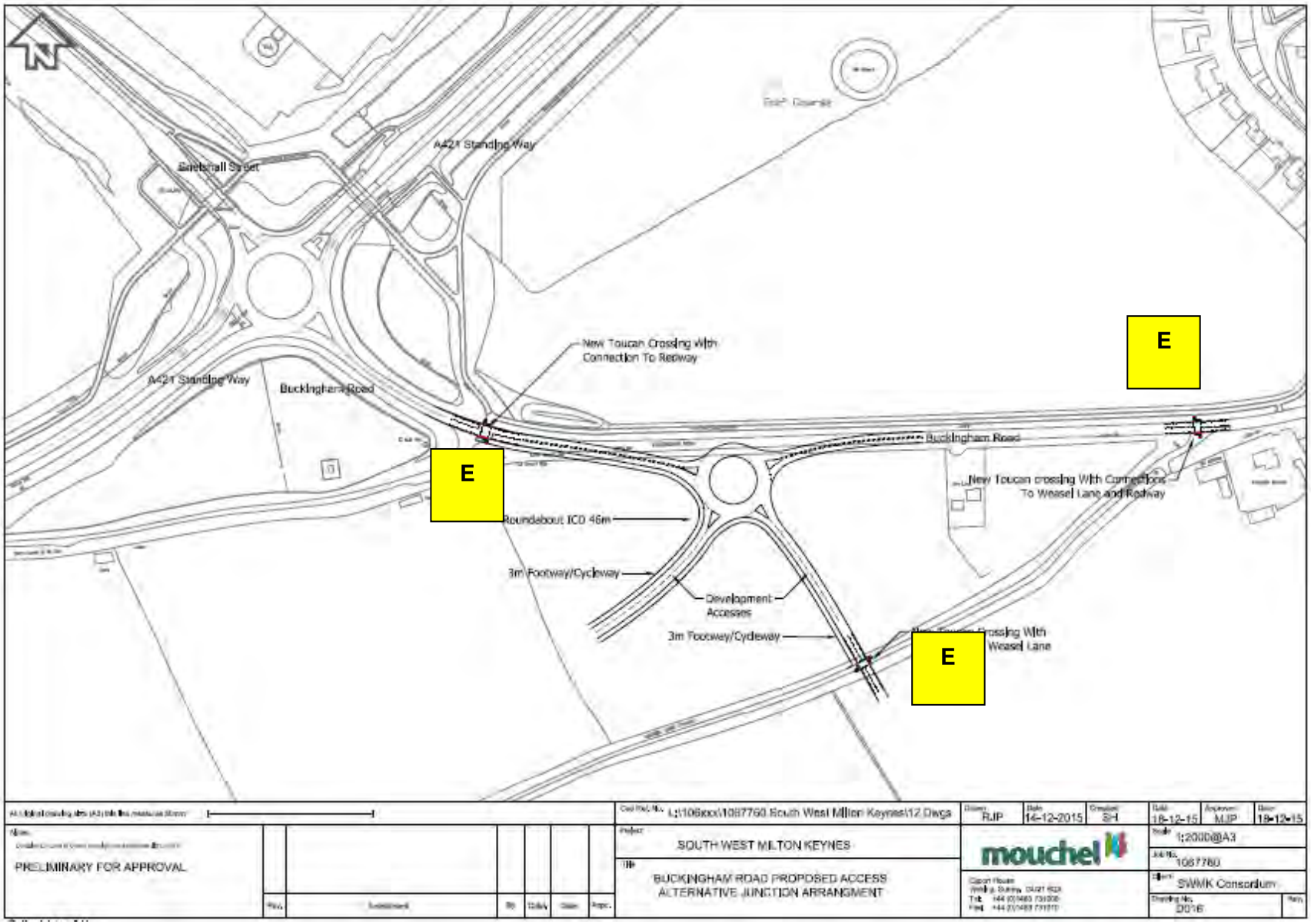
5 Appendix B

Problem Locations









Land South of A421, South West Milton Keynes

Access Junctions

Designer's response to Stage 1 Road Safety Audit

Produced for:
SWMK Consortium

Prepared by:
Transport Planning

Export House
Cawsey Way
Woking
Surrey
GU21 6QX
UK

T +44 (0)1483 731000
F +44 (0)1483 731007

Document Control Sheet

Project Title	Land South of A421, South West Milton Keynes
Report Title	Designer's response to Stage 1 Road Safety Audit: Access Junctions
Revision	01a
Status	Final
Control Date	17th December 2015

Record of Issue

Issue	Status	Author	Date	Check	Date	Authorised	Date
01	Draft	SH	11-12-15	SH	16-12-15	MJP	17-12-15

Distribution

Organisation	Contact	Copies
SWMK Consortium	Tom Thornewill, Gary Tucker, John Coleman, Brian Harding, Pat Tattan	1e
Mouchel	File	1e

Limitations

This report is presented to SWMK Consortium in respect of Land South of A421, South West Milton Keynes (Access Junctions) and may not be used or relied on by any other person. It may not be used by SWMK Consortium in relation to any other matters not covered specifically by the agreed scope of this report.

Notwithstanding anything to the contrary contained in the report, Mouchel Limited is obliged to exercise reasonable skill, care and diligence in the performance of the services required by SWMK Consortium and Mouchel Limited shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence, and this report shall be read and construed accordingly.

This report has been prepared by Mouchel Limited. No individual is personally liable in connection with the preparation of this report. By receiving this report and acting on it, the client or any other person accepts that no individual is personally liable whether in contract, tort, for breach of statutory duty or otherwise.

Contents

1 Introduction

1.1 This report sets out the design team's response to the following Stage 1 Road Safety Audit which was carried out by Mouchel Ltd on the proposed access junctions for the proposed development of 'Land South of the A421, South West Milton Keynes'.

1.2 The Stage 1 Road Safety Audit dated November 2015, document number ITS/287/2015, should be read alongside this report.

1.3 The documents submitted for the Road Safety Audit comprise a drawing, traffic flow data and collision data. These are listed within an appendix of the Road Safety Audit.

1.4 The proposed alterations form mitigation for the proposed development of land at South West Milton Keynes, as detailed within the Transport Assessment for the scheme. The proposed development at South West Milton Keynes is located within Aylesbury Vale District in Buckinghamshire.

1.5 The items raised from the Safety Audit have been reproduced within this report and are in *italics* and quotation marks. The design team response is also provided for each item raised.

2 Responses to Stage 1 RSA items raised

Item 2.1.1

"General

Location: A – Whaddon Road – New access junction

Summary: Reduced conspicuity of the junction could lead to rear end shunt or T-bone collisions.

The audit team are concerned that the proposed location of the access junction off Whaddon Road could be inconspicuous to approaching road users. The proposed access was perceived from the location on the plans to be located within a low point of the highway alignment with poor visibility splays from both directions. There is a risk that vehicles exiting the access may not adequately see approaching traffic due to the road alignment. This could lead to heavy/late braking resulting in rear end shunt or T-bone collisions.

Recommendation: Relocate the access on Whaddon Road to provide greater visibility splays of approaching traffic."

Response

2.1 Noted. The vertical alignment of Whaddon Road has been provided from a topographical survey in 3D CAD format. The profile of the road has been analysed to review the optimal location for the access point in order to meet the visibility criteria as required.

2.2 The 85th percentile wet weather speed of the road is 52mph in the vicinity of the proposed access, requiring a visibility splay of 159m in both directions, from a point 2.4m back from the give way line to meet the criteria set out in Manual for Streets 2. The visibility splay is achievable in both the horizontal and vertical planes, as shown on Drawings D007 and D014.

2.3 Further detail will be provided at detailed design stage.

Item 2.1.2

"General

Location: B – A421 Standing Way – New access junction

Summary: Reduced deceleration lane could lead to rear end shunt collisions.

The audit team are concerned of the proposed length of the deceleration lane into the access from the A421 Standing Way. With the speeds observed along this road, there is an increased risk heavy/late braking when turning into the access resulting in rear end shunt type collisions.

Recommendation: Provide an extended deceleration lane."

Response

2.4 Noted. The proposed junction has been amended to include access only. Egress at this location has been removed. A DMRB TD 42/95 compliant deceleration lane of 110m can be provided without impacting on the structure of the subway, the access-only junction shown on drawings D013.

2.5 Further detail will be provided at detailed design stage.

Item 2.1.3

"General

Location: C – Buckingham Road - New access junction

Summary: Existing Redway route could lead to NMU conflict with motor vehicles.

The existing Redway route running along the northern kerbline of Buckingham Road is proposed to be diverted across the new junction arrangement for the development. The audit team observed an existing Redway route crossing the carriageway west of the proposed junction. There is no detail at this stage of the design how this will stopped up to encourage NMU's to use the new crossing. There is a risk that if NMU's are not appropriately stopped up then this could lead to NMU's crossing Buckingham Road in close proximity leading to potential for conflict with passing motor vehicles.

Recommendation: Adequately stop up the existing Redway route crossing to encourage use of the proposed Redway route."

Response

2.6 Noted. An alternative junction arrangement for the new Buckingham Road access has been designed in response to the comments above, and comments raised by both Milton Keynes Council and Buckinghamshire County Council during recent discussions. A 4-arm roundabout is now proposed, as shown on drawings D016 and D017, with NMUs catered for at an upgraded toucan crossing at the current redway crossing location. The toucan crossing is shown on drawing D017 to ensure NMUs can cross Buckingham Road safely.

2.7 The 85th percentile wet weather speed along Buckingham Road in the vicinity of the proposed access is 43.7mph. As required by Design Manual for Roads and Bridges (DMRB) TD 9/93 and Manual for Streets 2, a desirable minimum SSD of 120m would be required in each direction on the approach to the toucan crossing. The required SSD can be achieved in both directions.

2.8 Additional toucan crossings would be provided where Weasel Lane crosses the development road and where Weasel Lane meets Buckingham Road, as shown on D016. Assuming a design speed of 30mph, SSDs of 43m will be provided in accordance with Manual for Streets.

2.9 Further detail will be provided at detailed design stage.

Item 2.1.4

"General

Location: D – Buckingham Road – New access junction

Summary: Existing speed limit could lead to rear end shunt and loss of control collisions.

The audit team observed the existing speed limit of Buckingham Road was national speed limit up to Far Bletchley Village where the speed limit reduces to 30mph. The audit team are concerned that a national speed limit along this stretch of Buckingham Road would not be suitable for road users negotiating the proposed access junction. This could increase the risk of speed related conflict resulting in rear end shunt and loss of control collisions.

Recommendation: The speed limit between Tattenhoe Roundabout and Far Bletchley should reviewed and appropriate limit adopted."

Response

2.10 Noted. An alternative junction arrangement for the new Buckingham Road access has been designed in response to the comments above, and comments raised by both Milton Keynes Council and Buckinghamshire County Council during recent discussions. A 4-arm roundabout is now proposed, as shown on drawings D016 and D017.

2.11 There are numerous examples of 3-arm and 4-arm roundabouts in the vicinity of the site within national speed limit (e.g Tattenhoe, Bottle Dump and Wind Mill Hill), therefore the revised junction arrangement is considered appropriate in this location.

2.12 Further detail will be provided at detailed design stage.

Item 2.1.5

"General

Location: E – Buckingham Road – New access junction

Summary: New junction layout could lead to NMU conflict with motor vehicles.

The proposed junction on Buckingham Road proposes to lead pedestrian movements to/from the development site along the south and west of the junction. No provision has been made on the eastern side of the junction for pedestrians who walk from Far Bletchley. The audit team are concerned that pedestrians from Far Bletchley direction may proceed through the junction without controlled provision to assist them. This could result in NMU's crossing Buckingham Road and the junction leading to conflict with passing motor vehicles.

Recommendation: Provide a NMU facility around the eastern side of the junction to assist users from Far Bletchley direction."

Response

2.13 An alternative junction arrangement for the new Buckingham Road access has been designed in response to the comments above, and comments raised by both Milton Keynes Council and Buckinghamshire County Council during recent discussions. A 4-arm roundabout is now proposed, as shown on drawings D016 and D017.

2.14 Pedestrians and cyclists from Far Bletchley must do so on the northern side of the road, where there is a redway. There is currently no pedestrian/cyclist provision on the southern side of Buckingham Road. NMUs will be able to cross at the new toucan crossing point provided to the north of the junction, as detailed under Item 2.1.3.

2.15 A second toucan crossing will also be provided at the junction of Buckingham Road and Weasel Lane, for pedestrians and cyclists wishing to use Weasel Lane, as shown on drawing D016.

2.16 Further detail will be provided at detailed design stage.

We have used our reasonable endeavours to provide information that is correct and accurate and have discussed above the reasonable conclusions that can be reached on the basis of the information available. Having issued the range of conclusions it is for the client to decide how to proceed with this project.

Appendices

Drawing D007 Whaddon Road Proposed Access - Vertical Visibility Splays

Drawing D014 Whaddon Road Proposed Access - Horizontal Visibility Splays

Drawing D013A A421 Proposed Access - Access Only Junction

Drawing D016 Buckingham Road Proposed Access – Alternative Arrangement

Drawing D017 Buckingham Road Proposed Access – Alternative Arrangement

South West Milton Keynes

Stage 1 Road Safety Audit

December 2015

Produced for

Hallam Land Management Ltd

Prepared by:

Brett Felstead
Mouchel Consulting
The Business and Technology Centre
Bessemer Drive
Stevenage
SG1 2DX

T +44 (0)7825 844249

Document Control Sheet

Project Title South West Milton Keynes

Report Title Stage 1 Road Safety Audit

Revision

Status Final

Control Date December 2015

Record of Issue

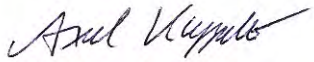
Issue	Status	Author	Date	Check	Date	Authorised	Date
A	Draft	B.Felstead	11/11/15	L. Turner	11/11/15	A. Kappeler	11/11/15
B	Final	B.Felstead	18/12/15	L. Turner	18/12/15	A. Kappeler	18/12/15

Copy no. 1	Issued electronically only

Distribution

Organisation	Contact	Copies
Mouchel Consulting	Stephanie Howard	1

Approval

Name	Title	Signature	Date
Brett Felstead Mouchel Consulting	Senior Consultant		18/12/15
Lyn Turner Mouchel Consulting	Principal Consultant		18/12/15
Axel Kappeler Mouchel Consulting	Technical Manager		18/12/15

Contents

1 Introduction

1.1 This report results from a Stage 1 Road Safety Audit carried out on the South West Milton Keynes project at the request of Stephanie Howard of Mouchel Consulting, on behalf of Hallam Land Management Ltd. The Road Safety Audit was carried out during November 2015.

1.2 The Road Safety Audit Team membership approved by Stephanie Howard of Mouchel Consulting was as follows:

Brett Felstead	MCIHT MSoRSA Mouchel Consulting Stevenage (Certificate of Competency in Road Safety Audit gained in April 2013)
Lyn Salmon	FIHE, RegRSA (IHE), MSoRSA Mouchel Consulting Stevenage (Certificate of Competency in Road Safety Audit gained in April 2014)

1.3 The Road Safety Audit took place at the Stevenage Office of Mouchel Consulting on 10th November 2015. The Road Safety Audit was undertaken in accordance with the Road Safety Audit Brief provided by Stephanie Howard of Mouchel Consulting. The Road Safety Audit comprised an examination of the documents provided and these are listed in the Annex. The documents consisted of a limited set of the draft tender drawings, a summary of the general details of the scheme including traffic flows, collision data and A3 plan for the Road Safety Audit Team's use. The Audit Team visited together the site of the proposed accesses on the morning of 10 November 2015 between 10am and 1pm. During the site visit the weather was fine and dry and the existing road surface was dry. Traffic conditions were free flowing, although lane 1 of H8 Standing Way was closed with traffic management from V1 Snelshall Street and Whaddon Road, with lane 2 only access onto the Tattenhoe Roundabout from Buckingham Road.

1.4. The terms of reference of the Road Safety Audit are as described in HD 19/15. The Road Safety Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

1.5. All comments and recommendations are referenced to the detailed design drawings and the locations have been indicated on the A3 plan supplied with the Road Safety Audit Brief.

1.6. The scope of the works includes proposals for various new localised vehicular accesses into the development from Buckingham Road, A421 Standing Way and Whaddon Road.

The audit brief did not include any details of Signing, Lighting, Drainage, Pavements, Footways, Geometry, cross sections, proposed speed limits or Vehicle Restraint System (VRS) at this Stage 1 audit – these should be assessed at the detailed design stage.

1.8 Audit administration

It is the Audit Project Sponsor's responsibility to advise the Audit Team Leader if any Problem or Recommendation is not accepted. A copy of every signed Exception Report is required by the Audit Team Leader from the Audit Project Sponsor for attachment to the master copy of the Final Audit Report.

Safety issues identified during the audit and site inspection which the Terms of Reference exclude from this report, but which the audit team wishes to draw to the attention of the Audit Project Sponsor, will be set out in a separate letter. These issues could include maintenance items and operational issues.

2 Items Raised in this Stage 1 Road Safety Audit

2.1 General

2.1.1 Problem

Location A: Whaddon Road – New access junction

Summary: Reduced conspicuity of the junction could lead to rear end shunt or T-bone collisions.

Detail: The audit team are concerned that the proposed location of the access junction off Whaddon Road could be inconspicuous to approaching road users. The proposed access was perceived from the location on the plans to be located within a low point of the highway alignment with poor visibility splays from both directions. There is a risk that vehicles exiting the access may not adequately see approaching traffic due to the road alignment. This could lead to heavy/late braking resulting in rear end shunt or T-bone collisions.

RECOMMENDATION

Relocate the access on Whaddon Road to provide greater visibility splays of approaching traffic.

2.1.2 Problem

Location B: A421 Standing Way – New access junction

Summary: Reduced deceleration lane could lead to rear end shunt collisions.

Detail: The audit team are concerned of the proposed length of the deceleration lane into the access from the A421 Standing Way. With the speeds observed along this road, there is an increased risk heavy/late braking when turning into the access resulting in rear end shunt type collisions.

RECOMMENDATION

Provide an extended deceleration lane.

2.1.3 Problem

Location C: Buckingham Road - New access junction

Summary: Existing Redway route could lead to NMU conflict with motor vehicles.

Detail: The existing Redway route running along the northern kerbline of Buckingham Road is proposed to be diverted across the new junction arrangement for the development. The audit team observed an existing Redway route crossing the carriageway west of the proposed junction. There is no detail at this stage of the design how this will stopped up to encourage NMU's to use the new crossing. There is a risk that if NMU's are not appropriately stopped up then this could lead to NMU's crossing Buckingham Road in close proximity leading to potential for conflict with passing motor vehicles.

RECOMMENDATION

Adequately stop up the existing Redway route crossing to encourage use of the proposed Redway route.

2.1.4 Problem

Location D: Buckingham Road – New access junction

Summary: Existing speed limit could lead to rear end shunt and loss of control collisions.

Detail: The audit team observed the existing speed limit of Buckingham Road was national speed limit up to Far Bletchley Village where the speed limit reduces to 30mph. The audit team are concerned that a national speed limit along this stretch of Buckingham Road would not be suitable for road users negotiating the proposed access junction. This could increase the risk of speed related conflict resulting in rear end shunt and loss of control collisions.

RECOMMENDATION

The speed limit between Tattenhoe Roundabout and Far Bletchley should reviewed and appropriate limit adopted.

2.1.5 Problem

Location E: Buckingham Road – New access junction

Summary: New junction layout could lead to NMU conflict with motor vehicles.

Detail: The proposed junction on Buckingham Road proposes to lead pedestrian movements to/from the development site along the south and west of the junction. No provision has been made on the eastern side of the junction for pedestrians who walk from Far Bletchley. The audit team are concerned that pedestrians from Far Bletchley direction may proceed through the junction without controlled provision to assist them. This could result in NMU's crossing Buckingham Road and the junction leading to conflict with passing motor vehicles.

RECOMMENDATION

Provide a NMU facility around the eastern side of the junction to assist users from Far Bletchley direction.

End of list of Problems identified and Recommendations offered in this Stage 1 Audit

3 Audit Team Statement

We certify that this Road Safety Audit has been carried out in accordance with HD 19/15.

AUDIT TEAM LEADER –

Brett Felstead HA Competency Cert. MCIHT MSoRSA
ITS Senior Consultant,
Mouchel Consulting, Signed: 
The Business and Technology Centre,
Bessemer Drive,
Stevenage
SG1 2DX Date: 18th December 2015

AUDIT TEAM MEMBER -

Lyn Turner HA Competency Cert. FIHE, RegRSA (IHE), MSoRSA
ITS Principal Consultant,
Mouchel Consulting, Signed: 
The Business and Technology Centre,
Bessemer Drive,
Stevenage
SG1 2DX Date: 18th December 2015

4 Appendix A

Documents Forming the Audit Brief

Drawings:

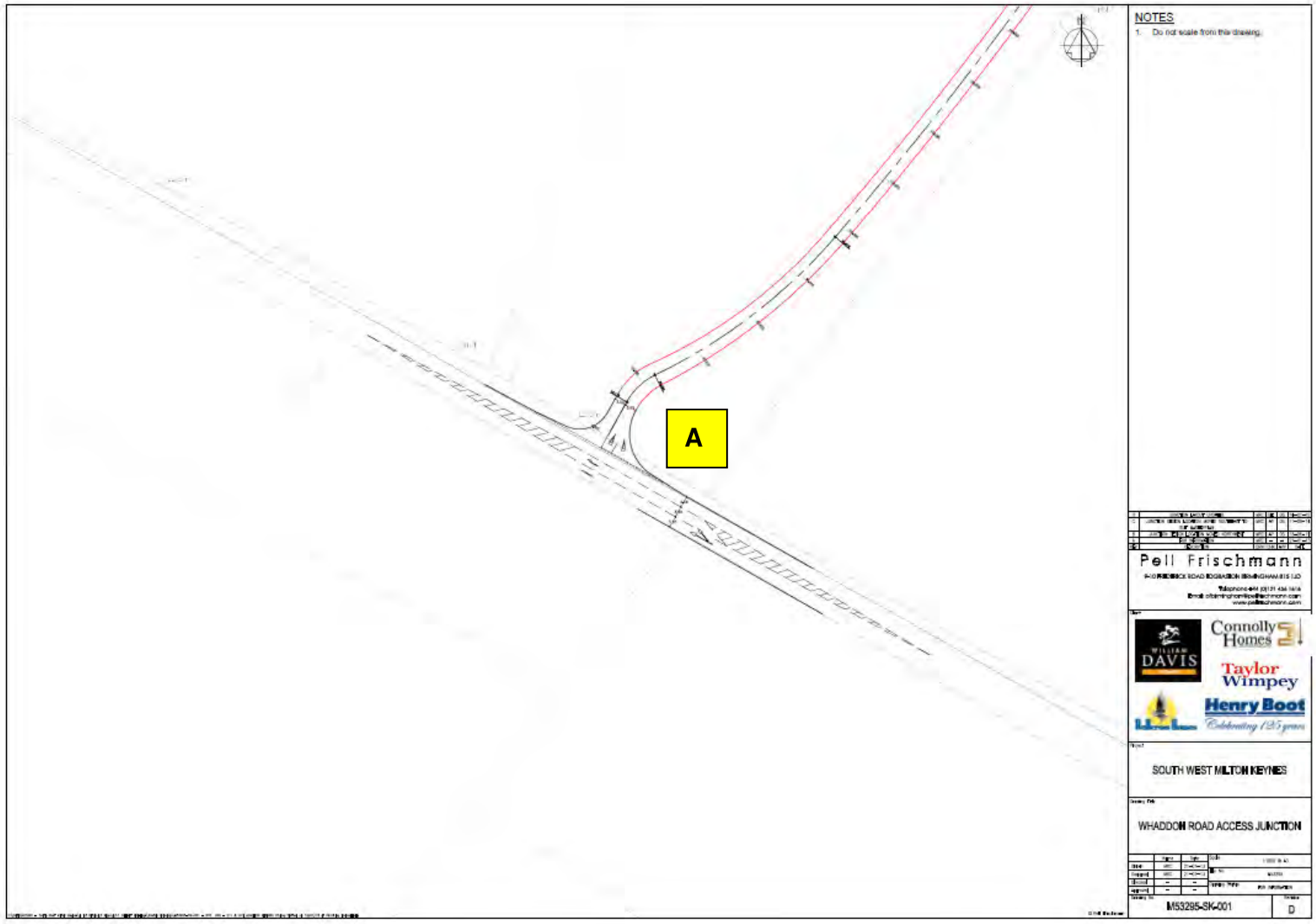
Location Plan
M53295-SK-001
M53295-SK-002
M53295-SK-006
M53295-SK-014

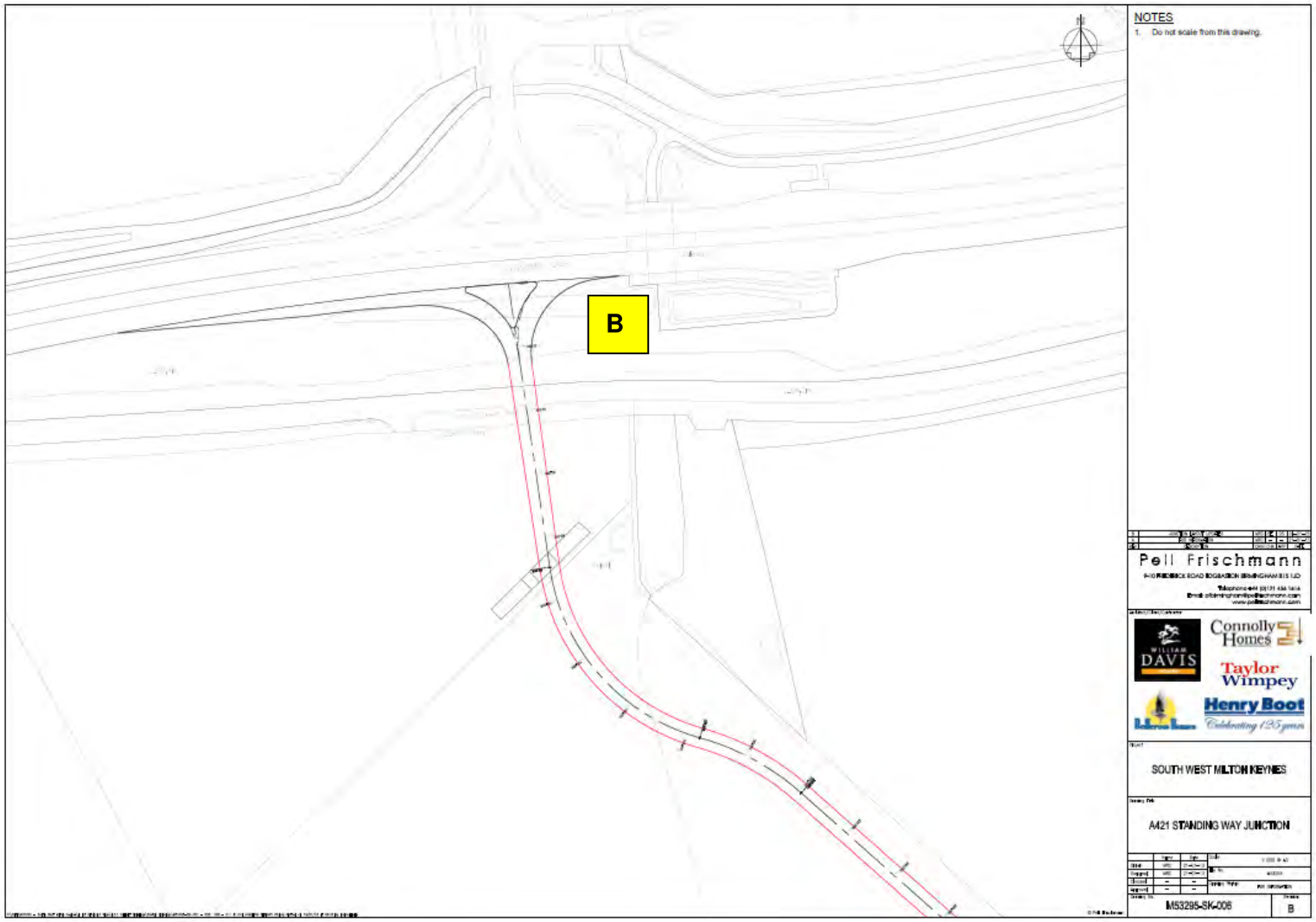
Documents:

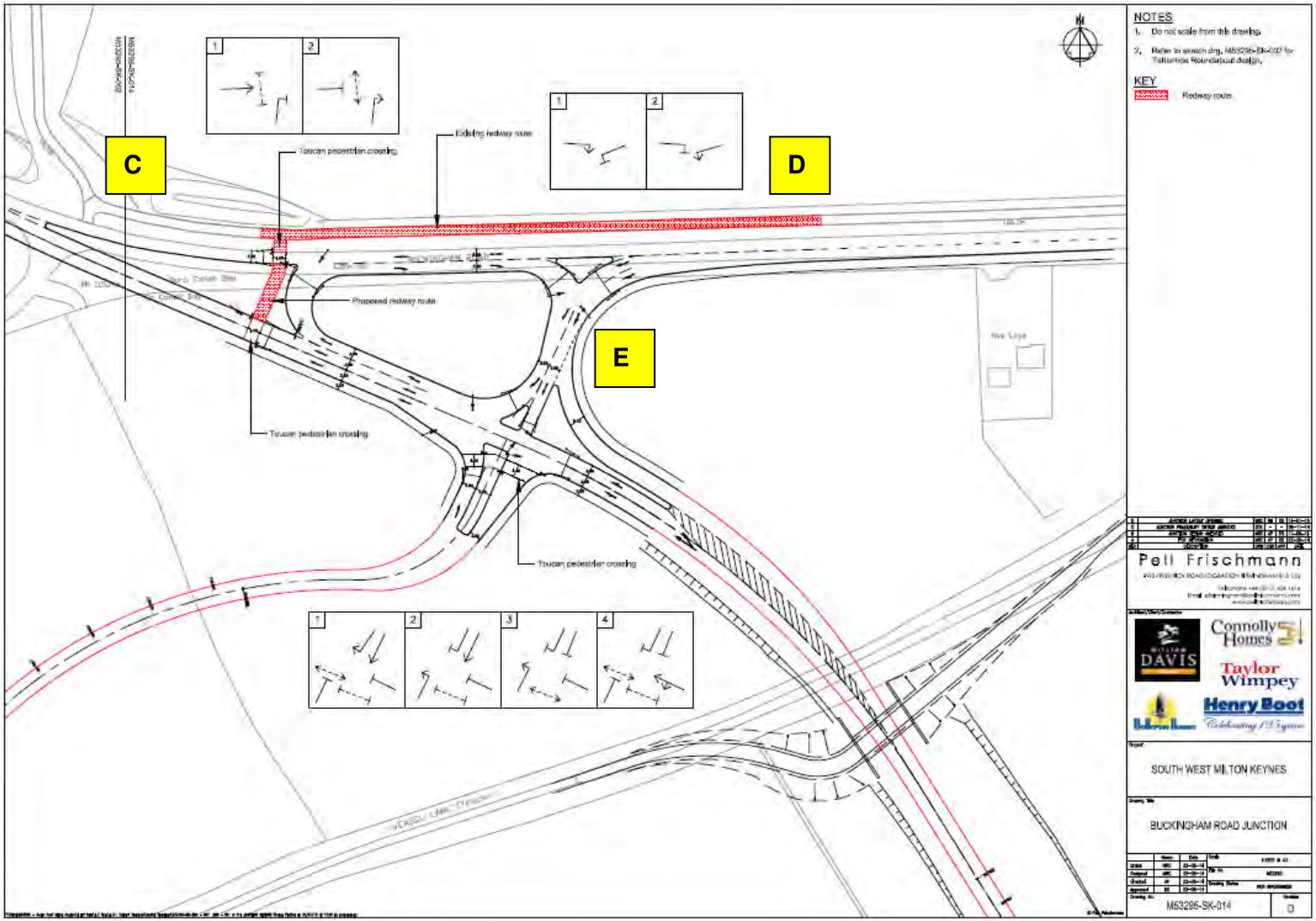
Traffic Flow data
Collison data

5 Appendix B

Problem Locations







Land South of A421, South West Milton Keynes

Bottle Dump Roundabout Equestrian Crossing

Designer's response to Stage 1 Road Safety Audit

Produced for:
Taylor Wimpey Ltd.

Prepared by:
Transport Planning

Export House
Cawsey Way
Woking
Surrey
GU21 6QX
UK

T +44 (0)1483 731000
F +44 (0)1483 731007

Document Control Sheet

Project Title	Land South of A421, South West Milton Keynes
Report Title	Designer's response to Stage 1 Road Safety Audit: Bottle Dump Roundabout Equestrian Crossing
Revision	01a
Status	Final
Control Date	17th December 2015

Record of Issue

Issue	Status	Author	Date	Check	Date	Authorised	Date
01	Final	SH	11-12-15	SH	17-12-15	MJP	17-12-2015

Distribution

Organisation	Contact	Copies
Taylor Wimpey Ltd	Gary Tucker	1e
Mouchel	File	1e

Limitations

This report is presented to Taylor Wimpey Ltd in respect of Land South of A421, South West Milton Keynes (Bottle Dump Roundabout) and may not be used or relied on by any other person. It may not be used by Taylor Wimpey Ltd in relation to any other matters not covered specifically by the agreed scope of this report.

Notwithstanding anything to the contrary contained in the report, Mouchel Limited is obliged to exercise reasonable skill, care and diligence in the performance of the services required by Taylor Wimpey Ltd and Mouchel Limited shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence, and this report shall be read and construed accordingly.

This report has been prepared by Mouchel Limited. No individual is personally liable in connection with the preparation of this report. By receiving this report and acting on it, the client or any other person accepts that no individual is personally liable whether in contract, tort, for breach of statutory duty or otherwise.

Contents

1 Introduction

1.1 This report sets out the design team's response to the following Stage 1 Road Safety Audit which was carried out by Mouchel Ltd on the proposed equestrian crossing scheme related to the proposed development of 'Land South of the A421, South West Milton Keynes'.

1.2 The Stage 1 Road Safety Audit dated July 2015, document number ITS/273/2015, should be read alongside this report.

1.3 The documents submitted for the Road Safety Audit comprise a drawing, traffic flow data and collision data. These are listed within an appendix of the Road Safety Audit.

1.4 The proposed alterations form mitigation for the proposed development of land at South West Milton Keynes, as detailed within the Transport Assessment for the scheme. The proposed development at South West Milton Keynes is located within Aylesbury Vale District in Buckinghamshire.

1.5 The items raised from the Safety Audit have been reproduced within this report and are in *italics* and quotation marks. The design team response is also provided for each item raised.

2 Responses to Stage 1 RSA items raised

Item 2.1.1

"General

Location: A – Whaddon Road – New Pegasus crossing

Summary: Proposed location of crossing could cause rear end shunts or NMU / vehicular conflicts.

The audit team are concerned of the proposed location of the new Pegasus crossing on Whaddon Road. Site observations highlighted two existing accesses to the north of the proposed location, which itself is on a bend. In addition the design proposes a ghost right turn island immediately to the south of Bottle Dump Roundabout into the recycling centre. Site observations also highlighted high vehicle speeds, in particular from exiting the roundabout onto Whaddon Road. There is a risk that vehicles exiting the roundabout will be faced with too much activity with a very short distance prior to the crossing, which in turn could take their awareness off the approaching crossing which could lead to heavy/late braking resulting in rear end shunt collisions or potential of NMU / vehicular conflicts.

Recommendation: Relocate the Pegasus crossing south on Whaddon Road away from the bend and other accesses."

Response

2.1 Noted. Following further discussions with the Audit Team, the diagram in Figure 1 was provided as a guide to an acceptable relocation for the crossing point.

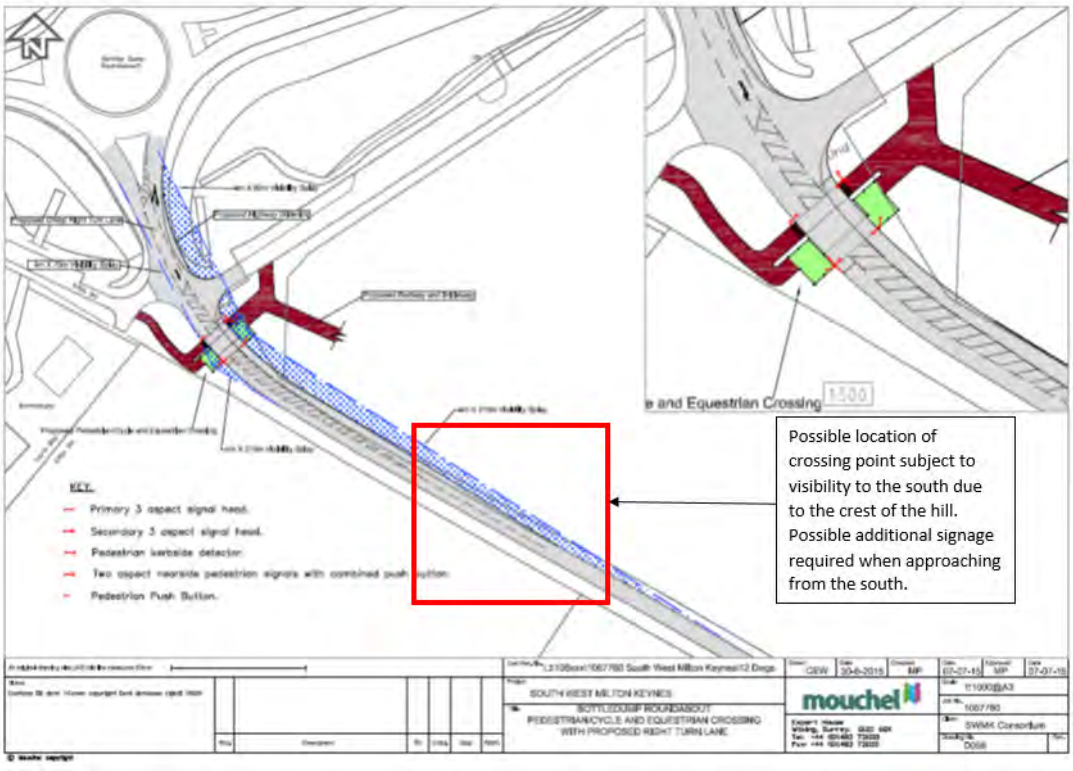


Figure 1: Suggested relocation of crossing point

2.2 The equestrian/pedestrian/cyclist crossing has been relocated further south along Whaddon Road, as shown in Drawing D015B, broadly in line with Figure 1. The ghosted right turn into Pearce Recycling has been removed from the design as there is no longer an interaction between horses crossing and HGVs turning at this location. The relocated crossing point provides a sight stopping distance (SSD) in excess of 154m to the Bottle Dump Roundabout exit to the north, and 154m to the south.

2.3 The 85th percentile wet weather speed along this stretch of Whaddon Road is 51mph. As required by Design Manual for Roads and Bridges (DMRB) TD 9/93 and Manual for Streets 2, a desirable minimum SSD for Whaddon Road of 154m would be required in each direction on the approach to the equestrian crossing. The relocated crossing point is therefore designed to give sufficient visibility for a vehicle to see users on the crossing, and at the kerb edge waiting to cross.

2.4 As a result of the proposed development, the area will become more urbanised, with frontage activity and a greater volume of pedestrians/cyclists/equestrians along the proposed Whaddon Road bridleway. This increased activity is likely to reduce the 85th percentile speed of Whaddon Road. Advanced signage would be used in both directions to ensure vehicle drivers are aware of the upcoming crossing point.

Item 2.1.2

"General

Location: B – Buckingham Road - Recycling Centre Lane

Summary: Proposed location of NMU/Bridleway tie-in could lead to NMU / equestrians /vehicular conflicts.

The audit team are concerned of the proposed location of the pedestrian/cycle and equestrian route tie-in on Buckingham Road outside the recycling centre. The proposed design makes NMU / equestrians join Buckingham Road at the entrance into the recycling centre depot and within the vicinity of the entrance off Whaddon Road. There is a risk that NMU / equestrians users joining Buckingham Road at this location could come into conflict with passing vehicles, leading to serious/fatal injury. This risk is increased due to regular LGV/HGV movements in the immediate area.

Recommendation: Either Relocate the pedestrian/cycle and equestrian tie-in with Buckingham Road or ensure good visibility splays, signing and enhanced visual features are proposed at this tie-in, warning vehicle users to expect NMU / equestrian activity."

Response

2.5 Noted. The relocation of the equestrian/pedestrian/cyclist crossing removes the conflict between NMU/equestrians crossing and HGVs turning at the recycling centre entrance. NMUs/equestrians will still be required to cross the recycling centre access, but in a straight line only, and not whilst thinking about crossing Whaddon Road at the same time. Vegetation will be trimmed to ensure good visibility for NMUs/equestrians in this location and advance signage and markings will be used to ensure the conspicuity of the equestrian route and recycling access. Further detail will be provided at the detailed design stage.

Item 2.1.3

"Junctions

Location: C – Disused access road

Summary: Proposed location of NMU/Bridleway tie-in could lead to NMU / equestrians /vehicular conflicts.

The audit team are concerned of the proposed location of the pedestrian/cycle and equestrian route tie-in on the existing disused access road to the east of Whaddon Road. The proposed design makes NMU / equestrians join the disused access road to link with existing NMU facilities to the northeast. Site observations highlighted numerous vehicle movements using this access. There is a risk that NMU / equestrians users joining this access could come into conflict with passing vehicles, leading to serious/fatal injury.

Recommendation: Good visibility splays, signing and enhanced visual features should be provided at this tie-in, warning vehicle users to expect NMU / equestrian activity."

Response

Noted. The relocation of the proposed NMU/equestrian crossing removes the need for NMUs to join the disused access road in close proximity to the junction. The NMU/bridleway tie-in will occur further along the disused access road away from the junction (as shown on drawing D015B), and will be suitably signed with sufficient visibility for both vehicles and pedestrians/cyclists/equestrians. Further detail will be provided at the detailed design stage.

Item 2.1.4

"Junctions

Location: D – Whaddon Road – New Pegasus crossing

Summary: Reduced conspicuity of crossing could cause rear end shunts or NMU / vehicular conflicts.

The audit team are concerned that the proposed signals for the Pegasus crossing could be inconspicuous. The plans propose only one nearside primary with one offside secondary approaching from the north and just one primary head approaching from the south. There is a risk that vehicles approaching the crossing may not adequately see the crossing due to the road layout and dense vegetation. With the reduced number of signal heads this could lead to heavy/late braking resulting in rear end shunt collisions or potential of NMU / vehicular conflicts.

Recommendation: Provide additional signal aspects in both directions to increase conspicuity of the crossing and remove all dense vegetation."

Response

2.6 Noted. The appropriate number of traffic signal heads will be included in the detailed design of the crossing point to ensure all users have sufficient visibility of the signals. If required, high mast signals could be used to increase conspicuity. Vegetation will also be cleared as required to ensure visibility spays are available. Further detail will be provided at the detailed design stage.

Item 2.1.5

"Non Motorist User Provisions

Location: E – Whaddon Road - New Pegasus crossing

Summary: Location of the equestrian push-button location could cause equestrian / vehicular conflicts.

The audit team are concerned of the proposed location of the push-button for equestrian users. Its proposed location is close to the edge of carriageway which would result in horse's heads obtruding into the live carriageway. This could lead to horses being struck by passing vehicles at the crossing.

Recommendation: Provide the equestrian push-button locations back from the carriageway to ensure that when the rider is using the facility, the horses head does not cross the kerb-line."

Response

2.7 Noted. The push button for equestrian users will be located at least 2m back from the kerb edge, as required by DfT advice note TAL 3/03. The revised locations of the push buttons is shown on drawing D015B.

Item 2.1.6

"Non Motorist User Provisions

Location: F – Whaddon Road - New Pegasus crossing

Summary: Reduced conspicuity of crossing could cause rear end shunts.

No high friction surfacing is proposed on either approach to the crossing on Whaddon Road. There is a risk that the potential reduced conspicuity of this crossing could lead to increased late/heavy braking resulting in rear end shunt collisions.

Recommendation: Provide high friction surfacing on both approaches to the crossing."

Response

2.8 Noted. High friction surfacing will be included on both approaches to the crossing, for a distance of 50m before the stop line, as required by DMRB TD 50/04, as shown on drawing D015B.

We have used our reasonable endeavours to provide information that is correct and accurate and have discussed above the reasonable conclusions that can be reached on the basis of the information available. Having issued the range of conclusions it is for the client to decide how to proceed with this project.

Appendix – Drawing D015B

South West Milton Keynes

Stage 1 Road Safety Audit

December 2015

Produced for

Taylor Wimpey UK Ltd

Prepared by:

Brett Felstead
Mouchel Consulting
The Business and Technology Centre
Bessemer Drive
Stevenage
SG1 2DX

T +44 (0)7825 844249

Document Control Sheet

Project Title South West Milton Keynes

Report Title Stage 1 Road Safety Audit

Revision

Status Final

Control Date December 2015

Record of Issue

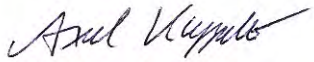
Issue	Status	Author	Date	Check	Date	Authorised	Date
A	Draft	B.Felstead	24/07/15	L. Salmon	24/07/15	A. Kappeler	24/07/15
B	Final	B.Felstead	18/12/15	L. Turner	18/12/15	A. Kappeler	18/12/15

Copy no. 1	Issued electronically only

Distribution

Organisation	Contact	Copies
Mouchel Consulting	Stephanie Howard	1

Approval

Name	Title	Signature	Date
Brett Felstead Mouchel Consulting	Senior Consultant		18/12/15
Lyn Turner Mouchel Consulting	Principal Consultant		18/12/15
Axel Kappeler Mouchel Consulting	Technical Manager		18/12/15

Contents

1 Introduction

1.1 This report results from a Stage 1 Road Safety Audit carried out on the South West Milton Keynes project at the request of Stephanie Howard of Mouchel Consulting, on behalf of Taylor Wimpey Ltd. The Road Safety Audit was carried out during 22 July 2015.

1.2 The Road Safety Audit Team membership approved by Stephanie Howard of Mouchel Consulting was as follows:

Brett Felstead	MCIHT MSoRSA Mouchel Consulting Stevenage (Certificate of Competency in Road Safety Audit gained in April 2013)
Lyn Salmon	FIHE, RegRSA (IHE), MSoRSA Mouchel Consulting Stevenage (Certificate of Competency in Road Safety Audit gained in April 2014)

1.3 The Road Safety Audit took place at the Stevenage Office of Mouchel Limited on 22 July 2015. The Road Safety Audit was undertaken in accordance with the Road Safety Audit Brief provided by Stephanie Howard of Mouchel Consulting. The Road Safety Audit comprised an examination of the documents provided and these are listed in the Annex. The documents consisted of a complete set of the draft tender drawings, a summary of the general details of the scheme including traffic flows, collision data and A3 plan for the Road Safety Audit Team's use. The Audit Team visited together the site of the proposed pedestrian/cycle/equestrian crossing on the afternoon of 22 July 2015 between 1pm and 3pm. During the site visit the weather was fine and sunny and the existing road surface was dry. Traffic conditions were free flowing.

1.4. The terms of reference of the Road Safety Audit are as described in HD 19/15. The Road Safety Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

1.5. All comments and recommendations are referenced to the detailed design drawings and the locations have been indicated on the A3 plan supplied with the Road Safety Audit Brief.

1.6. The scope of the works includes proposals for a new pedestrian/cycle/equestrian crossing on Whaddon Road immediately south of Bottle Dump Roundabout, along with localised highway widening and ghost right turn facility on Whaddon Road into localised access.

The audit brief did not include any details of Signing, Lighting, Pavements, Footways, Geometry, cross sections, proposed speed limits or Vehicle Restraint System (VRS) at this Stage 1 audit – these should be assessed at the detailed design stage.

1.8 Audit administration

It is the Audit Project Sponsor's responsibility to advise the Audit Team Leader if any Problem or Recommendation is not accepted. A copy of every signed Exception Report is required by the Audit Team Leader from the Audit Project Sponsor for attachment to the master copy of the Final Audit Report.

Safety issues identified during the audit and site inspection which the Terms of Reference exclude from this report, but which the audit team wishes to draw to the attention of the Audit Project Sponsor, will be set out in a separate letter. These issues could include maintenance items and operational issues.

2 Items Raised in this Stage 1 Road Safety Audit

2.1 General

2.1.1 Problem

Location A: Whaddon Road – New Pegasus crossing

Summary: Proposed location of crossing could cause rear end shunts or NMU / vehicular conflicts

Detail: The audit team are concerned of the proposed location of the new Pegasus crossing on Whaddon Road. Site observations highlighted two existing accesses to the north of the proposed location, which itself is on a bend. In addition the design proposes a ghost right turn island immediately to the south of Bottle Dump Roundabout into the recycling centre. Site observations also highlighted high vehicle speeds, in particular from exiting the roundabout onto Whaddon Road. There is a risk that vehicles exiting the roundabout will be faced with too much activity with a very short distance prior to the crossing, which in turn could take their awareness off the approaching crossing which could lead to heavy/late braking resulting in rear end shunt collisions or potential of NMU / vehicular conflicts.

RECOMMENDATION

Relocate the Pegasus crossing south on Whaddon Road away from the bend and other accesses.

2.1.2 Problem

Location B: Buckingham Road - Recycling Centre Lane

Summary: Proposed location of NMU/Bridleway tie-in could lead to NMU / equestrians / vehicular conflicts

Detail: The audit team are concerned of the proposed location of the pedestrian/cycle and equestrian route tie-in on Buckingham Road outside the recycling centre. The proposed design makes NMU / equestrians join Buckingham Road at the entrance into the recycling centre depot and within the vicinity of the entrance off Whaddon Road. There is a risk that NMU / equestrians users joining Buckingham Road at this location could come into conflict with passing vehicles, leading to serious/fatal injury. This risk is increased due to regular LGV/HGV movements in the immediate area.

RECOMMENDATION

Either Relocate the pedestrian/cycle and equestrian tie-in with Buckingham Road or ensure good visibility splays, signing and enhanced visual features are proposed at this tie-in, warning vehicle users to expect NMU / equestrian activity.

2.1.3 Problem

Location C: Disused access road

Summary: Proposed location of NMU/Bridleway tie-in could lead to NMU / equestrians / vehicular conflicts.

Detail: The audit team are concerned of the proposed location of the pedestrian/cycle and equestrian route tie-in on the existing disused access road to the east of Whaddon Road. The proposed design makes NMU / equestrians join the disused access road to link with existing NMU facilities to the northeast. Site observations highlighted numerous vehicle movements using this access. There is a risk that NMU / equestrians users joining this access could come into conflict with passing vehicles, leading to serious/fatal injury.

RECOMMENDATION

Good visibility splays, signing and enhanced visual features should be provided at this tie-in, warning vehicle users to expect NMU / equestrian activity.

2.1.4 Problem

Location D: Whaddon Road – New Pegasus crossing

Summary: Reduced conspicuity of crossing could cause rear end shunts or NMU / vehicular conflicts.

Detail: The audit team are concerned that the proposed signals for the Pegasus crossing could be inconspicuous. The plans propose only one nearside primary with one offside secondary approaching from the north and just one primary head approaching from the south. There is a risk that vehicles approaching the crossing may not adequately see the crossing due to the road layout and dense vegetation. With the reduced number of signal heads this could lead to heavy/late braking resulting in rear end shunt collisions or potential of NMU / vehicular conflicts.

RECOMMENDATION

Provide additional signal aspects in both directions to increase conspicuity of the crossing and remove all dense vegetation.

2.1.5 Problem

Location E: Whaddon Road - New Pegasus crossing

Summary: Location of the equestrian push-button location could cause equestrian / vehicular conflicts.

Detail: The audit team are concerned of the proposed location of the push-button for equestrian users. Its proposed location is close to the edge of carriageway which would result in horse's heads obtruding into the live carriageway. This could lead to horses being struck by passing vehicles at the crossing.

RECOMMENDATION

Provide the equestrian push-button locations back from the carriageway to ensure that when the rider is using the facility, the horses head does not cross the kerb-line.

2.1.6 Problem

Location F: Whaddon Road - New Pegasus crossing

Summary: Reduced conspicuity of crossing could cause rear end shunts.

Detail: No high friction surfacing is proposed on either approach to the crossing on Whaddon Road. There is a risk that the potential reduced conspicuity of this crossing could lead to increased late/heavy braking resulting in rear end shunt collisions.

RECOMMENDATION

Provide high friction surfacing on both approaches to the crossing.

End of list of Problems identified and Recommendations offered in this Stage 1 Audit

3 Audit Team Statement

We certify that this Road Safety Audit has been carried out in accordance with HD 19/15.

AUDIT TEAM LEADER –

Brett Felstead HA Competency Cert. MCIHT MSoRSA
ITS Senior Consultant,
Mouchel Ltd, Signed: 
The Business and Technology Centre,
Bessemer Drive,
Stevenage
SG1 2DX Date: 18th December 2015

AUDIT TEAM MEMBER -

Lyn Turner HA Competency Cert. FIHE, RegRSA (IHE), MSoRSA
ITS Principal Consultant,
Mouchel Ltd, Signed: 
The Business and Technology Centre,
Bessemer Drive,
Stevenage
SG1 2DX Date: 18th December 2015

4 Appendix A

Documents Forming the Audit Brief

Drawings:

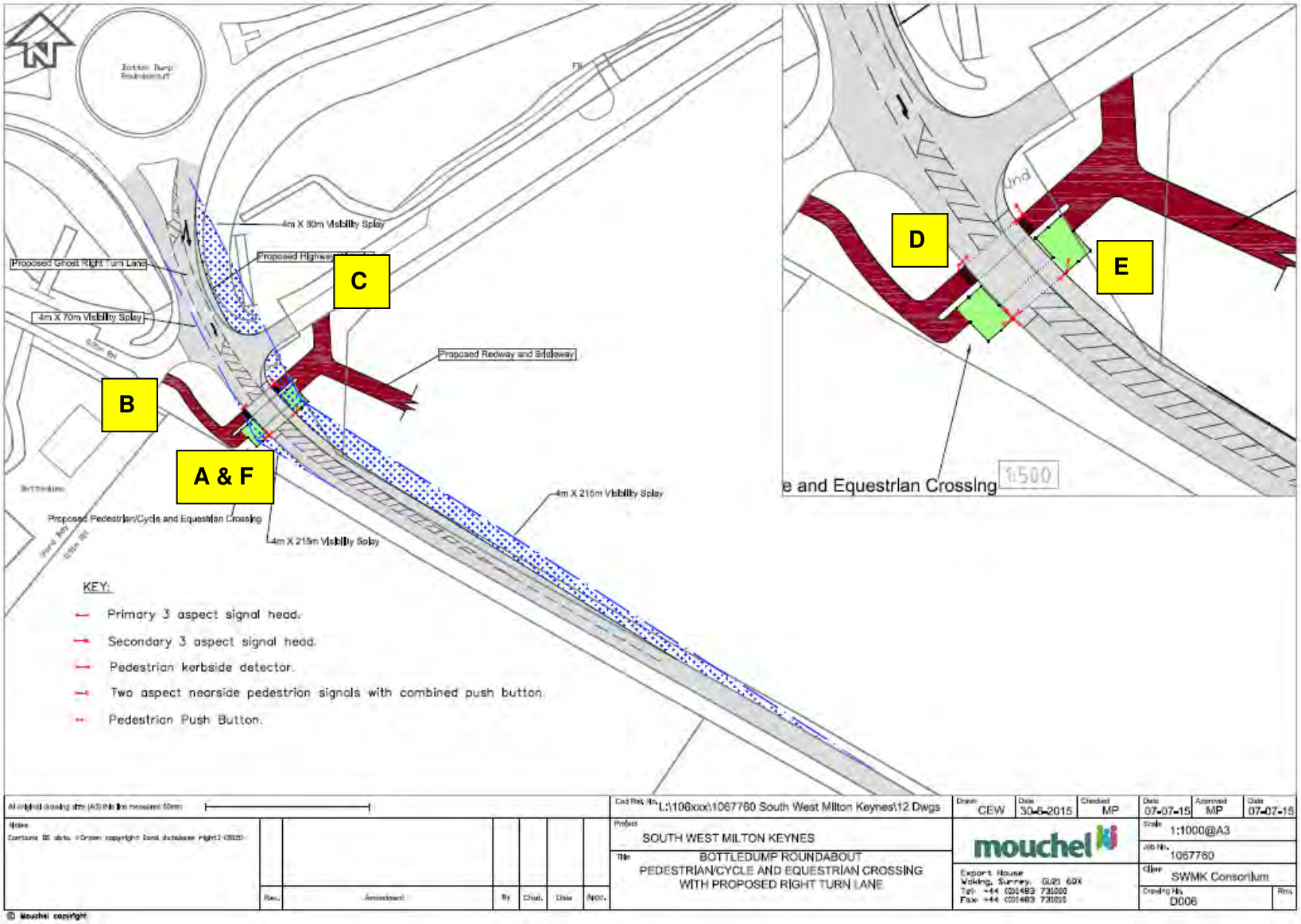
Bottle Dump Roundabout pedestrian/cycle/equestrian crossing with proposed right turn lane D006

Documents:

Traffic Flow data
Collison data

5 Appendix B

Problem Locations



Appendix J Extracts from 'MKTM Traffic Forecasting Report', May 2012

Table 4.1 – 'Committed' Strategic Infrastructure Changes

CORE STRATEGY 2026 - STRATEGIC INFRASTRUCTURE SCHEMES
Existing Highway Agency Schemes
M1 Junctions 10 – 13
A421 Bedford to M1
Highways Agency Schemes starting work before 2015
None
Schemes starting work post 2015
A5-M1 Link Road (Dunstable North)
Local Major Transport Schemes by Other Local Authorities
None
Strategic Rail Schemes
High Speed Two (HS2 :- This is due to open in 2026. It will release capacity on the West Coast Main Line (WCML) to allow MK to have a more frequent train service to/from places already having through service, e.g., London, Birmingham and Manchester, and to allow new through services to places like Liverpool, Central Lancashire, Scotland and possibly even Yorkshire. If an intermediate station is built on HS2 in the Claydon area (where it crosses EWR), faster train services to/from the more distant locations in North Lancashire, Cumbria and Scotland might be possible. These would all have to be lobbied for, but if achieved would again cause transfer of journeys from car to train.
East – West Rail:- Anticipated start date is from 2016 to 2018. The Western Section, currently being progressed, aims to have Oxford/Aylesbury – MK Central/Bedford train services, which may well run through to/from Reading or Didcot, and ultimately (many years from now, when work on the Central Section is more advanced) to/from Cambridge and further east. A Cross-Country service between Southampton and Manchester via Oxford, MK Central and the Trent Valley line has also been suggested. The effect of these services will be to divert existing and expanded rail traffic away from London (thus reducing overcrowding on routes like MK Central – Euston), and to encourage direct journeys between places like MK and Oxford to transfer from car to train.

Table 4.2 Local Network Infrastructure Schemes

Scheme
Local Public Transport Network Schemes
CMK Public Transport Access Scheme Improvements
Station Square access changes
MK Busways between Northfield and EEA (CIF bid)
Park and Ride Sites (Coachway, Denbigh, A421 East)
Roundabouts Signalised
A5/A4146/Watling St
Kingston (URS)
Brinklow (WSP)
Monkston (WSP)
South Grafton (PFA – WEA)
H3/V9 Great Linford (WYG)
H3/V10 Blakelands (WYG)
H3/V8 Redbridge (WYG)
A422/Willen Rd Marsh End (WYG)
A422/A509 Tickford (WYG)
Roundabouts converted to Traffic Signal Junctions
Kiln Farm (JMP – WEA) - 1235
Crownhill (PFA – WEA) – 1280
Loughton (PFA – WEA) – 1312
Knowlhill – 1353
Oakhill (PFA – WEA) – 1601
Oxley Park (PFA – WEA) – 1346
New Bradwell – 1673
Coffee Hall with left slips (Jacobs Babtie) – 1433
Silbury – completed 2007 (Atkins) – 1334
Marina & Netherfield (Jacobs Babtie) – 1437/1573
Watling Street/Saxon Street (WSP) – 1501
Fairways (JMP – WEA) – 1251
Roundabouts Adjusted
The Bowl – 1392
Grange Farm – 1705
Priority converted to Traffic Signal junctions
Watling Street/Tilers Road (JMP – WEA) – 1246
Watling Street/High Street (JMP – WEA) – 1279

Appendix K Pell Frischmann Scoping Report

Pell Frischmann

excellence through innovation

South West Milton Keynes

November 2013

Scoping Note for the Development and Delivery of the Site

M53295/VBB/SN Rev A

Submitted by Pell Frischmann

SOUTH WEST MILTON KEYNES
SCOPING NOTE
M53295/VBB/SN/REV-A

REVISION RECORD Report Ref: South West Milton Keynes - Scoping Note Draft.doc					
Rev	Description	Date	Originator	Checked	Approved
-	Draft	May 2012	LA/SW	SW/GT	GT
A	Updated Draft	Nov 2013	LA	SW/GT	GT

Prepared for:

Taylor Wimpey Developments Limited
Henryboot - Hallam Land Management Ltd
Connolly Homes
William Davies Homes

Prepared by:

Pell Frischmann
9-10 Frederick Road
Edgbaston
Birmingham
B15 1JD

CONTENTS

1. INTRODUCTION

1.1.1 Pell Frischmann have been commissioned to prepare a Transport Assessment (TA) in support of the proposed development of a mixed-use site in north-east Aylesbury Vale to the south-west of Milton Keynes.

1.2 Site Location

1.2.1 The South West Milton Keynes development site is located in north-east Aylesbury Vale, Buckinghamshire, to the south-west of Milton Keynes. The site is currently mostly in agricultural use. The site is bound to the north by the A421, to the east by the existing built up area of Far Bletchley, to the south by the disused East-West railway line, and to the west by existing fields and woodlands. **Figure 1.1** shows the site location in relation to Central Milton Keynes, which is located some 7km (as the crow flies) north-east of the site. Buckingham is some 13km west of the development site.

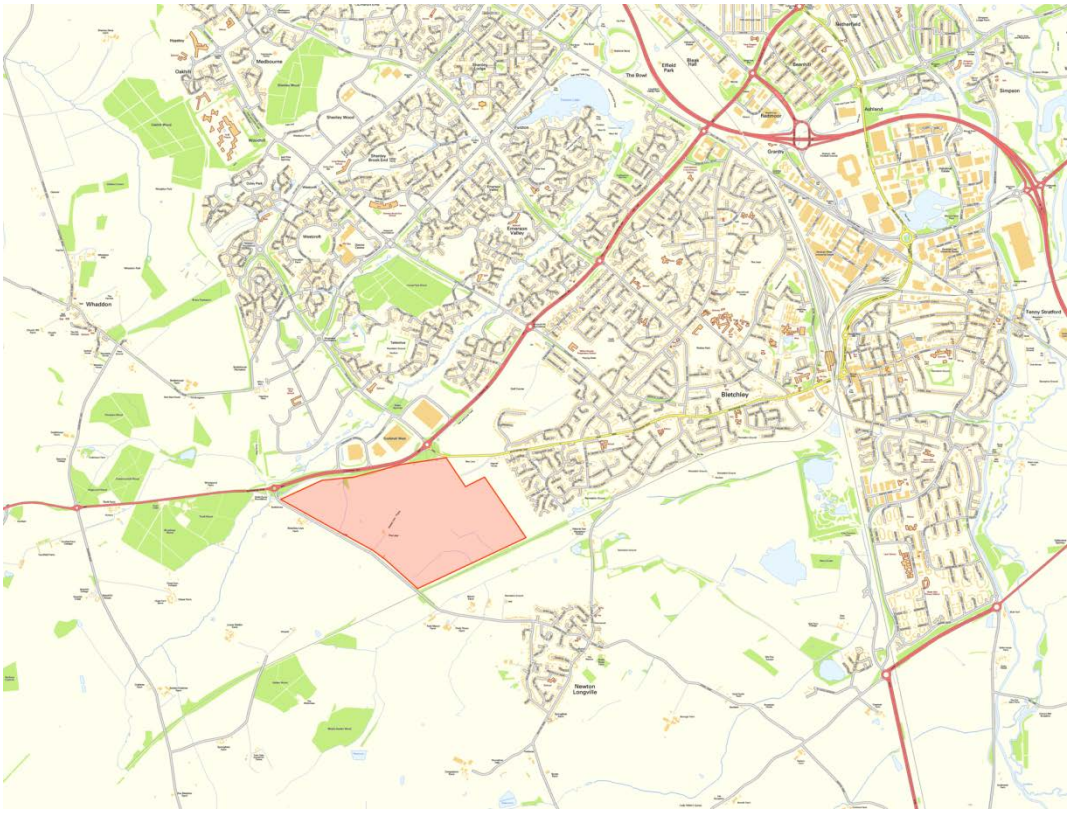


Figure 1.1: Approximate Site Location

1.3 Transport Network

1.3.1 The South West Milton Keynes development site is located to the south-west of Milton Keynes and south of the A421 Standing Way between Bottle Dump Roundabout and Tattenhoe Roundabout. Whaddon Road, which travels south-east from Bottle Dump Roundabout, bounds the western side of the development.

1.3.2 To the east of the South West Milton Keynes site, the A421 provides connections to Milton Keynes, the M1 and Bedford. The A421 travels north-east from the development site, crossing the A5 before continuing past Beanhill, Woughton Park, and south of Kingston to continue south-east adjacent to the M1, crossing the M1 at Junction 13 before travelling north towards Bedford.

1.3.3 To the west of the development site, the A421 provides links to Buckingham and the A43. The A421 travels west from Bottle Dump Roundabout, and has a number of junctions along its length providing links to minor roads that serve the surrounding villages. The A421 continues west and meets the A413 at a roundabout to the east of Buckingham, some 12.5km west of the site, before continuing around the south of Buckingham, north of the Buckingham Industrial Estate. The A421 continues west from Buckingham, bypassing to the south of Tingewick before joining the A43 approximately 4km south of the centre of Brackley.

1.3.4 Link and junction capacity assessments will be undertaken for major junctions in the vicinity of the site to enable an assessment of potential impacts of trips generated by the proposed development on the surrounding local and trunk road network. The specific traffic impact issues will be set out in the Transport Assessment and will be within the wider strategic level transport modelling and infrastructure strategy for the Milton Keynes.

1.3.5 Pell Frischmann will ensure that the proposed transport strategy for the site will follow the best practice and NPPF principles to achieve sustainable development, not only in terms of environment but also economic and social well being.

2. PROPOSED DEVELOPMENT

2.1.1 The developing Core Strategy for Milton Keynes identifies 28,000 new houses for the period up to 2026. This is due to a 24% population growth forecast in the borough in the same period. Whilst at a lower scale, the draft Vale of Aylesbury Plan identified housing growth in the range of 4,500 to 13,500 for the period of 2011 to 2031. Whilst the Core Strategy for the Vale of Aylesbury is yet to be finalised, this level of growth which needs to be accommodated comes with pressures to achieve on average 2317 houses completion per annum. Figures for the last 5 years (2006-2011) demonstrate that house completion rates are 1660 and 746 in Milton Keynes and Aylesbury respectively. This site is not identified within the Core Strategy but can help the council to meet their target as the developers are committed to deliver the site.

2.1.2 Discussions with the Council and the planning team has identified that the site needs to possess mixed-use characteristics where the site can be considered as self-sufficient with services and facilities attached within its context.

2.2 Previous

2.2.1 The previous TA completed in 2010 proposed the following:

- 5,387 dwellings,
- 37,050m2 employment land,
- Four primary and 1 secondary school,
- 5,200m2 food retail, and
- Leisure and community uses.

2.2.2 The above proposed land-use identified likely external trip generation for the site as follows:

Mode	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Car Driver	837	1182	1258	797
Car Passenger	105	149	158	100
Public Transport	95	134	142	90
Bicycle	38	54	57	36
Pedestrian	88	106	132	84

Table 1: External Trip Generation – 2010 TA

2.2.3 Whilst this is accepted at the time, the development of TRICS software continues (currently version 2012(a)) with new sites and multi-modal trip generation where an update of these and a consideration for potential modal shift trips will need be considered for a sustainable site development.

2.3 Current

2.3.1 The site will include:

- Up to 1,855 mixed tenure homes (C3) on 53.79 Ha of land;
- An employment area of 2 Ha;
- A local centre of 0.6 Ha; and
- Provision of 5.2 Ha of land to provide education facilities comprising a primary school with ancillary early years provision and a potential site for a satellite Secondary school;

2.3.2 A Master Plan of the proposed layout of the site is shown in **Appendix A**.

2.3.3 Three new vehicular junctions will be constructed for vehicular access into the site. These will be via:

- Whaddon Road
- Buckingham Road; and
- A Left in/Left Out junction on the north of the site leading onto the A421.

2.3.4 Whaddon Road bounds the west side of the development site. The road connects to the north to Bottle Dump Roundabout. To the south, Whaddon Road connects to Bletchley Road, in the village of Newton Longville.

2.3.5 The new junction connecting into the development site will be priority T Junction with a right turn lane into the site from the northbound carriageway of Whaddon Road.

2.3.6 The access junction along Buckingham Road will be a roundabout or traffic signalised junction.

2.3.7 The access junction to the north, will connect from the A421 Standing Way. The junction will be a Left In/Left Out arrangement, as is common throughout existing neighbourhoods in Milton Keynes.

3. POLICY REVIEW

3.1.1 The MKC Core Strategy and the LTP3 will be reviewed in line with the proposed development, an initial review has already been undertaken but a thorough review of the policies in relation to the site will be undertaken

3.1.2 The Development and how it complies with the MKC Core Strategy is introduced as follows:

Strategy	Development Compliance with MKC Core Strategy Policy					
	CS1	CS2	CS6	CS8	CS11	CS12
Mixed use Development	✓	✓	✓	✓	✓	✓
Development Phasing	✓	✓	✓	✓	✓	✓
Access Control			✓		✓	✓
Bus Operations and priority			✓		✓	✓
Development of Smart Corridors			✓		✓	
Park & Ride			✓		✓	
Information Systems (RTPI)			✓		✓	✓
Real-time Travel Advice			✓		✓	✓
Bus Gating and Priority			✓		✓	✓
Smarter Choices & Travel Plan Initiatives			✓		✓	✓
Walking Network Improvements			✓		✓	✓
Cycle network Improvements			✓		✓	✓
Mitigating Residual Traffic			✓		✓	

Table 2: Development Compliance with Core Strategy

3.1.3 A similar analysis for the development against the LTP 3 compliance has been undertaken and is shown below.

Strategy	Development Compliance with LTP3						
	Public Transport	Cycling and Walking	Smarter Choices	Highways and Traffic Management	Technology	Infrastructure Management	Development Planning
Mixed use Development							✓
Development Phasing							✓
Access Control				✓	✓	✓	
Bus Operations and priority	✓		✓				
Development of Smart Corridors	✓		✓	✓	✓	✓	
Park & Ride	✓					✓	
Information Systems (RTPI)	✓		✓	✓	✓	✓	
Real-time Travel Advice	✓		✓	✓	✓	✓	
Bus Gating and Priority	✓		✓	✓	✓	✓	
Smarter Choices & Travel Plan Initiatives	✓	✓	✓	✓			✓
Walking Network Improvements		✓	✓				✓
Cycle network Improvements		✓	✓				✓
Better Bus Area Fund	✓	✓	✓	✓	✓		✓
Mitigating Residual Traffic				✓	✓	✓	

Table 3: Development Compliance with LTP3

3.1.4 Also following MKC's successful bid for the Better Bus Area Fund, the proposed bus route improvements and other initiatives will be reviewed in line with the site and how they will aid the site in creating a Sustainable Urban Extension (SUE) to Milton Keynes.

3.1.5 With the successful BBAF bid MKC is investing in infrastructure in the area which will also support the proposed development as well the existing developments.

3.1.6 MKC has an Urban and Rural housing target for new homes to be provided by 2026 which is equivalent to 1640 urban and 110 rural houses per annum. The site will help MKC to meet its future housing targets.

4. TRANSPORT AND ACCESS STRATEGY

4.1 Sustainability Assessment

4.1.1 A sustainability assessment will be conducted assessing the accessibility of the site by all modes of transport. Pell Frischmann will ensure that the proposed transport strategy for the site will follow the best practice and will be NPPF compliant to deliver the strategy supported by Local policies through:

- Being Sustainable;
- Encourage Modal shift;
- Increase Accessibility; and
- Mitigate any residual impacts.

4.1.2 South West Milton Keynes presents an opportunity for a coordinated and well designed SUE site, with potential to incorporate Redway principles, sustainable transport with ability to fully mitigate its traffic impact, ability to complement future strategic link road(s) such as the "V0" link between the Bottledump Roundabout and the H7 and the Bletchley Southern Bypass. The site will incorporate social and commercial facilities for local demand, and has potential to include a P&R site on or near the A421 to improve sustainability, as well as the ability to contribute towards future infrastructure provision through the mass housing supply at future phases.

4.1.3 The site will also benefit from recent 'Better Bus Area Fund' which will help to introduce a north-south express bus service (Wolverton-Centre-Bletchley) as well as significant improvements to the major Bus to Bus Interchange locations. The Site is bounded by the A421 and the Buckingham Road to the north, the BBAF includes improvements to Route 4 which passes the northeast section of the site and this route could be extended to be accessible to more of the site. If an extension to Route 4 is considered unrealistic, then an alternative could be contribution to a new service linking Bletchley with Tattenhoe Park, Kingsmead South and the Westcroft District Centre.

4.1.4 The possibility of a shared minibus/taxi service to main locations within MK will be investigated in relation to the site. This links into MKC's LPT Public Transport Strategy Bo2 which seeks to introduce "semi-flexible, dial-a-ride style bus services covering the city estates" in 5 to 10 years.

4.1.5 The South West Milton Keynes site will be easily accessible and well connected, it will sustain existing facilities and be well-integrated with the local area. It will complement the existing Milton Keynes grid road system, both in internal and external layout.

4.1.6 It will be well designed to ensure a safe and accessible environment, and allow ease of access to nearby facilities. The site creates an SUE, complimenting the existing housing such as Tattenhoe Park and the Kingsmead development which benefit from extant permissions and it will provide a local centre for everyday needs for education, community facilities and food-retail.

4.1.7 In addition, an accident assessment will be conducted for the local highway network over the last 5 years. This will include key links and local junctions shown in Figure 1.

4.2 Demand Management

4.2.1 Alternative means of travel will be promoted to minimise vehicle trip generation. The site is to be designed to maximise the accessibility of the site by alternative means other than the private car. This includes bus route layout and positioning of the bus stops to ensure that the maximum number of properties are situated within 400m of a bus stop.

4.2.2 The H6, H7, H8, V2 and V3 have been identified as valid routes for A Smart Corridor Concept, this concept will be investigated along these major routes and these can be extended into the Western Expansion Area (WEA). The provision of a "Public Transport Spine" from the V0/H7 link along the western edge up to the WEA will also be investigated.

4.2.3 A Framework Travel Plan will be produced for the site which will set out the overall demand management strategy to reduce the number of single occupancy vehicle trips.

4.3 Mitigate residual impact

4.3.1 After taking into account the above measures there will still be some impact on the local road network and it's junction due to development traffic. This impact will be assessed with the relevant standard software and a mitigation strategy will be proposed based on the results.

5. TRANSPORT IMPACT ASSESSMENT

5.1.1 Although the South West Milton Keynes development is located on the edge of the model network area, the 2009 Milton Keynes Multi-Modal SATURN Model (MKMM) will be utilised to assess the highway and public transport impact of the South West Milton Keynes proposed development in the forecast years as most of the impact will be towards Milton Keynes Central.

5.1.2 In the future year scenario in MKMM model, the South West Milton Keynes proposed development will be coded using separate zones housing, employment and schools.

5.1.3 The MKMM current covers the base year of 2009 and future forecast years of 2026. Available modelled option runs are therefore:

- 2009 Base year AM and PM peak ;
- 2026 Do Something AM and PM peak;

5.1.4 Tempro growth will be applied to uplift 2009 to 2012 Base year. The MKMM 2026 Do Something Model will be used as the base for both the Do Minimum and Do Something assessments i.e. the Do Something test will include the South West Milton Keynes Development proposals while in 2026 Do minimum will exclude South West Milton Keynes Development proposals from the total traffic.

5.1.5 It is anticipated that all committed highway schemes will be included in the in the Do-Something scenario. PF have been provided with a list of all future housing developments which have valid planning permission or have been allocated in the Local Plan. It is considered that these developments will be completed by 2026.

5.1.6 The development figures will be provided to Halcrow (the owners & operators of the MKMM), who will then provide them to Rand Europe, who developed the Local Demand Model, to establish trip generation, mode split and distribution impacts of the development. In addition the concentration of development in the area will be incorporated into the Regional Demand Model by concentrating the rural development forecasts for the Aylesbury Vale District (where it sits) within the relevant zone. The regional demand model will then be rerun to revise the regional development forecasts and growth.

5.1.7 Trip rates used in the MKMM for the SWMK development will be provided by Halcrow and will be based on their standard trip rates, distribution was also provided by halcrow based on existing nearby areas with the same land use.

5.1.8 The strategy for the site will take the previous work beyond its capacity to enable agreement with the MK Council with respect to:

- Strategic Interventions; and
- Development of the Transport Assessment based on agreed principles.

5.2 Modelling Scenarios to Undertake Strategy for the Site

5.2.1 The main access to the site will be gained off the Tattenhoe Roundabout/A421/ Buckingham Road and in so doing creating the first leg of a Bletchley southern bypass, facilitating the connectivity of the full link between the A421 and the A4146 as shown in Figure 2. The development proposal will enable vehicular connectivity with Whaddon Road and pedestrian/cycle connectivity with Far Bletchley.

5.2.2 The SATURN demand flows will be used to:

- Identified junction improvements, park and ride and information Technologies (possibly in the form of MS4);
- Identified junction improvements & 'Bletchley Bypass' link
- Identified junction and links improvements and Smarter choices (similar to the Council's LSTF DfT bid) to achieve modal shift targets; and
- Bus network improvements (frequency and/or priority/gating);

5.2.3 In order to forecast the traffic impact of the development on the surrounding road network and junctions, Turning Counts experienced at key junctions, will be extracted from the Saturn Model.

5.2.4 The below scenarios will be tested:

- **S1:** 2026 DM Base + Permitted Committed Developments + without proposed development but with committed infrastructure (i.e. planned junction/highway improvements);
- **S2:** 2026 DS Base + Permitted Committed Developments + with proposed development with committed infrastructure (i.e. planned junction/highway improvements);
- **S3:** 2026 DS Base + Permitted Committed Developments + with proposed development with committed infrastructure (i.e. planned junction/highway improvements) and with Bletchley Southern Bypass;

5.2.5 The following junctions will be assessed using the above scenarios:

Site Accesses

- Whaddon Road Access Junction
- Buckingham Road
- A421 Left In/Left Out

Offsite Junctions

- Bottle Dump Roundabout
- Tattenhoe Roundabout
- Kingsmead Roundabout
- Westcroft Roundabout
- Windmill Hill Roundabout
- Emerson Roundabout
- Furzton Roundabout
- Elfield Park Roundabout
- Bleak Hall Roundabout
- Whaddon Crossroads
- Caldecotte & Bletcham Roundabouts
- Abbey Hill Roundabout
- Portway Roundabout
- Redmore Roundabout

5.2.6 Any mitigation identified at these locations will be undertaken in line with the principals of the traffic management and control in the MKC network.

5.2.7 The link and junction capacity will be assessed for the key scenarios by use of Arcady for roundabouts and Linsig/Transyt for signalised junctions.

6. NEXT STEP:

6.1.1 We will contact Halcrow to agree runs of the MKMM to include the SWMK development.

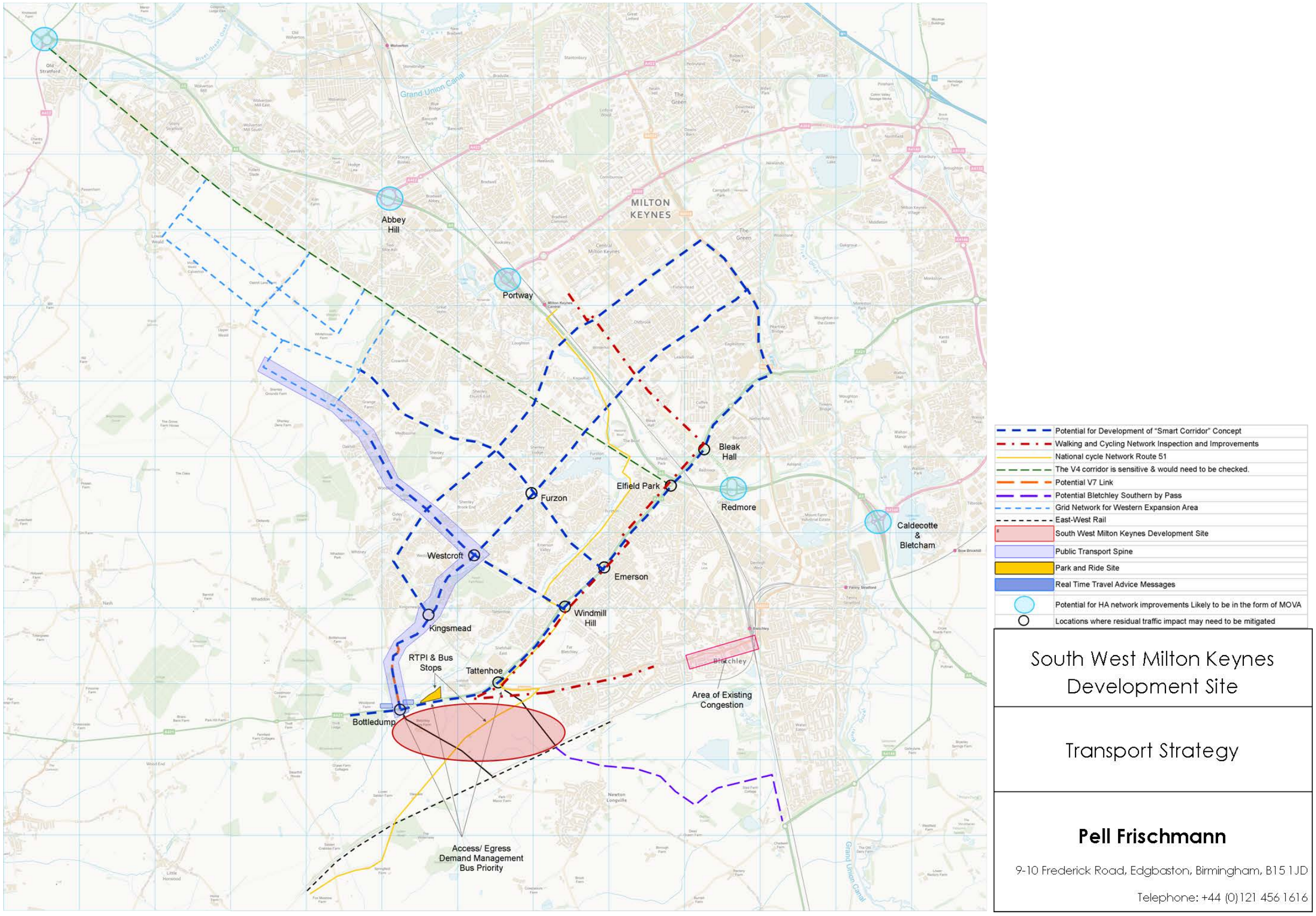
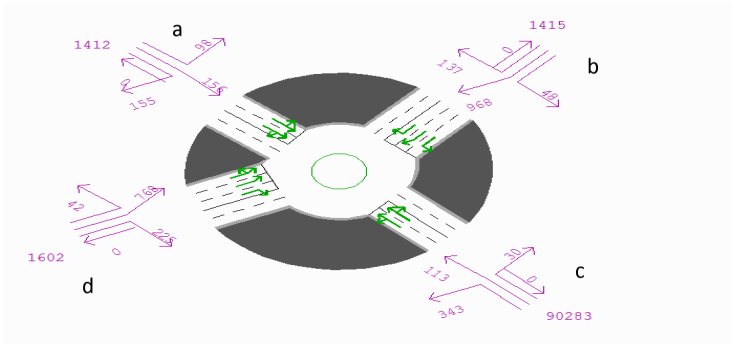


Figure 2: Key Junctions and Interventions

Appendix L MKTM Base and Base + Development Turning Flows

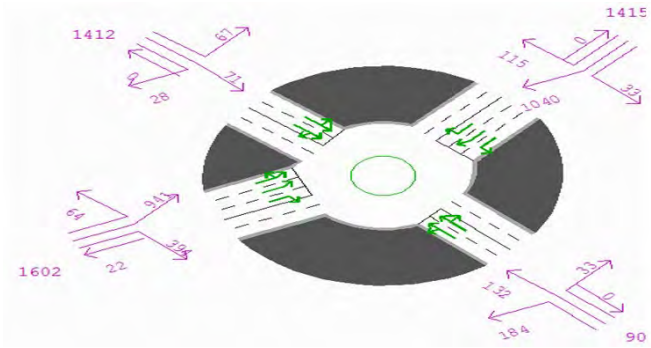
Tattenhoe Roundabout

Scenario 1 - AM Peak



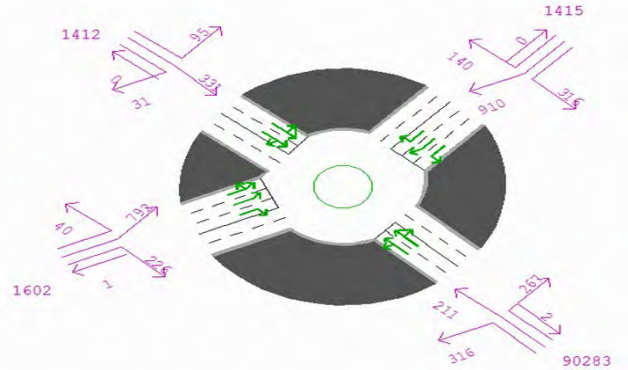
	A	B	C	D	Total
A	-	98	156	155	409
B	137	-	48	968	1153
C	113	30	-	343	486
D	42	768	225	-	1035
Total	292	896	429	1466	

Scenario 1 - PM Peak



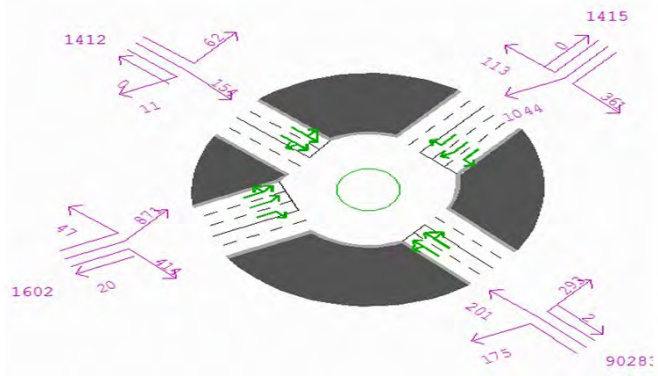
	A	B	C	D	Total
A	-	67	71	28	166
B	115	-	33	1040	1188
C	132	33	-	184	349
D	64	941	394	22	1399
Total	311	1041	498	1252	

Scenario 2 - AM Peak



	A	B	C	D	Total
A	-	95	331	31	457
B	140	-	316	910	1366
C	211	267	2	316	794
D	40	792	226	1	1058
Total	391	1154	873	1257	

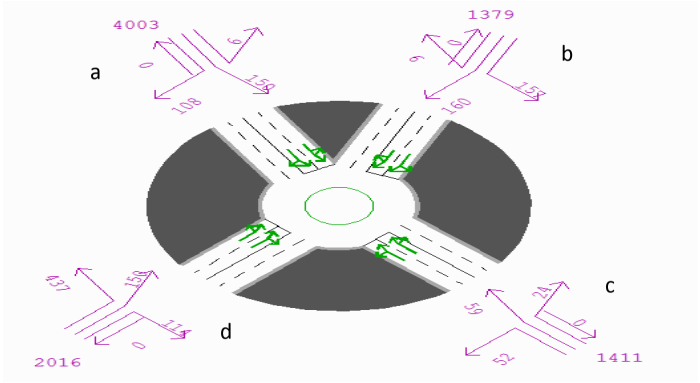
Scenario 2 - PM Peak



	A	B	C	D	Total
A	-	62	154	11	227
B	113	-	361	1044	1518
C	201	293	2	175	669
D	47	871	414	20	1332
Total	361	1226	929	1230	

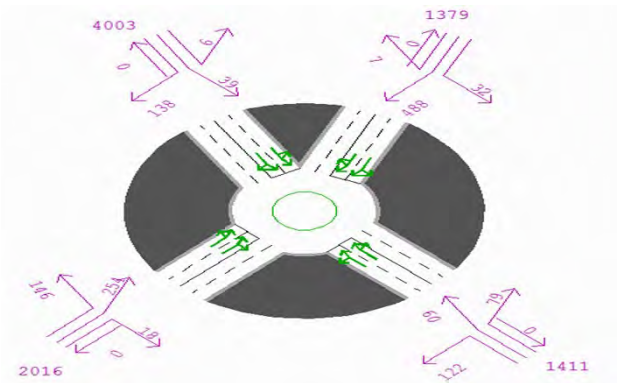
Kingsmead Roundabout

Scenario 1 - AM Peak



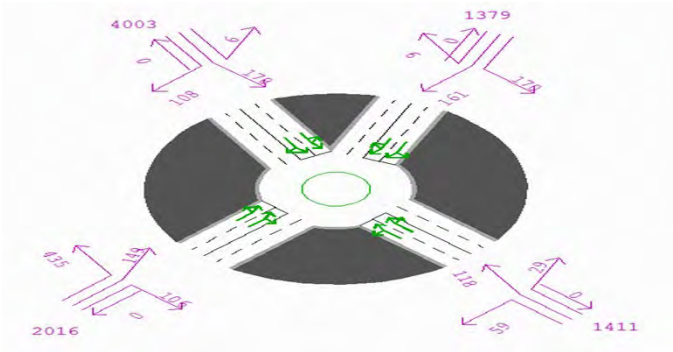
	A	B	C	D	Total
A	-	6	150	108	264
B	6	-	157	160	323
C	59	24	-	52	135
D	437	150	114	-	701
Total	502	180	421	320	

Scenario 1 - PM Peak



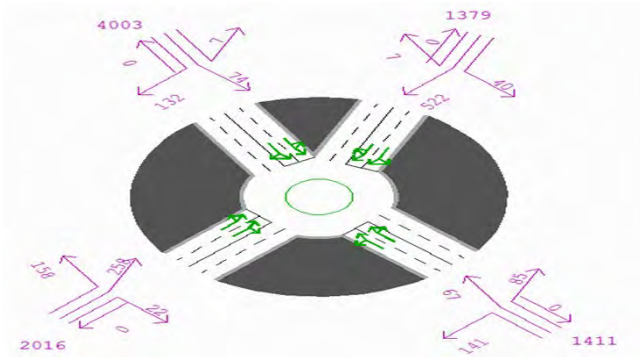
	A	B	C	D	Total
A	-	6	39	138	183
B	7	-	32	488	527
C	60	79	-	122	261
D	146	254	18	-	418
Total	213	339	89	748	

Scenario 2 - AM Peak



	A	B	C	D	Total
A	-	6	178	108	292
B	6	-	170	161	337
C	118	29	-	59	206
D	435	149	106	-	690
Total	559	184	454	328	

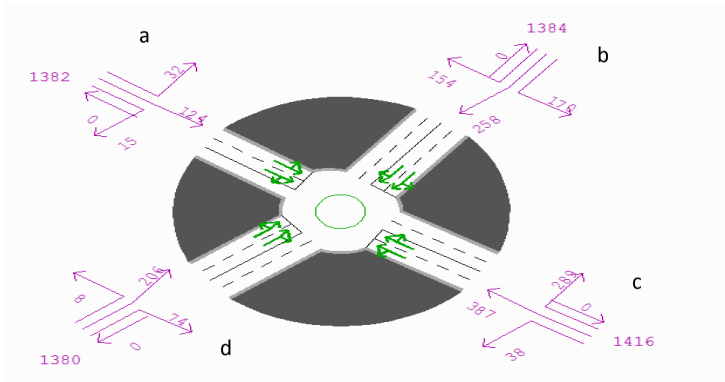
Scenario 2 - PM Peak



	A	B	C	D	Total
A	-	7	74	132	213
B	7	-	40	522	569
C	67	85	-	141	293
D	158	258	22	-	438
Total	232	350	136	795	

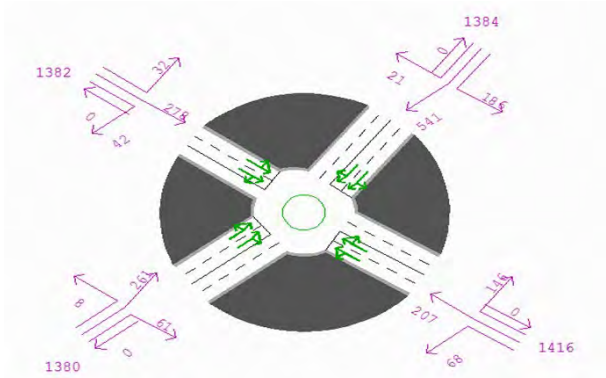
Westcroft Roundabout

Scenario 1 - AM Peak



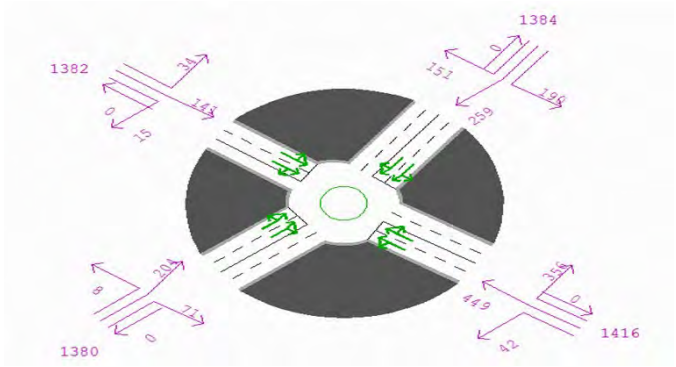
	A	B	C	D	Total
A	-	32	124	15	171
B	154	-	170	258	582
C	387	289	-	38	714
D	8	206	74	-	288
Total	549	527	368	311	

Scenario 1 - PM Peak



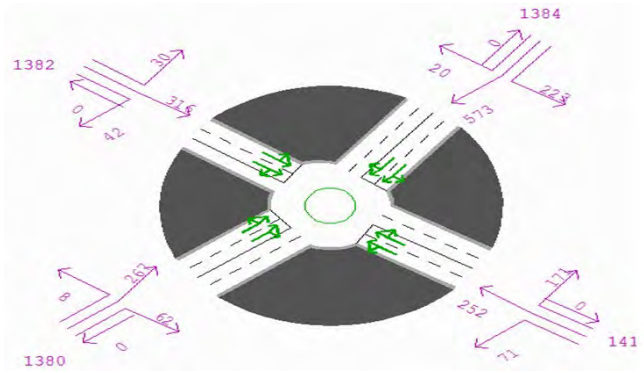
	A	B	C	D	Total
A	-	32	278	42	352
B	21	-	186	541	748
C	207	146	-	68	421
D	8	261	61	-	330
Total	236	439	525	651	

Scenario 2 - AM Peak



	A	B	C	D	Total
A	-	34	141	15	190
B	151	-	190	259	600
C	449	356	-	42	847
D	8	204	71	-	283
Total	608	594	402	316	

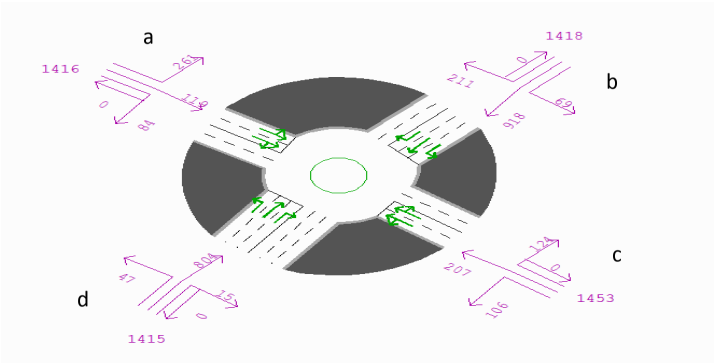
Scenario 2 - PM Peak



	A	B	C	D	Total
A	-	30	316	42	388
B	20	-	223	573	816
C	252	171	-	71	494
D	8	267	62	-	337
Total	280	468	601	686	

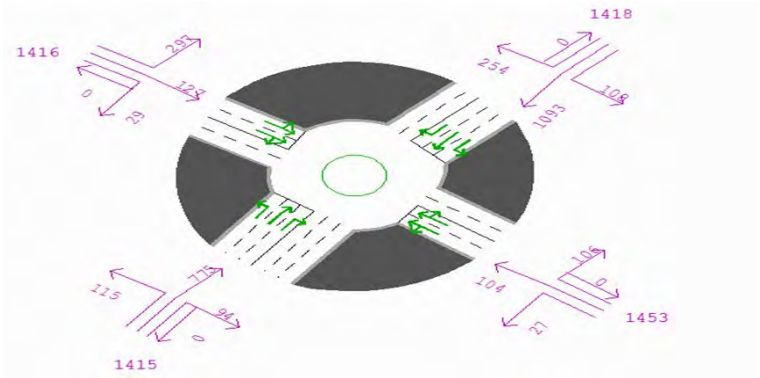
Windmill Hill Roundabout

Scenario 1 - AM Peak



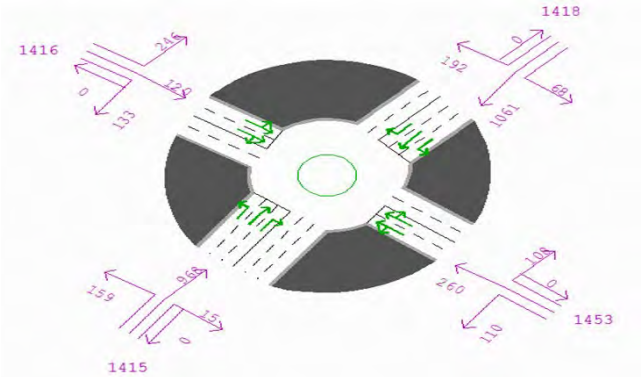
	A	B	C	D	Total
A	-	261	119	84	464
B	211	-	69	918	1198
C	207	124	-	106	437
D	47	804	15	-	866
Total	465	1189	203	1108	

Scenario 1 - PM Peak



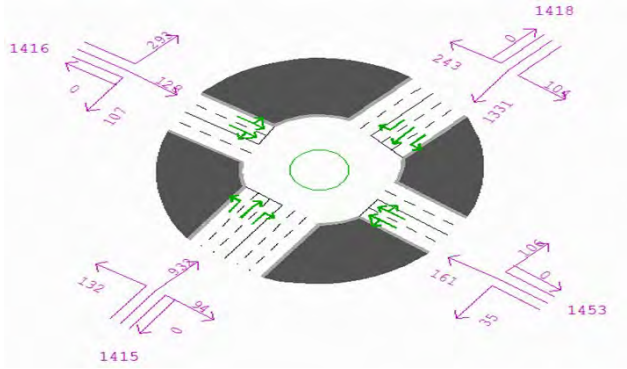
	A	B	C	D	Total
A	-	297	127	29	453
B	254	-	108	1093	1455
C	104	106	-	27	237
D	115	775	94	-	984
Total	473	1178	329	1149	

Scenario 2 - AM Peak



	A	B	C	D	Total
A	-	246	120	133	499
B	192	-	68	1061	1321
C	260	108	-	110	478
D	159	968	15	-	1142
Total	611	1322	203	1304	

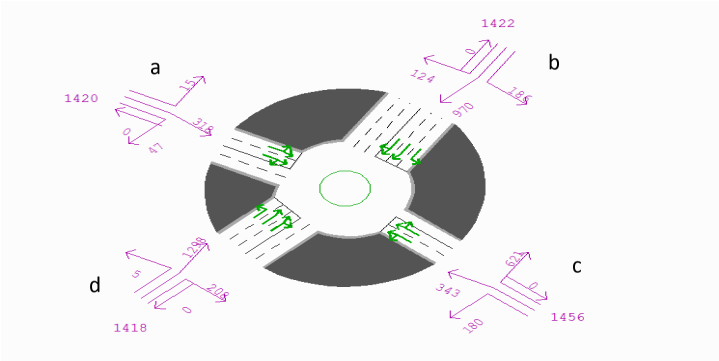
Scenario 2 - PM Peak



	A	B	C	D	Total
A	-	293	128	107	528
B	243	-	104	1331	1678
C	161	106	-	35	302
D	132	932	94	-	1158
Total	536	1331	326	1473	

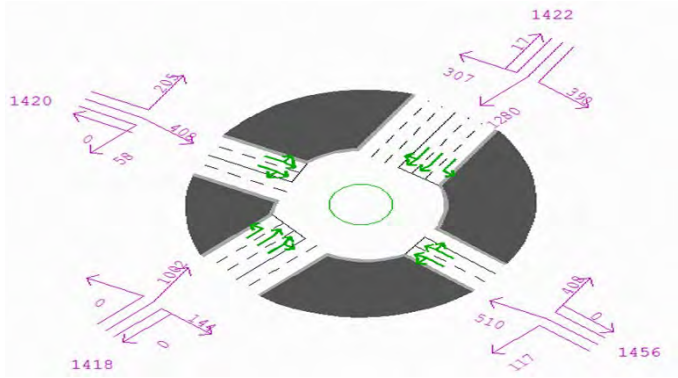
Emerson Roundabout

Scenario 1 - AM Peak



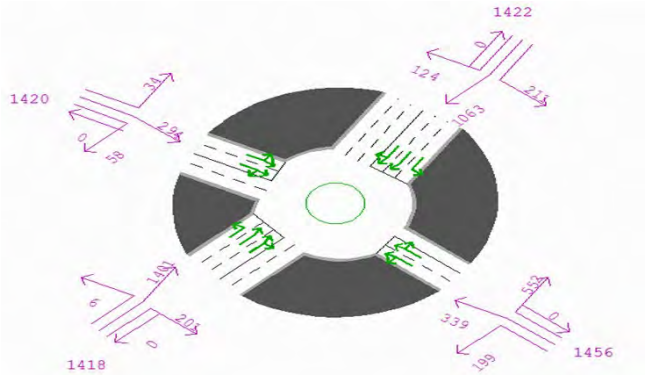
	A	B	C	D	Total
A	-	15	318	47	380
B	124	-	186	970	1280
C	343	621	-	180	1144
D	5	1298	208	-	1511
Total	472	1934	712	1197	

Scenario 1 - PM Peak



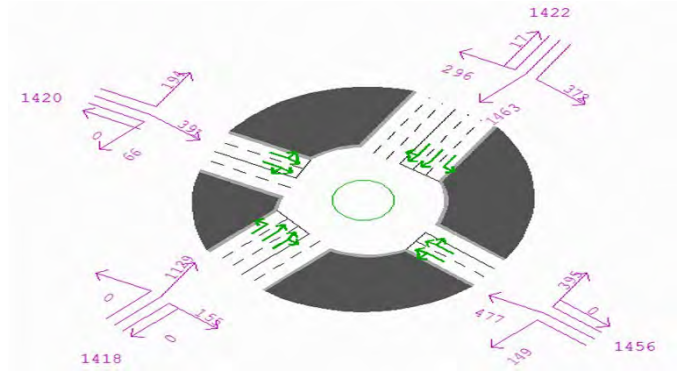
	A	B	C	D	Total
A	-	205	408	58	671
B	307	17	391	1280	1995
C	510	408	-	117	1035
D	0	1002	144	-	1146
Total	817	1632	943	1455	

Scenario 2 - AM Peak



	A	B	C	D	Total
A	-	34	294	58	386
B	124	-	211	1063	1398
C	339	552	-	199	1090
D	6	1401	201	6	1608
Total	469	1987	706	1320	

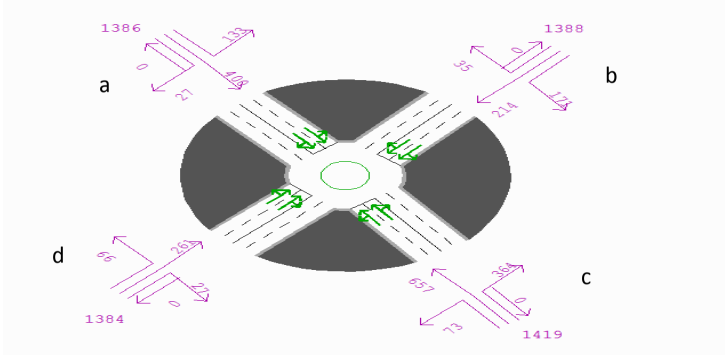
Scenario 2 - PM Peak



	A	B	C	D	Total
A	-	194	391	66	651
B	296	17	372	1463	2131
C	477	395	-	149	1021
D	0	1129	155	-	1284
Total	773	1718	918	1678	

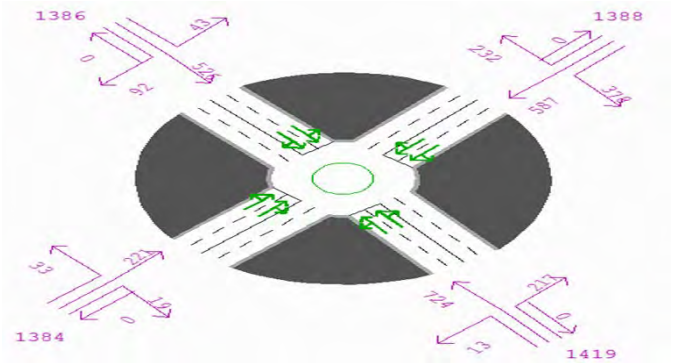
Furzton Roundabout

Scenario 1 - AM Peak



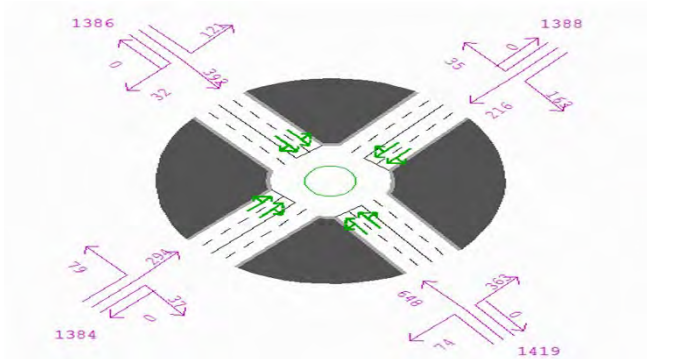
	A	B	C	D	Total
A	-	133	400	27	560
B	35	-	171	214	420
C	657	364	-	73	1094
D	66	261	27	-	354
Total	758	758	598	314	

Scenario 1 - PM Peak



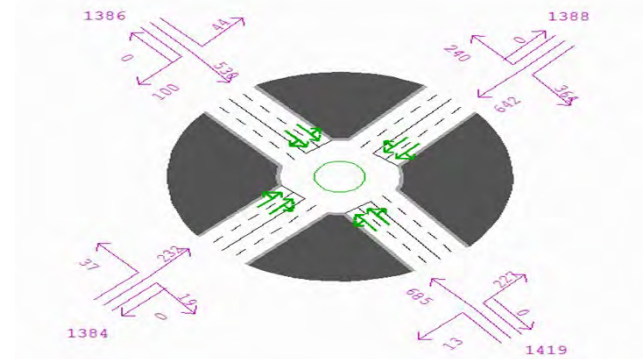
	A	B	C	D	Total
A	-	43	526	92	661
B	232	-	378	587	1197
C	724	217	-	13	954
D	33	221	19	-	273
Total	989	481	923	692	

Scenario 2 - AM Peak



	A	B	C	D	Total
A	-	121	392	32	545
B	35	-	163	216	414
C	648	363	-	74	1085
D	79	294	37	-	410
Total	762	778	592	322	

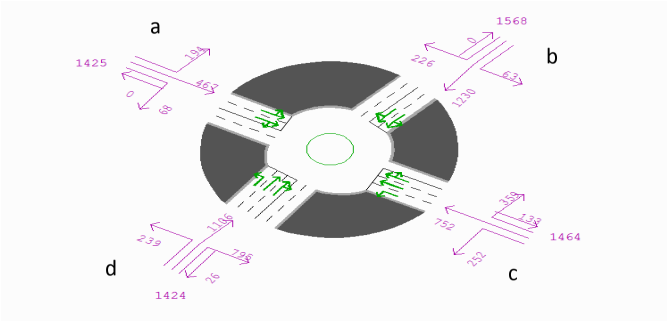
Scenario 2 - PM Peak



	A	B	C	D	Total
A	-	44	530	100	674
B	240	-	364	642	1246
C	685	227	-	13	925
D	37	232	19	-	288
Total	962	503	913	755	

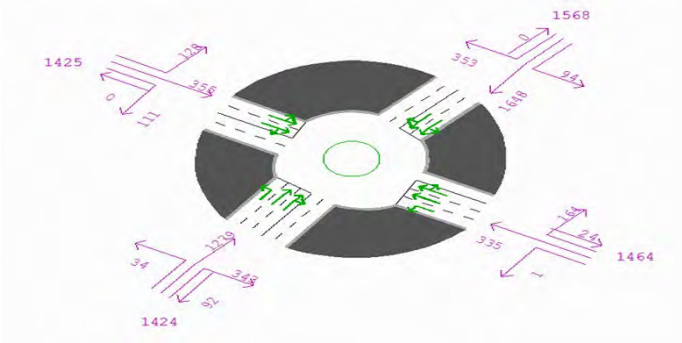
Elfield Park Roundabout

Scenario 1 - AM Peak



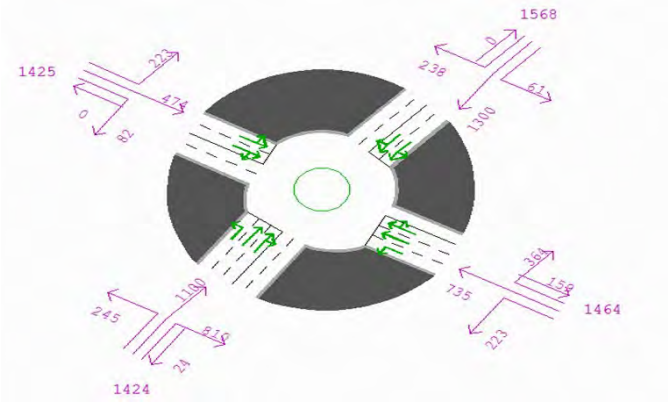
	A	B	C	D	Total
A	-	194	467	68	729
B	226	-	63	1230	1519
C	752	359	133	252	1496
D	239	1106	795	26	2166
Total	1217	1659	1458	1576	

Scenario 1 - PM Peak



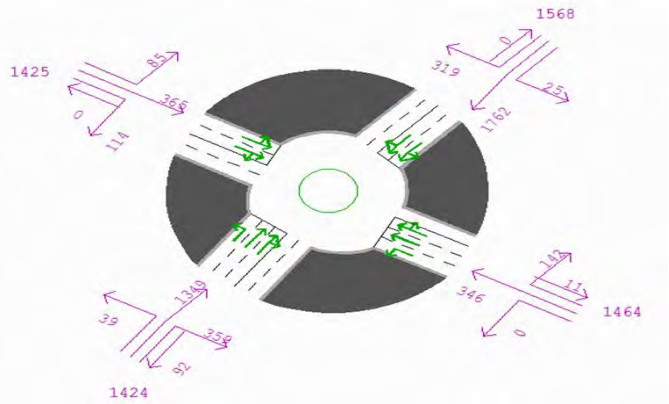
	A	B	C	D	Total
A	-	128	355	111	594
B	353	-	94	1648	2095
C	335	164	24	1	524
D	34	1279	343	92	1748
Total	722	1571	816	1852	

Scenario 2 - AM Peak



	A	B	C	D	Total
A	-	223	474	82	779
B	238	-	61	1300	1599
C	735	364	150	223	1322
D	245	1100	810	24	2155
Total	1218	1687	1345	1605	

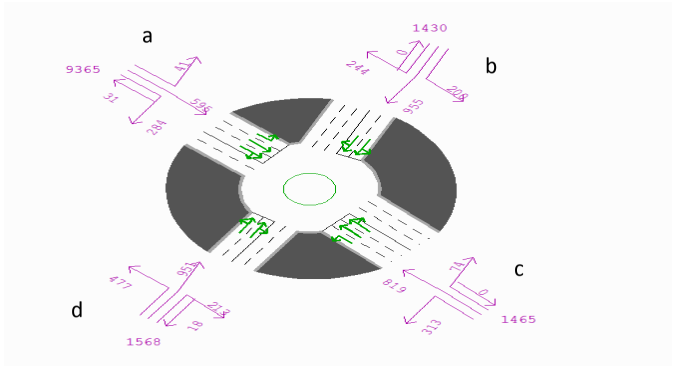
Scenario 2 - PM Peak



	A	B	C	D	Total
A	-	85	365	114	564
B	319	-	25	1762	2106
C	346	142	11	0	488
D	39	1349	359	92	1747
Total	704	1576	749	1876	

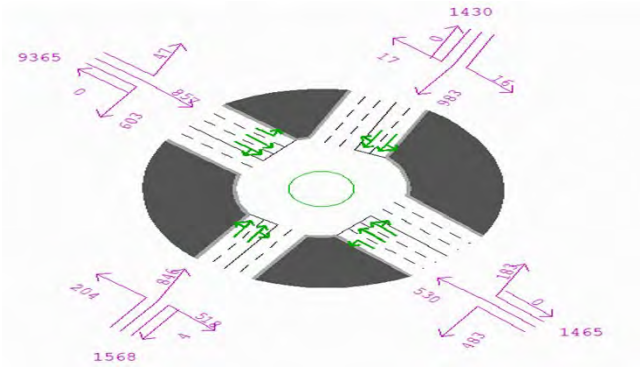
Bleak Hall Roundabout

Scenario 1 - AM Peak



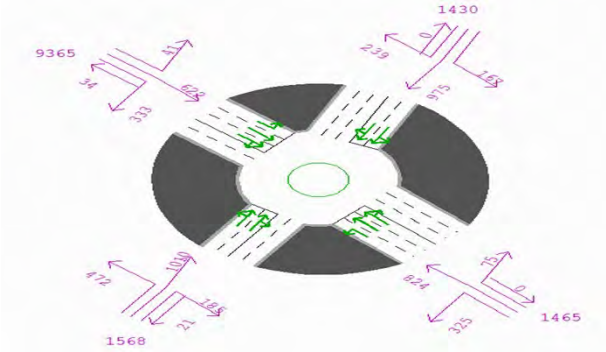
	A	B	C	D	Total
A	31	41	595	284	951
B	244	-	200	955	1399
C	819	74	-	313	1206
D	477	951	213	18	1659
Total In	1571	1066	1008	1570	

Scenario 1 - PM Peak



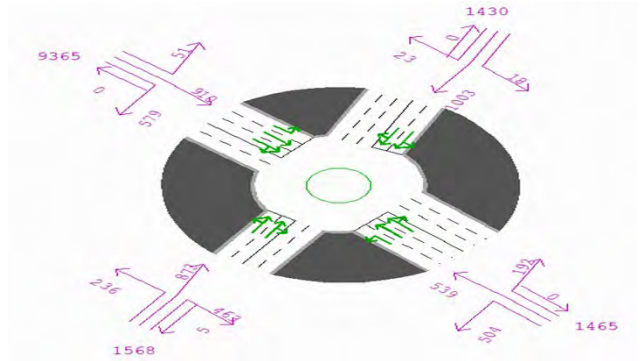
	A	B	C	D	Total
A	-	47	857	603	1507
B	17	-	17	983	1017
C	531	184	-	483	1198
D	204	846	518	4	1572
Total In	752	1077	1392	2073	

Scenario 2 - AM Peak



	A	B	C	D	Total
A	34	41	622	333	996
B	239	-	167	975	1381
C	824	75	-	325	1224
D	472	1010	185	21	1667
Total In	1535	1126	974	1633	

Scenario 2 - PM Peak



	A	B	C	D	Total
A	-	51	910	579	1540
B	23	-	18	1003	1044
C	539	192	-	504	1235
D	236	873	463	5	1572
Total In	798	1116	1391	2086	

Appendix M Additional Education Trip Assessment

Project :	South West Milton Keynes (SWMK)		
Date:	28-01-2016	Ref:	1067760/TN6 version 2
Subject:	**Technical Note 6** - Education Trips		

Introduction

BCC has expressed concern that the education trips included within the assessment for the proposed development at SWMK are too low. BCC believe that the Milton Keynes Traffic Model (MKTM) underestimates the future education trips, and the potential impact of the proposed development on the local area.

BCC and MKC confirmed at the meeting on 7 January 2016[1] that the 'primary school education' trips are not of concern, as the proposed school would essentially be provided to serve the development only and therefore any trips would be internalised and contained on the development road network.

SMT (on behalf of MKC) confirmed at the meeting on 7 January 2016 that the MKTM does not include primary school trips as they are assumed to be internal to each local grid area. Therefore Mouchel should consider the trips associated with a 600-pupil proposed secondary school located within the proposed development site.

There was some debate at the topic meeting held 7 January 2016 about the provision of secondary education and whether the proposed school would be either a comprehensive or a satellite Grammer school. At this stage, the nature of the secondary school provision is uncertain. Current advice from AVDC suggests that the school is likely to be a Comprehensive as opposed to a Grammer.

It is Mouchel's opinion that the split between external and internal trips is unlikely to vary to any great extent irrespective of the nature and type of school that is eventually provided. For the purpose of this Technical Note, Mouchel has assumed that the school would take the form of a typical Comprehensive.

Trips Included in the MKTM for SWMK

The MKTM Includes car trips from/to external locations for education purposes at the following rates:

		Trip Rate Per Pupil			Total Trips		
Schools		arrivals	departures	Totals	arrivals	Departures	totals
AM	08:00-09:00	0.007	0.006	0.012	8	7	15
PM	17:00-18:00	0.002	0.001	0.002	2	1	3

Table 1 – Education Trips by car within the MKTM for SWMK

Secondary School Trip Generation

Working from 'first principles' we can generate the number of staff and pupils likely to use a car for travel to/from the school.

[1] Topic Meeting held at AVDC's offices to discuss Transport and Masterplan issues

Pupils

The proposed school would cater for circa 600 pupils. It is assumed that with 30 pupils per class, the school would have 20 classes, across five year groups (Yr7-Yr11 – no sixth form), and would therefore be a '4-form entry' school.

Pupils will initially be allocated places at the school based on distance. Therefore it is assumed that the majority of pupils would live on the proposed development, and would therefore be considered in the assessment as internal trips (i.e. they would not impact on the external road network). It is only the pupils living outside the development that would generate external trips.

Data from Census 2011 for pupil travel to secondary schools in Buckinghamshire is presented in Table 2.

Travel Mode	BCC
Walk	30%
Cycle	2%
Car/Van	24%
Bus	43%
Train	2%

Table 2 – Secondary Pupil Travel Modes – Census 2011

BCC has suggested that based on data from 'Berryfields' in Aylesbury, approximately 75% of trips to school would be from the immediate local area, with 25% originating from further afield.

Considering this level of internal/external trips and travel mode as indicated in Table 2 above, pupil travel would be split as set out in Table 3.

Travel Mode	Proportion	Total Car Trips	Internal – 75%	External 25%
Car/Van	24%	144	108	36

Table 3 – Expected Pupil Car Travel

Based on Mouchel's work in the education sector, siblings at the same school are likely to account for at least 35% of the total school cohort. That is, 35% of the total pupil cohort would have at least one sibling. It is therefore reasonable to assume that siblings travelling by car would do so together (i.e. the same car trip). For robustness, Mouchel has assumed a 'sibling factor' of 20%. As such, the total car trips generated by pupil travel has been reduced by 20%, as shown in Table 4.

Travel Mode	External Trips – 75%	Proportion of Siblings	Siblings car trips	Total External Car Trips
Car/Van	36	20%	7	29

Table 4 – Expected Pupil Car Travel

It is assumed that the school day will begin around 0830 and will end around 1530. Although some pupils do attend 'before-school' and 'after-school' activities, the majority of pupils would travel between 0800-0900 and 1500-1600. It is therefore assumed that there would be no pupil trips during the period 1700-1800.

Staff

At a Comprehensive Secondary school with 600 pupils, and 20 classes, there should be 58 Full Time Equivalent (FTE) members of staff. The School Census[2] completed by the DfE details a pupil:teacher ratio of 14.9, and a pupil:adult ratio of 10.4 within secondary schools in England. Using these ratios, the following staff numbers can be generated:

- 40 teachers; and
- 18 non-teaching staff (bursars, technicians, secretaries).

Census 2011 data indicate that 20% of people travel less than 2km to get to work in Aylesbury Vale. These trips are highly likely to be made by walking and cycling, and given the rural location of the Site, can be considered to be internal trips. Therefore, assuming that each member of staff makes a trip (i.e: there is no car sharing etc), it is considered that 20% of the 58 trips (i.e: 12 trips) are made internally, with the remaining 80% (i.e: 46 trips) originating off-site.

The 46 external trips have been split by mode using journey to work data from the Census 2011 as shown in Table 5.

Travel Mode	Proportion	Staff Trips
Underground, metro, light rail, tram	0%	0
Train	5%	3
Bus, minibus or coach	3%	2
Taxi	1%	0
Motorcycle, scooter or moped	1%	0
Driving a car or van	73%	33
Passenger in a car or van	5%	2
Bicycle	2%	1
On foot	11%	5
TOTAL	100%	46 (External)

Table 5 – Staff Travel Modes – Census 2011

It is assumed that with a school start time of 0830, the majority of teaching staff will arrive between 0700-0800, with most support staff arriving between 0800 and 0900. For robustness, it is considered that 25% of teaching staff and 90% of non-teaching staff arrive between 0800 and 0900, as shown in Table 6. Similarly, staff departure times and trips are summarised in Table 7.

Travel Mode	Teaching Staff (69%)		Non-Teaching Staff (31%)		Total
0700-0800	75%	17	10%	1	18
0800-0900	25%	6	90%	9	15
TOTAL	100%	23	100%	10	33

Table 6 – Staff Car Arrival Trips

[2] DfE, 2015, School Workforce in England: Nov 2014

Travel Mode	Teaching Staff (69%)		Non-Teaching Staff (31%)		Total
1500-1600	25%	6	80%	8	14
1600-1700	50%	11	10%	1	12
1700-1800	25%	6	10%	1	7
TOTAL	100%	23	100%	10	33

Table 7 – Staff Car Departure Trips

Total Trip Generation

From the calculations above, the overall trip generation during the network peak hours is summarised in Table 8 below. It is assumed that during the peak AM period, pupils are dropped off by their parents and therefore the peak arrivals equals peak departures. Staff would leave the school campus between 1500 and 1800 hours.

	Vehicle Trips: 0800-0900			Vehicle Trips: 1700-1800		
	Arrivals	Departures	Total	Arrivals	Departures	Total
Staff	15	0	15	0	7	7
Pupils	29	29	58	0	0	0
TOTAL	44	29	73	0	7	7

Table 8 – Total Network Peak Hour Trip generation

Assessment of Impact

Comparing the secondary school trip generation in Table 1 with that calculated in Table 8 it can be seen that there is a difference in the flows predicted to be generated. As such, it is proposed that the higher education trips are included within the assessment of the proposed development for completeness. The net increase (Table 8 less Table 1) is 58 trips during the peak AM period and 4 trips during the peak PM period.

	Vehicle Trips: 0800-0900			Vehicle Trips: 1700-1800		
	Arrivals	Departures	Total	Arrivals	Departures	Total
MKTM	8	7	15	2	1	3
Proposed	44	29	73	0	7	7
Net Difference	36	22	58	-2	6	4

Table 9 – Comparison of Trip Generation

The additional trips would be assigned and - distributed in the same proportions as per the MKTM model flows.

Summary

The education trips within the SWMK MKTM have been reviewed, and when compared to a calculation of pupils/staff derived from first principles, there is a difference in the number of trips generated.

When distributed across the local highway network, it is considered that the impact of the additional trips generated by the education provision will be indiscernible, and will not cause the proposed access arrangements to operate over capacity. Notwithstanding this summary, it is agreed with BCC and MKC that the additional education trips would be added to the MKTM trips to present a robust assessment.

End.

Stephanie Howard

From: Stephanie Howard
Sent: 11 March 2016 15:40
To: 'Smith, RichardN'; Christine Urry
Cc: Nigel Weeks (smt@smtrans.co.uk); Andy Swannell (andy.swannell@milton-keynes.gov.uk); Martin Paddle
Subject: FW: SWMK - Education Trips
Attachments: Education trip calcs 2016-03-11_SH.xlsx; School Bus Catchments.pdf

Richard,

Please find below our response to your points:

R1 - No response needed.

R2 – We still disagree regarding the reassignment, however we are looking at the approach with no reassignment as the "worst-case" as explained previously.

R3 - No response needed.

R4 –The rail trips are 1.7% of the mode share. We can reassign them to car/bus only, but it makes very little difference to the table – in fact, the only change is a reduction of 1% in walking proportions. See below.

Pupil Travel Mode	BCC
Walk	29.6%
Cycle	1.6%
Car/Van	24.4%
Bus	44.3%
Train	0%

R5 – The design of the school is not a matter for the outline planning application. Accommodating school buses in the design of the school will be considered at reserved matters stage. Any financial contributions potentially required towards school buses is a matter for the education team at BCC to consider, not the highways team.
We will include school buses within the assessments. The number of school buses is difficult to determine without knowing the catchment of the pupils. However, from the pupil trip generation as calculated in R6 below, there would be 36 external bus trips to the school. We will assume all of those originate in Bucks rather than Milton Keynes (for robustness, but probably unrealistic as some would come from MK). 36 pupils would fit on one bus, however it is acknowledged that various routes would probably be used given varying pupil home locations. We have assumed that there may be three school bus routes used as per the plan attached, probably using minibuses given the number of pupils, and hence three trips in/out have been included in the AM peak.

R6 – Following the logic through to enable 24% car/van trips as per Census, to the internal/external split from NTS, the pupil trip generation is as per below.

Mode	Mode Splits		Pupil Trips		Overall Trips	Overall % Mode Split
	Internal (under 1 mile)	External (over 1 mile)	Internal (under 1 mile)	External (over 1 mile)		
Walk	85%	13%	381	20	401	67%
Bicycle	2%	2%	11	3	14	2%
Car / van	12%	61%	55	92	146	24%
Bus	1%	24%	3	36	39	6%
All modes	100%	100%	450	150	600	100%

Travel Mode	External Trips – 75%	Proportion of Siblings	Siblings car trips	Total External Car Trips
Car/Van	92	20%	18	73

R7 - No response needed.

R8 - I had amended the tables in my email of 09/03. No further response needed.

R9 - I had amended the tables in my email of 09/03. No further response needed.

In summary, the total additional trips included in the modelling is as below:

	AM Peak (0800-0900)			PM Peak (1700-1800)		
	In	Out	Total	In	Out	Total
Secondary Pupil Car Trips	73	73	146	0	0	0
Secondary Staff Car Trips	24	0	24	0	15	15
School Bus Trips	3	3	6	0	0	0
Total Secondary Trips	**101**	**76**	**177**	**0**	**15**	**15**
MKTM Education Trips	7	8	15	1	2	3
Additional Education Trips	**94**	**68**	**162**	**-1**	**13**	**12**

In order for you to follow the calculations through (if required), I have attached our spreadsheet for the above. We are rerunning our modelling to take into account the above pupil trip generation amendments. The modelling will be presented in TN7 shortly.

Kind Regards
Steph

Steph Howard
Technical Manager – Transport & Development Planning
T: 01483 731254 I M: 07976 344303

From: Smith, RichardN [mailto:RichardN.Smith@jacobs.com]
Sent: 11 March 2016 10:11
To: Stephanie Howard <Stephanie.Howard@mouchel.com>; Christine Urry <curry@buckscc.gov.uk>
Cc: Nigel Weeks (smt@smtrans.co.uk) <smt@smtrans.co.uk>; Andy Swannell (andy.swannell@milton-keynes.gov.uk) <andy.swannell@milton-keynes.gov.uk>
Subject: RE: SWMK - Education Trips

Hi Steph

We have annotated each comment below with a number (e.g. R1) and I enclose a separate Word document with our response which references that number. I agree, we are looking to close these matters out so where appropriate we have suggested a way forward / resolution to each point.

Kind regards

Richard Smith | **Jacobs** | Divisional Director | Transport Planning | Direct Dial +44 (0) 118.946.7620 | richardn.smith@jacobs.com | www.jacobs.com

---

From: Stephanie Howard [mailto:Stephanie.Howard@mouchel.com]
Sent: 04 March 2016 12:35
To: Smith, RichardN; Christine Urry
Cc: Nigel Weeks (smt@smtrans.co.uk); Andy Swannell (andy.swannell@milton-keynes.gov.uk)
Subject: FW: SWMK - Education Trips

Richard,

Please see responses to your queries in red below. I do hope that we can agree these parameters - we are now progressing with the modelling assessments as per the methodologies outlined below.

Kind Regards
Steph

Steph Howard
Technical Manager – Transport & Development Planning
T: 01483 731254 I M: 07976 344303

From: Smith, RichardN [mailto:RichardN.Smith@jacobs.com]
Sent: 09 February 2016 16:51
To: Stephanie Howard <Stephanie.Howard@mouchel.com>; Christine Urry <curry@buckscc.gov.uk>
Cc: Nigel Weeks (smt@smtrans.co.uk) <smt@smtrans.co.uk>; Andy Swannell (andy.swannell@milton-keynes.gov.uk) <andy.swannell@milton-keynes.gov.uk>
Subject: RE: SWMK - Education Trips

Hi Steph

In advance of any further technical reporting from Jacobs, please find below some comments on TN's 4 to 6, supplied by Mouchel regarding SWMK. I would welcome your view and happy to discuss any of the points on the phone.

Growth Factors (Ref TN5)
We have undertook a calculation to establish the growth factors for 2015 to 2026 consistent with WebTAG guidance on application of TEMPRO outside of a highway model. See enclosed the results. We therefore do not agree with the factors proposed by Mouchel.
See email of 10th Feb. Further to that email, the DfT Road Traffic Forecasts 2015 reviews five scenarios for growth between 2010 and 2040. The scenarios suggest growth of between 19% and 55% over that period (para 3.18). Taking the scenario which produces the highest growth for maximum robustness, and assuming a linear growth pattern, that equates to 1.8% per year. For our growth scenario from 2015 to 2026, an 11 year period, the growth would be just under 20%. As we understand it from DfT, a new version of TEMPRO will be released in the summer 2016 to take account of the revised lower growth rates now forecast compared to those included in the current version of TEMPRO which are proven to be overly pessimistic. The data from the Road Traffic Forecasts supports our assertion in my email of 10th Feb that a 35% growth rate from 2015-2026 is too high. Hence we still

propose to use growth at 26% AM/27% PM as per your spreadsheet, but on the understanding that this represents a very robust growth rate. R1

Traffic Re-assignment A421 (Ref TN4)

We do not accept the explanation provided by Mouchel related to traffic re-assignment and do not consider that a lower level of 'with development' traffic volume than the baseline is an acceptable basis for the assessment of a development proposal. First of all, we know that the model flows and journey times have not been calibrated or validated on this corridor in Buckinghamshire, so we have no evidence to suggest whether the model is accurate in that regard. Furthermore, your TN4 shows the forecast models, overall, do not converge to WebTAG standards. However, the key question here is the reason for the re-assignment of traffic away from the A421 corridor. This re-assignment suggests the model is forecasting that trips that use this corridor without the SWMK development in place are now being discouraged from doing so. This suggests that the performance of the route, relative to other routes, has significantly degraded with SWMK in place, presumably as a result of the introduction of additional link or junction performance issues that arise as a direct result of the development. We have not been advised that the model is suggesting any links or junctions are operating in such a way as to deter traffic using them, and further commentary would be required to understand the cause of such a re-assignment. If the corridor is not functioning in a way that would accommodate existing and forecast trips, then the corridor would need to be upgraded to allow this to happen, avoiding detrimental impacts on other routes and junctions.

We disagree with your interpretation of the reassignment. Only a marginal change in travel costs would be sufficient to re-assign traffic to alternative routes, there is no indication that the route has 'significantly degraded' with SWMK in place. As you know, we have no more information on the validation of the model, therefore I don't think we will ever agree on this point! If the corridor is not functioning well enough to accommodate existing and future base traffic, then upgrading the corridor is clearly not something that SWMK would be providing! If there is an impact requiring mitigation as a result of SWMK, we will consider mitigation as appropriate.

We need to be able to move forwards, and complete the assessment work ASAP. Therefore, as we agreed at the last technical meeting on 13th November, we will do some sensitivity tests regarding the reassignment of traffic. We will include the following tests:

- no reassignment - the absolute worst case which we do not believe is realistic for reasons previously described;
- partial reassignment; and
- full reassignment (which we feel is appropriate). R2

Education Trips (Ref TN6)

We have the following initial comments/points of clarification on the technical note.

- Could you confirm the number of pupils that is assumed for the calculation in Table 1 and what that number relates to? Table 1 shows the flows taken from the MKTM, which includes 600 secondary pupils and 630 primary pupils, as detailed in Table 3.1 of TN1. R3
- Table 2. The mode share assumptions seem inappropriate e.g. assuming a 2% mode share on rail, when there is no train station in a reasonable vicinity of the school. As part of the SWMK public transport strategy, there will be bus links between the Site and both MK and Bletchley rail stations, therefore it is reasonable to assume that there could be some trips made by rail as the main mode of travel. For info, 2% of the pupil trips is equivalent to just 12 trips. If we were to remove those rail trips, and reassign them in the same proportions as the other modes, a replacement Table 2 would look like this:

Pupil Travel Mode	BCC
Walk	31%
Cycle	2%
Car/Van	24%
Bus	44%
Train	0%

As you can see, the proportion of car/van trips does not change, therefore for the purposes of junction/traffic modelling, the inclusion or not of rail trips is irrelevant. R4

- Table 2. If you're saying that 43% of the external school trips would be served by bus, it would be helpful to have more detail on the bus provision to ensure that a sufficiently broad geographical area would be adequately served by bus. Could you outline the expected approach to providing for external bus mode of travel including regular and school services. Although modest in number, we'd also like to understand how the volume of school buses is being accounted for in the traffic assessment methodology. There is a statutory duty placed on BCC to ensure pupils are able to access schools. The statutory duty requires authorities to provide bus travel to pupils that live over 3km from their closest school. As such, BCC's education transport team would need to liaise with the school, once catchments are defined, to ensure appropriate bus provision is in place. There is a comprehensive public transport strategy included within the TA, with a bus strategy proposed to link with existing buses into Milton Keynes. The strategy is also included within the comprehensive Framework Travel Plan which has been agreed with BCC, MKC and Highways England. More detailed plans will be submitted prior to first occupation of the school and elements of the residential development in due course, and will be secured through a planning publication or condition. **R5**

- Tables 2/3. The mode share assumptions that have been made are the same regardless of whether the trips are internal (which would have a relatively lower car mode share compared to the average) or external (which would have a higher car mode share). Given the location of the proposed development and the likely walk travel distances for many, a 30% walk mode share does not appear to be realistic, although a 2% cycle mode share appears pessimistic, assuming appropriate cycle facilities are provided. On the basis that the data represents an overall average for all travel distances, this could be an under-estimate for external car/van based travel. Agreed the mode splits would be different for internal and external trips. We didn't include this in TN6 as we felt it was getting too complicated and in-depth for the level of trips we are talking about! Using data from National Travel Survey table NTS0614 the following proportions should be used for the travel mode proportions for secondary pupils (adjusted to remove rail travel):

	NTS0614		Without rail	
	Internal (under 1 mile)	External (over 1 mile)	Internal (under 1 mile)	External (over 1 mile)
Walk	90%	23%	91%	24%
Bicycle	3%	3%	3%	4%
Car / van	6%	29%	6%	31%
Bus	1%	38%	1%	41%
Other transport	1%	7%	0%	0%
All modes	100%	100%	100%	100%

Using these proportions, the secondary pupil trips would be as follows:

	Internal (under 1 mile) 75%	External (over 1 mile) 25%
Walk	410	37
Bicycle	12	5
Car / van	26	46
Bus	3	61
Other transport	0	0
All modes	450	150

The sibling proportion of 20% then needs to be applied to the car trips:

Travel Mode	External Trips – 75%	Proportion of Siblings	Siblings car trips	Total External Car Trips
Car/Van	46	20%	9	37

Using this methodology, there would be an additional 8 pupil car trips than proposed in TN6. We are progressing on the basis of this methodology unless we hear otherwise from you in the next few days with any alternative methodology with supporting evidence. **R6**

- Table 5. The Census journey to work proportions used in the table are presumably for all trip lengths. However, the previous paragraph already excluded trips less than 2km. Therefore, the trip proportions in table 5 should be similarly adjusted. Train doesn't appear to be a plausible choice of mode given travel distances. Following the same logic as for pupils, using National Travel Survey Table NTS0308, the travel mode proportions for staff should be as follows:

	NTS0308		Without rail	
	Internal (under 1 mile)	External (over 1 mile)	Internal (under 1 mile)	External (over 1 mile)
Walk	76%	7%	77%	8%
Bicycle	1%	2%	1%	2%
Car / van	21%	76%	21%	83%
Local bus	1%	6%	1%	7%
Rail	0%	6%	0%	0%
Other transport	1%	3%	0%	0%
All modes	100%	100%	100%	100%

Approximating the internal trip distance of 2km in TN6 to the NTS distance of 1 mile, the following trips are generated: **R7**

	Internal (under 1 mile) 20%	External (over 1 mile) 80%
Walk	9	4
Bicycle	0	1
Car / van	2	39
Local bus	0	3
Rail	0	0
Other transport	0	0
All modes	12*	46*

*columns don't total due to rounding

- Assumptions have been made about the arrival and departure profiles of trips in Table 6. For robustness, it would offer more confidence if it was assumed all AM peak trips arrive 0800-0900. With secondary schools usually opening their doors to pupils between 0815 and 0830, it is completely unreasonable to think that teaching staff would arrive between 0800-0900! Teaching staff would arrive well before 0800 to be ready to welcome pupils. Hence the calculations assumed a proportion of only 75% of teaching staff arriving earlier, with 25% still arriving during the peak hour. We believe this to be a very robust assessment and do not see the need to 'offer more confidence' when the assumptions are perfectly sound. Non-teaching staff are more likely to arrive later, hence 90% are included in the 0800-0900 peak, with just 10% such as the headteacher and front-line office staff arriving before 0800. To enable us to move forwards with the assessments, we are prepared to assign the teaching staff trips in the proportion 50/50 (0700-0800/0800-0900) as a compromise. **R8**

Travel Mode	Teaching Staff (69%)		Non-Teaching Staff (31%)		Total
0700-0800	50%	**13**	10%	1	21
0800-0900	50%	**14**	90%	11	17
TOTAL	100%	**27**	100%	12	39

- Similarly, the rationale for the departure profiles in Table 7 should be explained and robust assumptions made. Teaching staff are likely to leave at a variety of times following the end of the school day. Secondary schools usually finish the day at around 1515-1530. Some teaching staff will leave immediately, taking work home with them, hence the 25% of staff leaving between 1500-1600. The majority of teaching staff will

clear classrooms ready for the next day and gather marking/preparations work to take home for that evening, hence 50% of staff will leave between 1600-1700. Some teaching staff prefer to stay at school and complete some marking/preparations before leaving, hence the remaining 25% have been allocated to leave between 1700-1800. We believe that this is a robust departure profile for teaching staff. Non-teaching staff are more likely to leave immediately upon the school day finishing (kitchen staff, teaching assistants, technicians etc.), hence 80% are assumed to leave between 1500-1600. Office staff and some technicians are likely to finish paperwork and prepare for the next day, hence we have assumed 10% leave between 1600-1700. The headteacher and business manager and a small number of other support staff would stay later at work, hence we have assumed 10% would leave during the PM peak of 1700-1800. We believe that this is a robust set of assumptions for the non-teaching staff. To enable us to move forwards with the assessments, we are prepared to assign the teaching staff trips in the proportion 25/25/50 (1500-1600/1600-1700/1700-1800) as a compromise. Hence, the departures profile would be as follows:

Travel Mode	Teaching Staff (69%)		Non-Teaching Staff (31%)		Total
1500-1600	25%	7	80%	10	16
1600-1700	25%	7	10%	1	15
1700-1800	50%	13	10%	1	8
TOTAL	100%	27	100%	12	39

Using this methodology, there would be an additional 10 staff car trips in the AM peak and 7 staff car trips in the PM peak compared to that proposed in TN6. We are progressing on the basis of this methodology unless we hear otherwise from you in the next few days with any alternative methodology with supporting evidence. **R9**

- It is premature to be making statements in the note about indiscernible impact. No response required.

Kind regards

Richard Smith | **Jacobs** | Divisional Director | Transport Planning | Direct Dial +44 (0) 118.946.7620 | richardn.smith@jacobs.com | www.jacobs.com

---

From: Stephanie Howard [mailto:Stephanie.Howard@mouchel.com]
Sent: 05 February 2016 10:11
To: Christine Urry
Cc: Smith, RichardN; Nigel Weeks (smt@smtrans.co.uk); Andy Swannell (andy.swannell@milton-keynes.gov.uk)
Subject: RE: SWMK - Education Trips

Hi Chrissy,

Are you able to respond regarding the education trips for the SWMK development? We need to progress with the modelling and therefore require agreement on these trips (and the other parameters as sent to you before Christmas) asap.

I look forward to hearing from you shortly.

Kind Regards
Steph

Steph Howard
Technical Manager – Transport & Development Planning
T: 01483 731254 I M: 07976 344303

From: Stephanie Howard
Sent: 28 January 2016 16:15
To: Christine Urry <curry@buckscc.gov.uk>; Andy Swannell (andy.swannell@milton-keynes.gov.uk) <andy.swannell@milton-keynes.gov.uk>; Nigel Weeks (smt@smtrans.co.uk) <smt@smtrans.co.uk>; Richard Smith (richardn.smith@jacobs.com) <richardn.smith@jacobs.com>
Subject: SWMK - Education Trips

Chrissy,
Please find attached TN6 regarding education trips for the SWMK proposed development. Please review and get back to us with any comments ASAP.
Kind Regards
Steph

Steph Howard
Technical Manager – Transport & Development Planning

Mouchel Consulting I Export House, Cawsey Way, Woking, Surrey GU21 6QX
T: 01483 731254 I M: 07976 344303 I www.mouchel.com

Connect with us I follow us on LinkedIn I like us on Facebook I follow us on Twitter I follow us on Google+
Our values are enthusiastic, collaborative and forward-thinking

Mouchel Limited I Registered in England No. 1686040
Registered Office: Tempsford Hall, Sandy, Bedfordshire, SG19 2BD
Part of the Kier Group

NOTICE - This communication may contain confidential and privileged information that is for the sole use of the intended recipient. Any viewing, copying or distribution of, or reliance on this message by unintended recipients is strictly prohibited. If you have received this message in error, please notify us immediately by replying to the message and deleting it from your computer.

Jacobs U.K. Limited
1180 Eskdale Road, Winnersh, Wokingham RG41 5TU
Registered in England and Wales under number 2594504

Introduction

Jacobs has been asked to provide a review and response to the content of an e-mail received from Mouchel on 4/3/16. The e-mail provides a response to queries raised by Jacobs and BCC including the calculation of the pupil and staff trips to a planned secondary school in the development south west of Milton Keynes.

The below provides a summary of the initial query, Mouchel's response, and Jacobs response to this.

Responses

R1
As per my e-mail of 19/02, I have accepted (and we have agreed) the 26-27% rather than the 35% which current guidance and NTEM rates show is the rate that should be used outside of a highway model. As such, I have accepted a compromise position and do not consider this to be a very robust growth rate.

R2
The evidence Mouchel are presenting is a comparison between the 'with SWMK' and 'without SWMK' scenarios. The re-assignment effect is therefore a direct result of the proposals and a major shift in traffic (such as one that reduces traffic levels to less than those that would be prevalent without this development in place) can only be a result of degraded performance (increased delay) on the corridor. The only plausible explanation of the re-assignment effects is as previously stated and these would need to be investigated fully as part of a Transport Assessment.

In terms of what was previously agreed, Item 39 in the meeting minutes of 13 Nov 2015 required an explanation and valid reason for the reduction in traffic volume to be provided. One has not been forthcoming. The appropriate basis for the assessment in our opinion is the methodology agreed as per that meeting which is a traditional approach of TEMPRO factors applied to junction models. Therefore the partial and full re-assignment results are not considered an appropriate basis for the assessment.

R3
Noted

R4
It is noted that the data provided in the replacement Table 2 (shown above) is derived from data from Census 2011 for pupil travel to secondary schools in Buckinghamshire and therefore has a local context.

Reassigning the 2% of rail trips in the same proportions as the other modes is not appropriate. It would be more appropriate to assign the 2% of rail trips to car/ van and bus modes only.

It is noted that the mode share percentages presented in the replacement Table 2 in the e-mail dated 4/3/16 do not add up to 100%.

Suggested approach to resolve the above:

- Assign the 2% of rail trips to car/ van and bus modes only and recalculate the percentages presented in the replacement Table 2.
- Show that the mode shares presented add up to 100%.

R5

It is noted from Mouchel's response that there is commitment to deliver a comprehensive public transport strategy and a travel plan. It is noted that there is acceptance that these will be secured through a planning condition.

No response has been given by Mouchel to how the number of school buses is accounted for in the assessment methodology. Can this be provided. The number of school buses expected will need to be accommodated in the design of the school, which can be discussed and agreed as part of reserved matters.

Suggested approach to resolve the above:

- Agree the planning conditions required and, if necessary, the level of financial contribution needed.
- Provide further information on the number of school buses expected.

R6

It is noted that Mouchel agree that mode splits would be different for internal and external trips. A lot of detail has been provided on the breakdown and assumptions in TN06, so it is commensurate with the work already done by Mouchel to add the depth and consider different mode shares for internal and external trips. A methodology for using the information provided in the e-mail dated 4/3/16 to derive internal/ external car trips is provided below.

Prior to this, commentary is provided on flaws in the revised methodology outlined in the e-mail dated 4/3/16:

- The National Travel Survey data in Table NTS0614 and the without rail data for internal (under 1 mile) does not add up to 100%.
- The National Travel Survey data in Table NTS0614 is provided and adjusted for rail. Again, the adjustment for rail would be more appropriate if only applied to car/ van and bus. The without rail mode shares should be recalculated.
- The National Travel Survey data in Table NTS0614 adjusted for rail has been applied to the number of secondary school pupils (600) and the results from this presented as the methodology Mouchel intend to proceed with. The National Travel Survey data in Table NTS0614 presents data at a national level, and therefore is not reflective of the local context. Mouchel has previously presented data from the Census 2011 for pupil travel to secondary schools in Buckinghamshire. This allows a check of the car mode share and trip numbers calculated from the National Travel Survey data in Table NTS0614 (presented by Mouchel) and the mode shares in the local Census 2011 data. This is summarised in the table below:

	Data provided by Mouchel		**Jacobs calculated from data provided by Mouchel**		**2011 Census mode share for secondary schools in Buckinghamshire (Mouchel adjusted, noting that this equals 101%)**
	Internal (under 1 mile) 75%	**External (over 1 mile) 25%**	**Total of internal and external trips**	**Mode share % for total trips**	
Car / van	26	46	72 (26+46)	12% (72 / 600)	24%

This shows that Mouchel's intention to apply data from the National Travel Survey data in Table NTS0614 to the number of secondary school pupils would result in an underestimate of the total number of pupils travelling by car/ van.

Therefore the internal/ external trip numbers need to be recalculated and the analysis which shows an additional 8 pupil car trips than proposed in TN6 is considered to be flawed.

A simplistic approach for determining the number of internal and external car trips only would be to use the ratio of 12% to 24%, which requires doubling of the 46 external car trips to 92. The number of internal car trips would be 52. The 20% sibling discount could be applied to the 92 external and 52 internal, which would give a total of 73 external car trips and 41 internal car trips for consideration in the assessment.

Suggested approach to resolve the above:

- Assign the rail trips to car/ van and bus modes only and recalculate the percentages presented.
- Show that the mode shares presented add up to 100%.
- Re-calculate the internal and external car/ van trips using the ratio of the NTS derived mode share and 2011 census mode share. Then apply the sibling discount.

R7

Using data from the NTS which is specific to school staff travel is likely to give a better representation of staff travel behaviour, compared to the 2011 Census for all travel to work. Using the trip generations as presented for staff travel is acceptable.

R8

Assigning the teaching trips 50:50 is acceptable. It does appear however that some of the numbers presented in Mouchel's table have been miscalculated, and table headings incorrect. It is assumed that the table should show the following:

Time Period	Teaching Staff (69%)		Non-Teaching Staff (31%)		Total
0700-0800	50%	13	10%	1	14
0800-0900	50%	14	90%	11	25
TOTAL	100%	27	100%	12	39

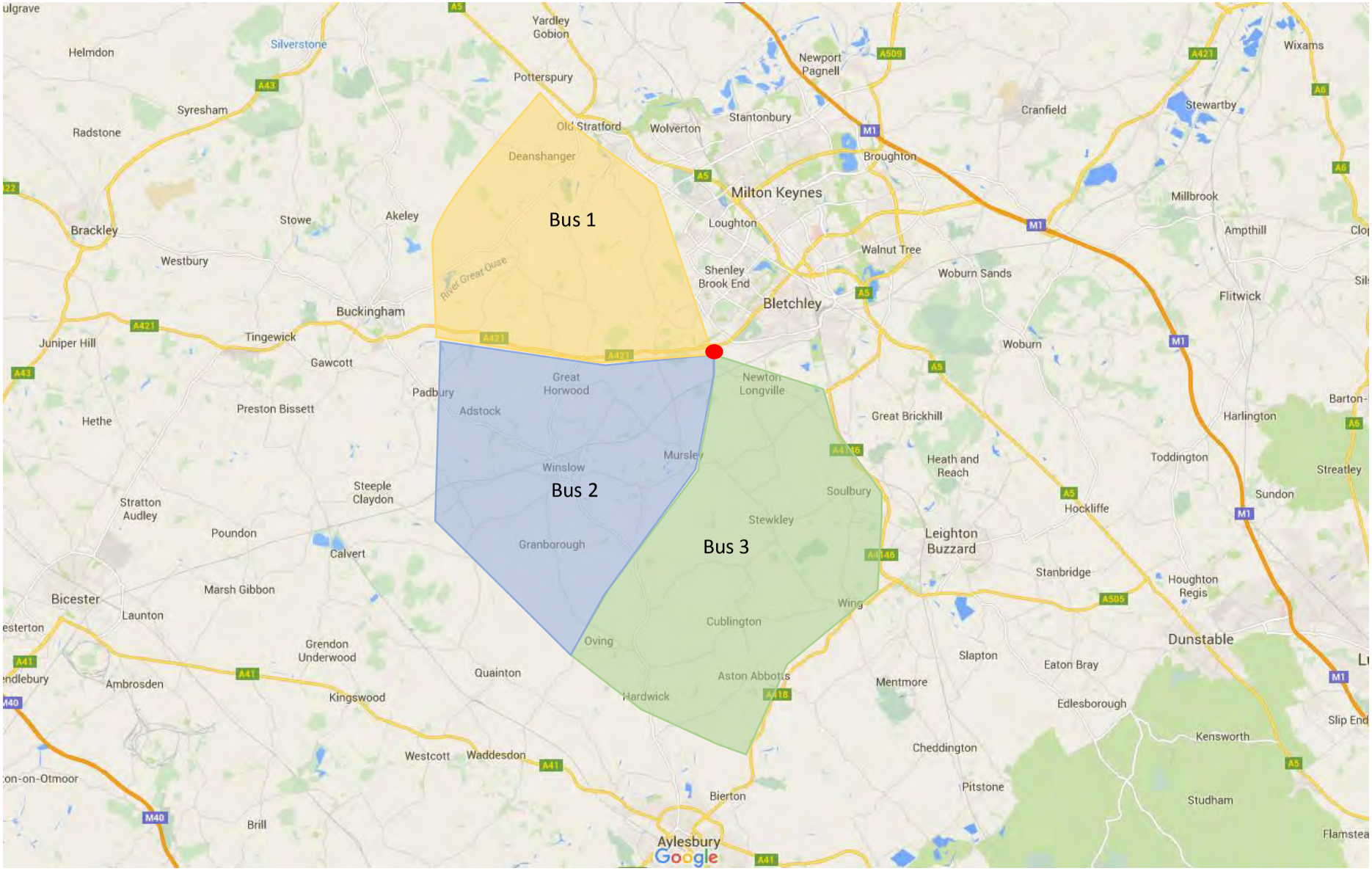
R9

Assigning the teaching trips 25/25/50 (1500-1600/1600-1700/1700-1800) is acceptable. It does appear however like some of the numbers presented in Mouchel's table have been miscalculated. It is assumed that the table should show the following:

Travel Mode	Teaching Staff (69%)		Non-Teaching Staff (31%)		Total
1500-1600	25%	7	80%	10	17
1600-1700	25%	7	10%	1	8
1700-1800	50%	13	10%	1	14
TOTAL	100%	27	100%	12	39

It is agreed that by using the above methodology there would be an additional 10 staff car trips in the AM peak and 7 staff car trips in the PM peak compared to that proposed in TN6.

SWMK
Potential School Bus Catchments



Steph Howard
11/03/2016

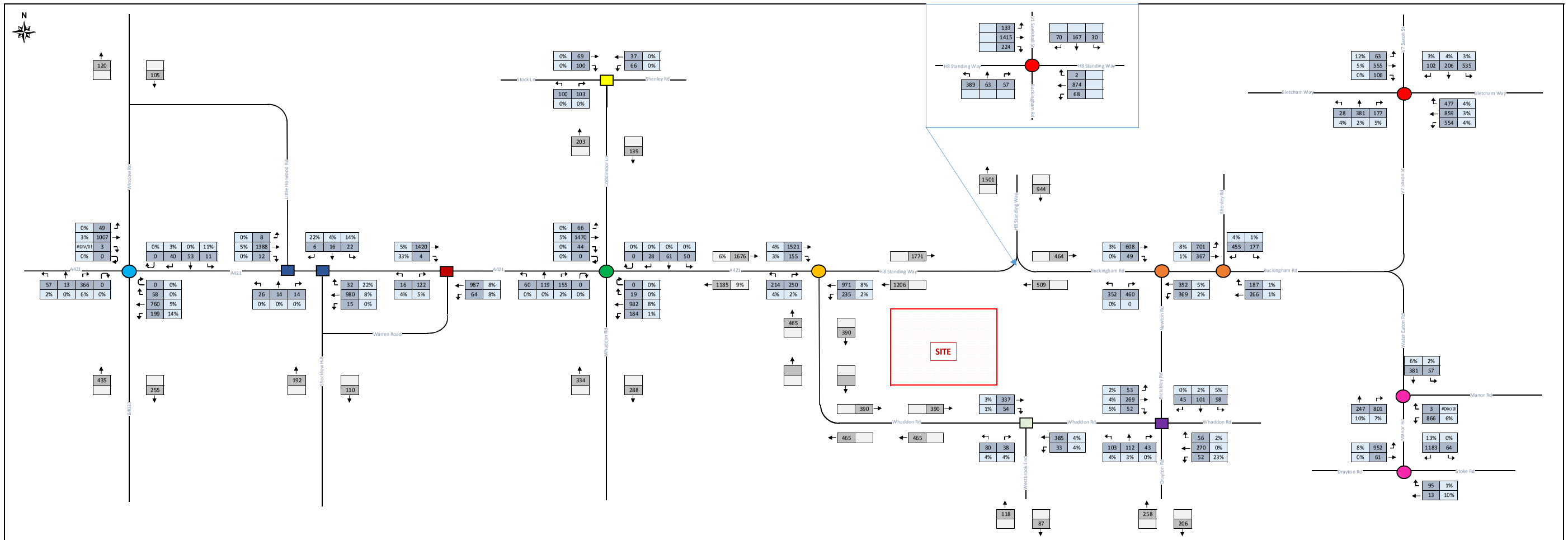
04/03/2016

Pupil Travel Mode	BCC			no rail travel
Walk	30%	30%	0.6%	31%
Cycle	2%	2%	0.0%	2%
Car/Van	24%	24%	0.5%	24%
Bus	43%	43%	0.9%	44%
Train	2%			0%

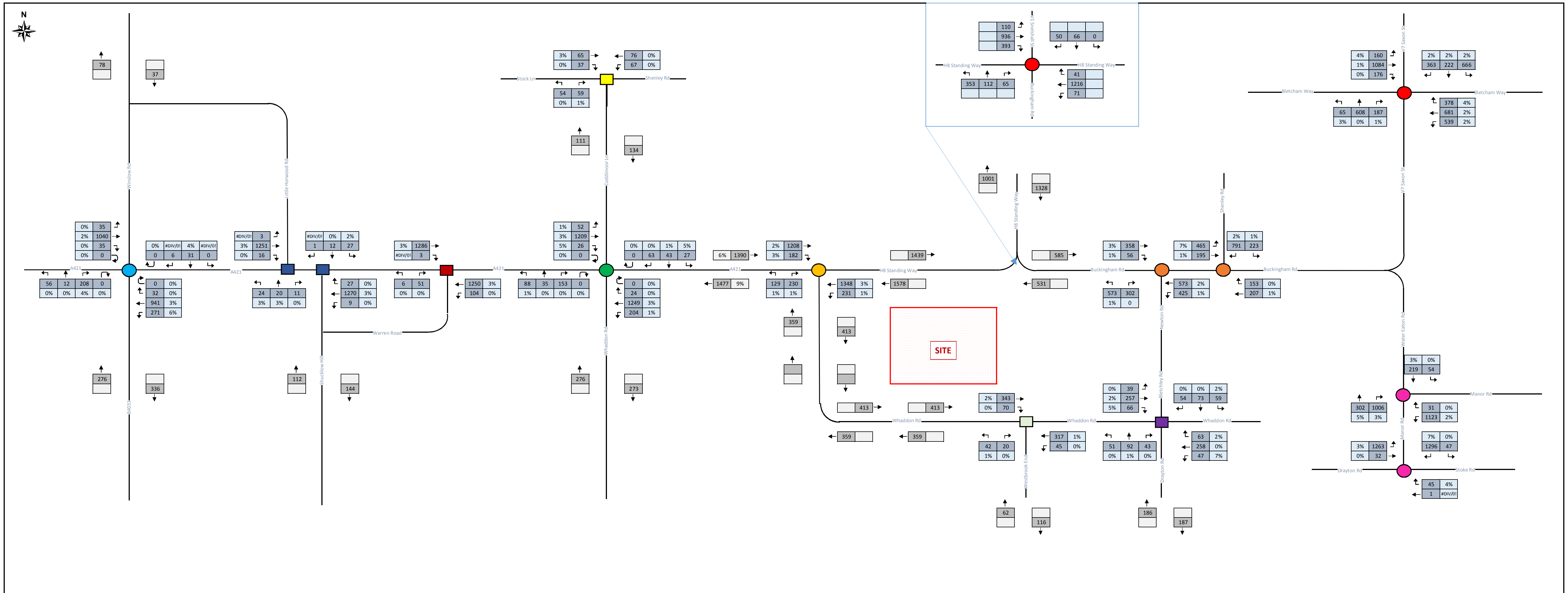
11/03/2016

Pupil Travel Mode	BCC			no rail travel
Walk	29.6%			29.6%
Cycle	1.6%			1.6%
Car/Van	23.7%	35.4%	0.7%	24.4%
Bus	43.0%	64.2%	1.3%	44.3%
Train	1.7%			0%

Appendix N Traffic Flow Diagrams – 2026 Base and 2026 Base + Development



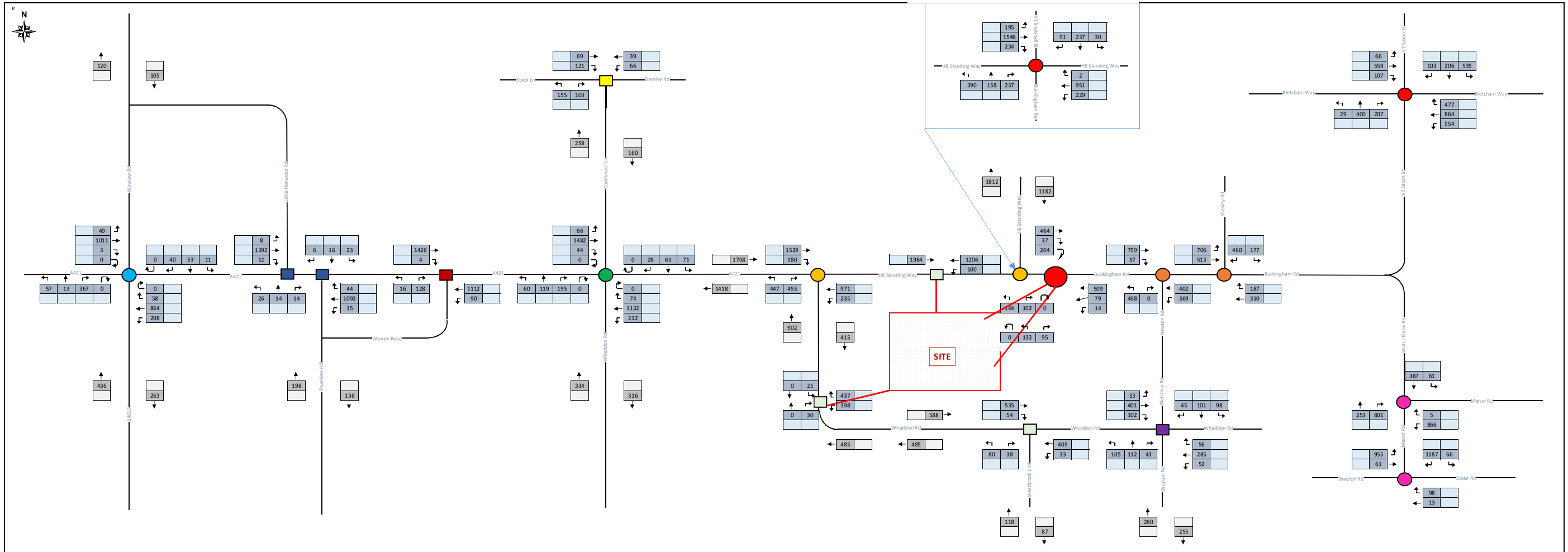
mouchel building great relationships	Drawing Ref No.		Drawn by	Date	Checked by	Date	Approved by	Date
Export House, Cawsey Way, Woking	Project	South West Milton Keynes	FSC	10/03/2016	RS	10/03/2016	SH	09/08/2016
Surrey, GU21 6QX	Title	2026 Base Traffic AM Peak hour (08:00-09:00)	Notes: 2015-2026 AM Peak Growth Rate 1.2609				Scale: NTS	
T: 01483 731000 F: 01483 731010							Job No. 1067760	
							Client SWMK Consortium	
							Drawing No. TN7_AppB3	Rev. 1



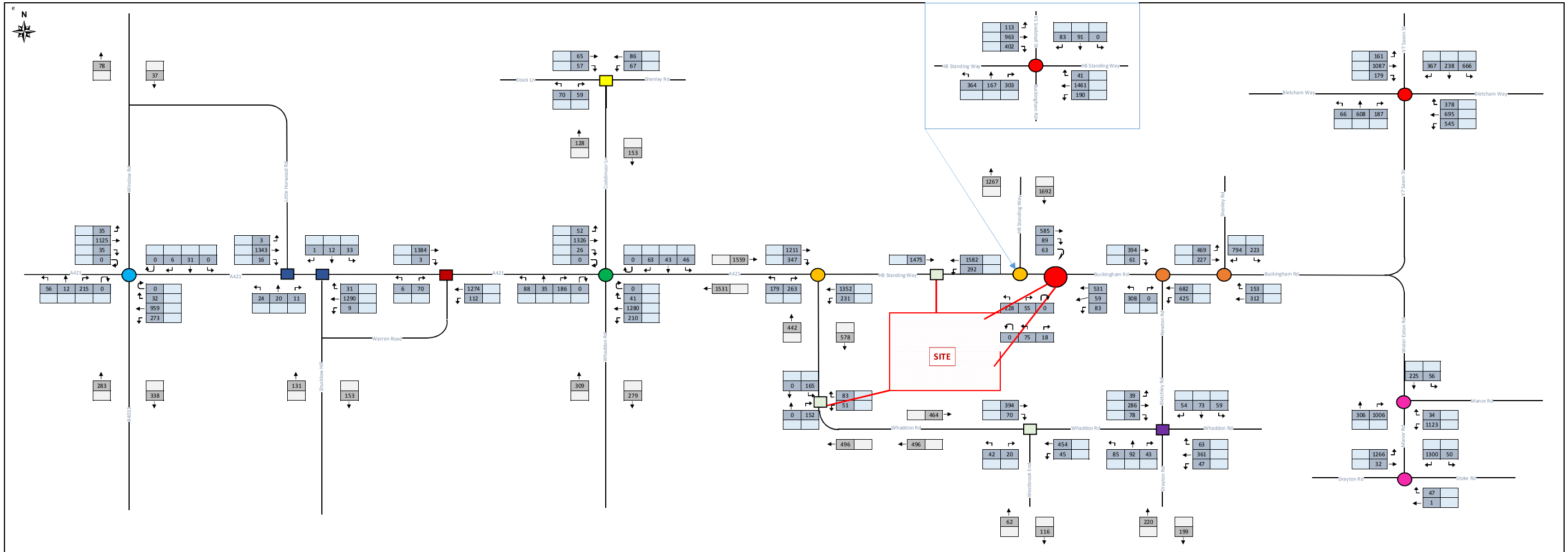
Drawing Ref No.		Drawn by	Date	Checked by	Date
Project	South West Milton Keynes	FSC	10/03/2016	RS	10/03/2016
Title	2026 Base Traffic PM Peak hour (17:00-18:00)	Notes	2015-2026 PM Peak Growth Rate 1.2781		

Approved by	SH
Date	09/08/2016
Scale:	NTS
Job No.	1067760
Client	SWMK Consortium
Drawing No.	TN7_AppB4
Rev.	1

mouchel
building great relationships
Export House, Cawsey Way, Woking
Surrey, GU21 6QX
T: 01483 731000 F: 01483 731010



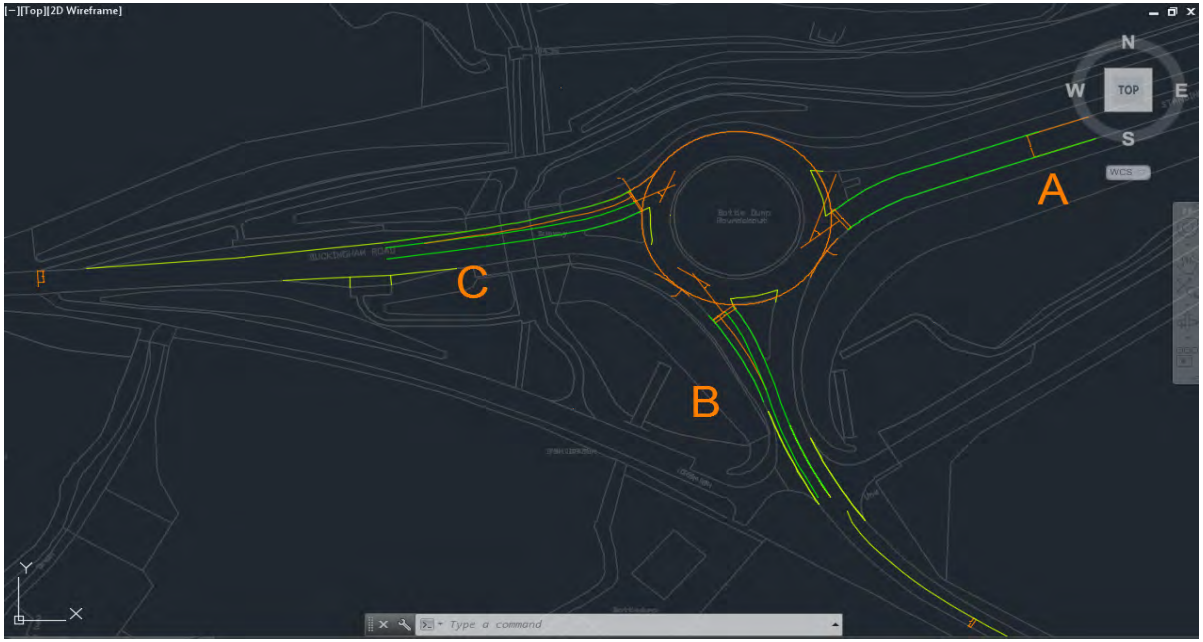
mouchel building great relationships Export House, Cawsey Way, Woking Surrey, GU21 6QX T: 01483 731000 F: 01483 731010	Drawing Ref No.		Drawn by	Date	Checked by	Date	Approved by / Date
	Project	South West Milton Keynes	FSC	10/03/2016	RS	10/03/2016	SH / 09/08/2016
	Title	2026 Base + Development Traffic AM Peak hour (17:00-18:00)	Notes				Scale: NTS Job No. 1067760 Client SWMK Consortium Drawing No. TN7_AppB13 Rev. 1

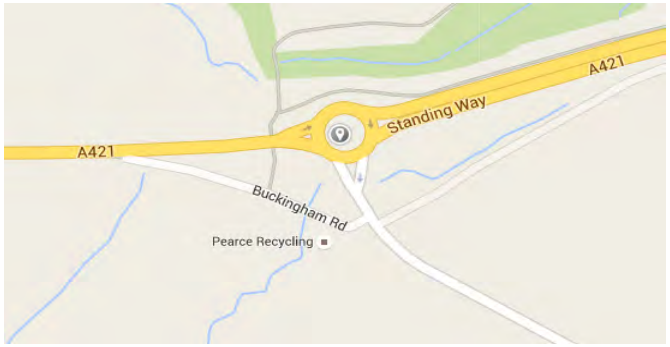


mouchel building great relationships Export House, Cawsey Way, Woking Surrey, GU21 6QX T: 01483 731000 F: 01483 731010	Drawing Ref No.					Approved by	Date
	Project	South West Milton Keynes				SH	09/08/2016
	Title	2026 Base + Development Traffic PM Peak hour (17:00-18:00)	Drawn by	Date	Checked by	Date	Scale: NTS
			FSC	10/03/2016	RS	10/03/2016	Job No. 1067760
			Notes				Client SWMK Consortium
							Drawing No. TN7_AppB14 Rev. 1

Appendix O Junction Assessment Geometric Parameters

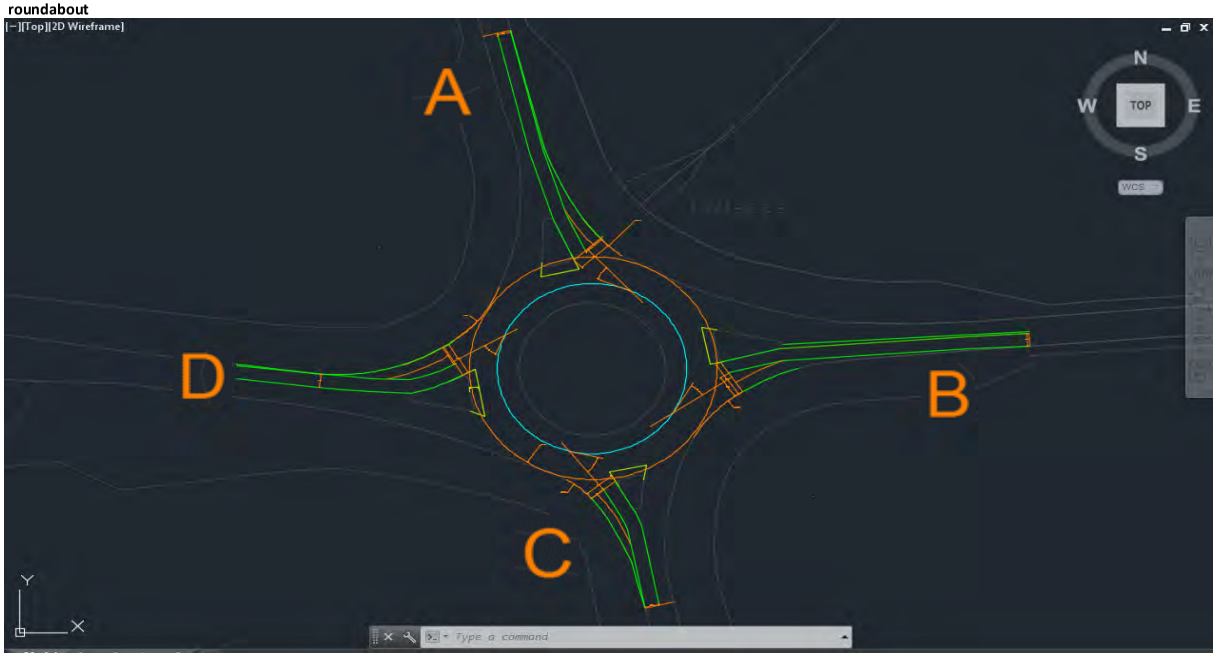
Bottle Dump Roundabout
roundabout

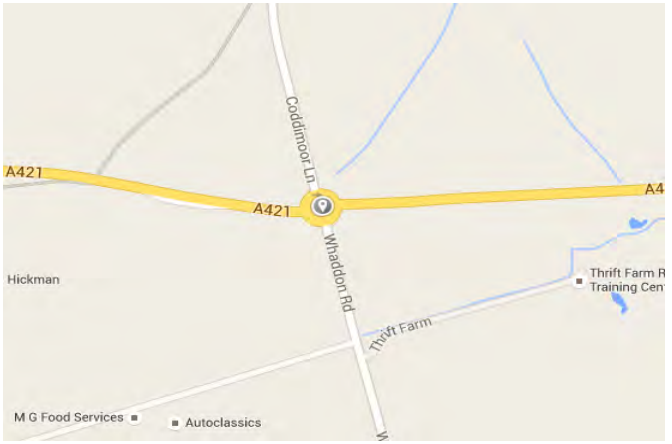




	Arm	V - Approach road half-width (m)	E - Entry width (m)	I - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
Standing Way (A421 E)	**A**	7.51	7.6	0.7	39.49	56	33	
Whaddon Rod (S)	**B**	3	7.61	27.8	50.07	56	23	
A421 (W)	**C**	3.5	7.44	63.9	39.08	56	41	

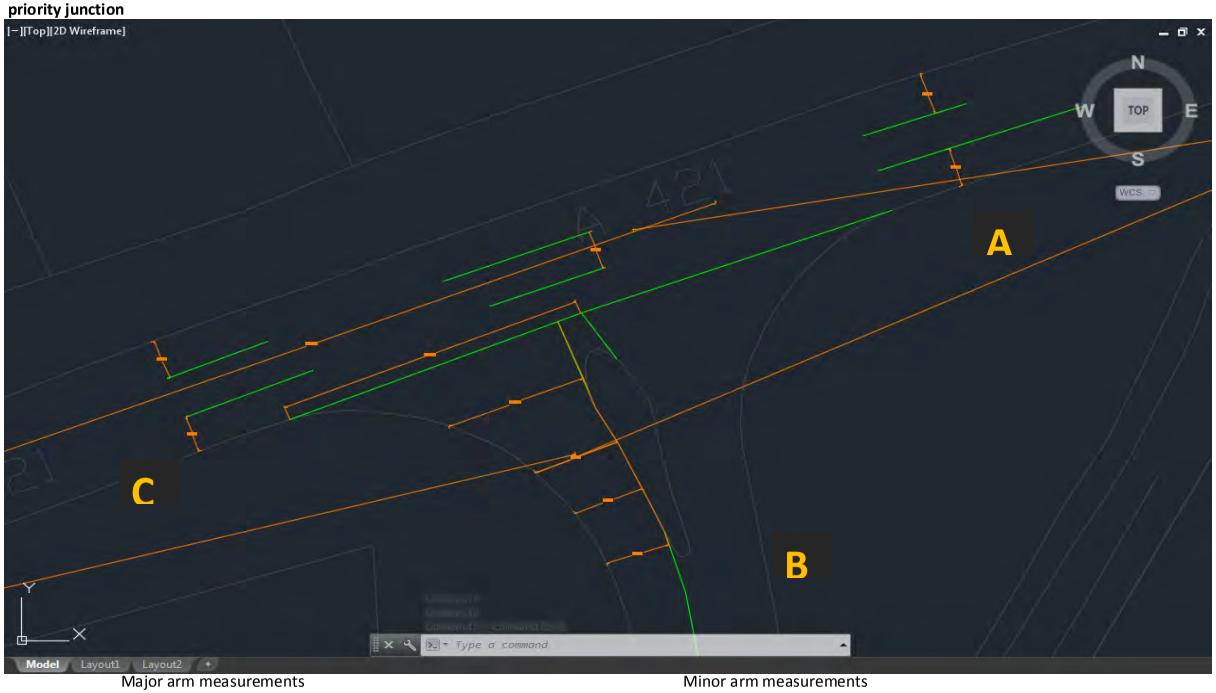
Whaddon Crossroads roundabout





	Arm	V - Approach road half-width (m)	E - Entry width (m)	I - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
Coddimoor Lane (N)	A	2.82	7.13	9.69	36.48	50	24	
A421 (E)	B	2.76	7.94	10.58	27.32	50	24	
Whaddon Road (S)	C	2.99	6.19	13.04	15.49	50	38	
A421 (W)	D	3.01	7.48	13.55	25.78	50	37	

A421/Warren Road
priority junction



Major arm measurements

Main carriageway opp. Arm B		
Width carriage	6.38745	m
kerbed central reserve	-	m
Right turners into B		
Visibility along A fo C-B turn	237.5	m
Right turn bay for C-B traffic	64.2	m
C-B traffic Blocks C-A traffic	11	PCU

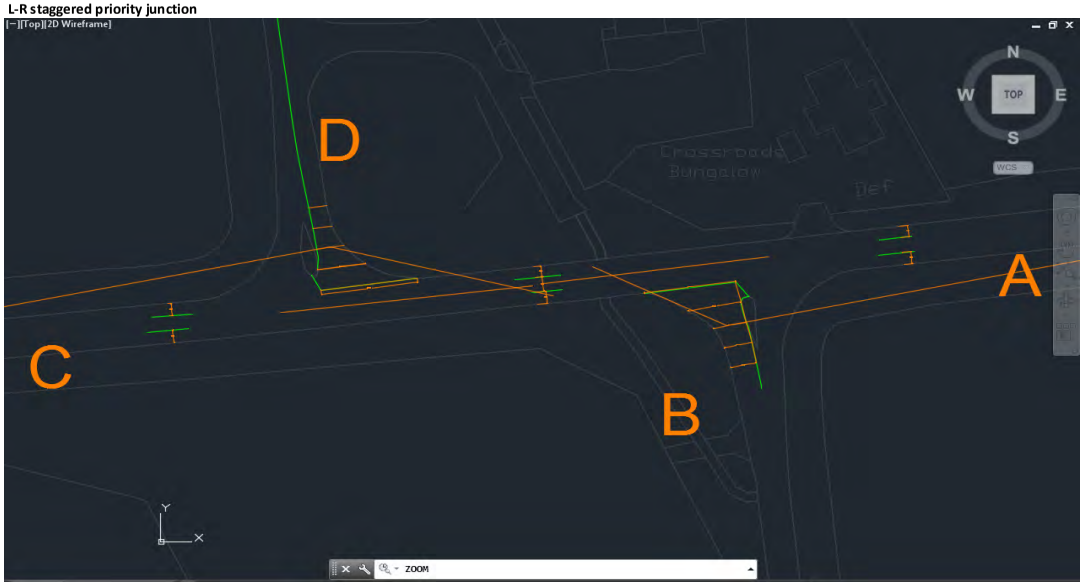
Minor arm measurements

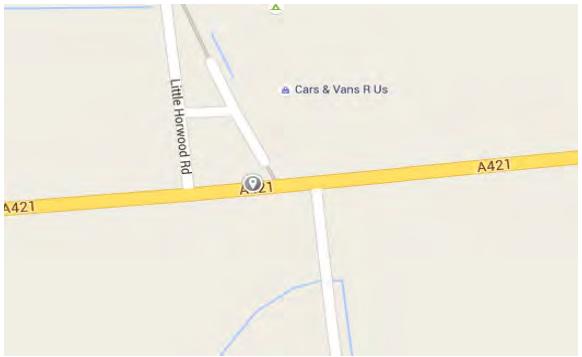
Arm B		
Visibility to Left	229	m
Visibility to Right	111.03	m
Lane Width - One lane plus flare		
Width at give way	23.26	m
Width at 5 m	10.66	m
Width at 10 m	6.56	m
Width at 15 m	5.39	m
Width at 20 m	4.86	m

A	A421 (E)
B	Warren Road
C	A421 (W)

A421/Little Horwood Road

L-R staggered priority junction





Major arm measurements

Opposite Arm B		
Width carriage	5.68	m
kerbed central reserve	-	m
Right turners into B		
Visibility along A fo C-B turn	200	m
Right turn bay for C-B traffic	3.53	
C-B traffic Blocks C-A traffic	9	PCU

Opposite Arm D		
Width carriage	5.92	m
kerbed central reserve	-	m
Right turners into D		
Visibility along C fo A-D turn	300	m
Right turn bay for A-D traffic	3.49	
C-B traffic Blocks A-C traffic	10	PCU

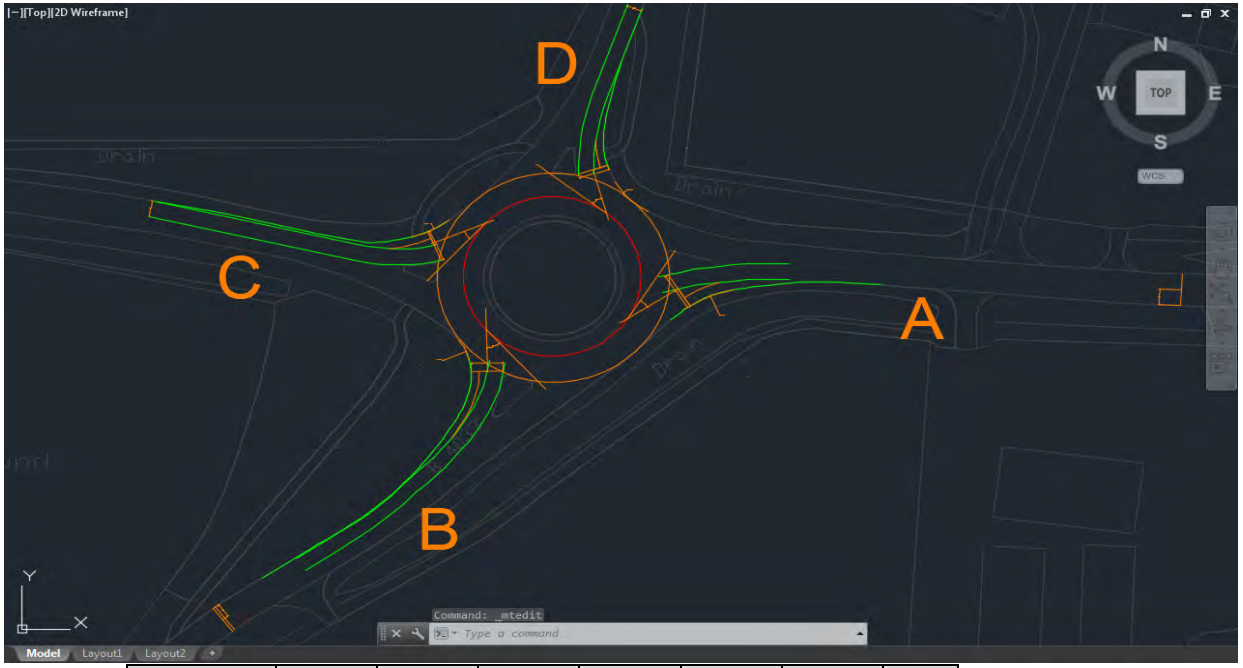
A	A421 (E)
B	Shucklow Hill
C	A421 (W)
D	Little Horwood Road

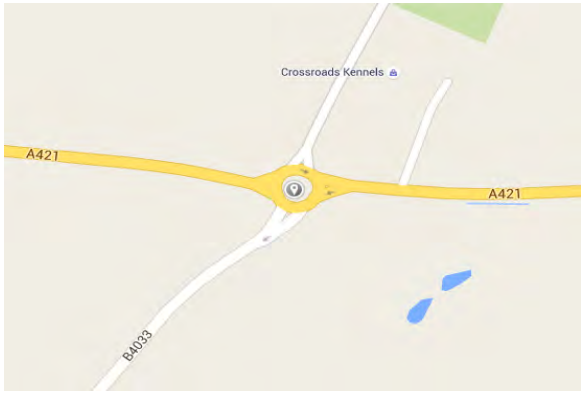
Minor arm measurements

Arm B		
Visibility to Left	32.61	m
Visibility to Right	152.80	m
Lane Width - One lane plus flare		
Width at give way	20.194	m
Width at 5 m	11.8	m
Width at 10 m	7.34	m
Width at 15 m	6.21	m
Width at 20 m	5.81	m

Arm D		
Visibility to Left	50.16	m
Visibility to Right	131.17	m
Lane Width - One lane plus flare		
Width at give way	21.28	m
Width at 5 m	9.91	m
Width at 10 m	5.97	m
Width at 15 m	4.20	m
Width at 20 m	3.97	m

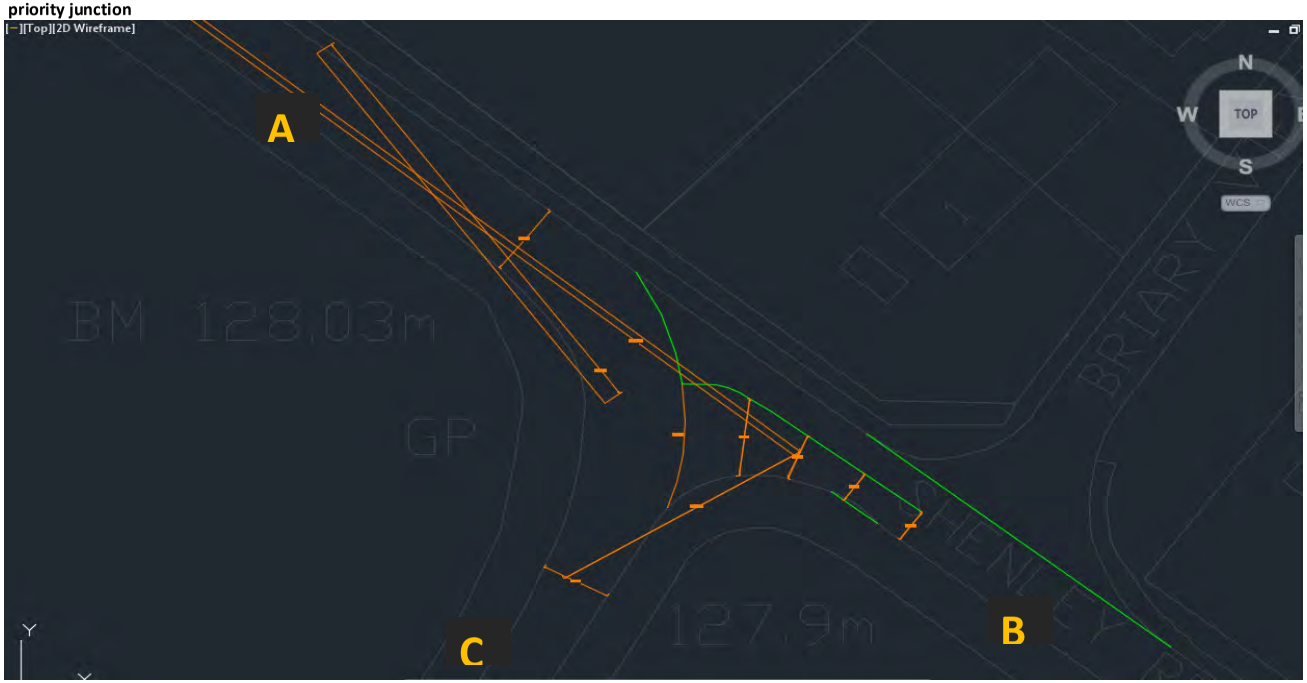
A421/Winslow Road
roundabout





	Arm	V - Approach road half-width (m)	E - Entry width (m)	I - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
A421 East	A	3.8	8.88	8.21	21.06	50	25	
Nash Road	B	3.43	6.98	17.3	9.92	50	50	
A421 West	C	3.8	7.52	9.19	23.64	50	24	
Winslow Road	D	3.3	6.6	6.64	17.34	50	36	

Coddimoor Lane/Shenley Road
priority junction



Major arm measurements

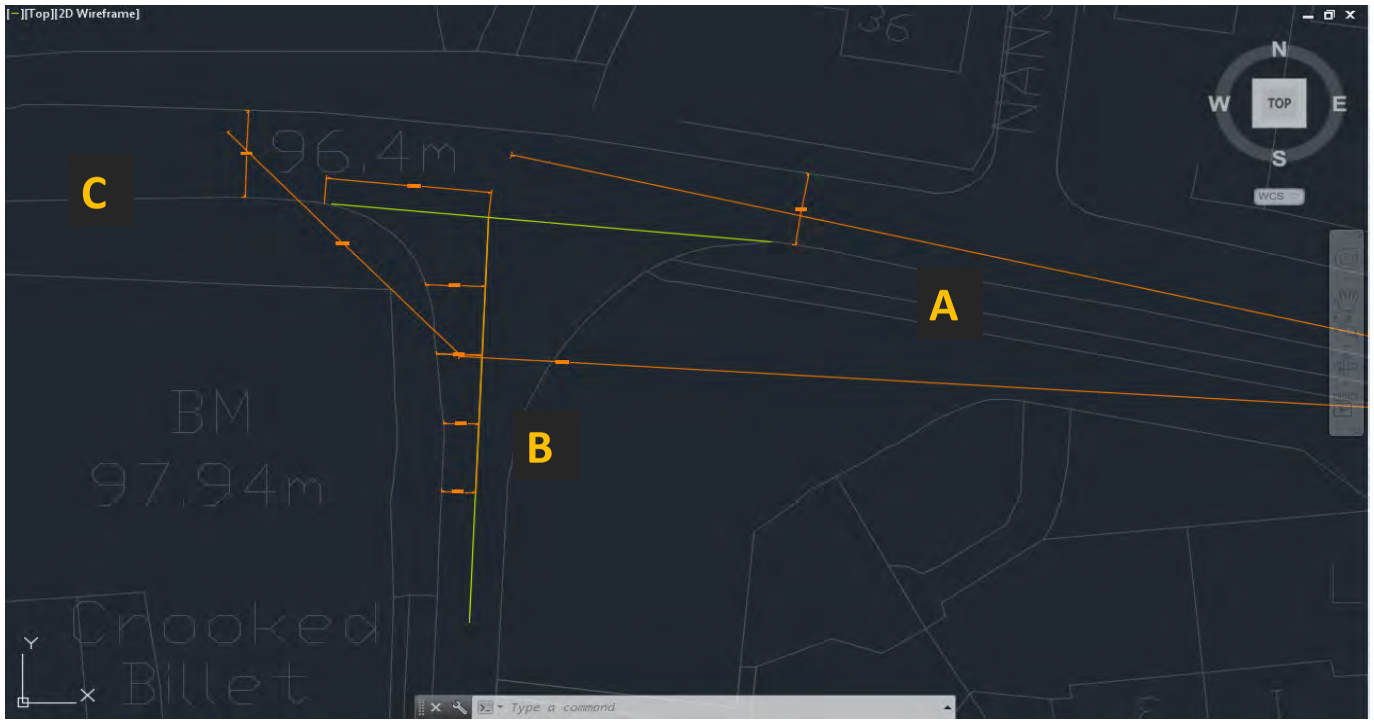
Main carriageway opp. Arm B		
Width carriage	5.3287	m
kerbed central reserve	-	m
Right turners into B		
Visibility along A fo C-B turn	34	m
Right turn bay for C-B traffic	-	m
C-B traffic Blocks C-A traffic	0	PCU

Minor arm measurements

Arm B		
Visibility to Left	19.3	m
Visibility to Right	174.65	m
Lane Width - One lane plus flare		
Width at give way	9.9	m
Width at 5 m	6.1	m
Width at 10 m	3.63	m
Width at 15 m	2.52	m
Width at 20 m	2.63	m

A	Stock Lane
B	Shenley Road
C	Coddimoor Lane

Whaddon Road/Westbrook End
priority junction



Major arm measurements

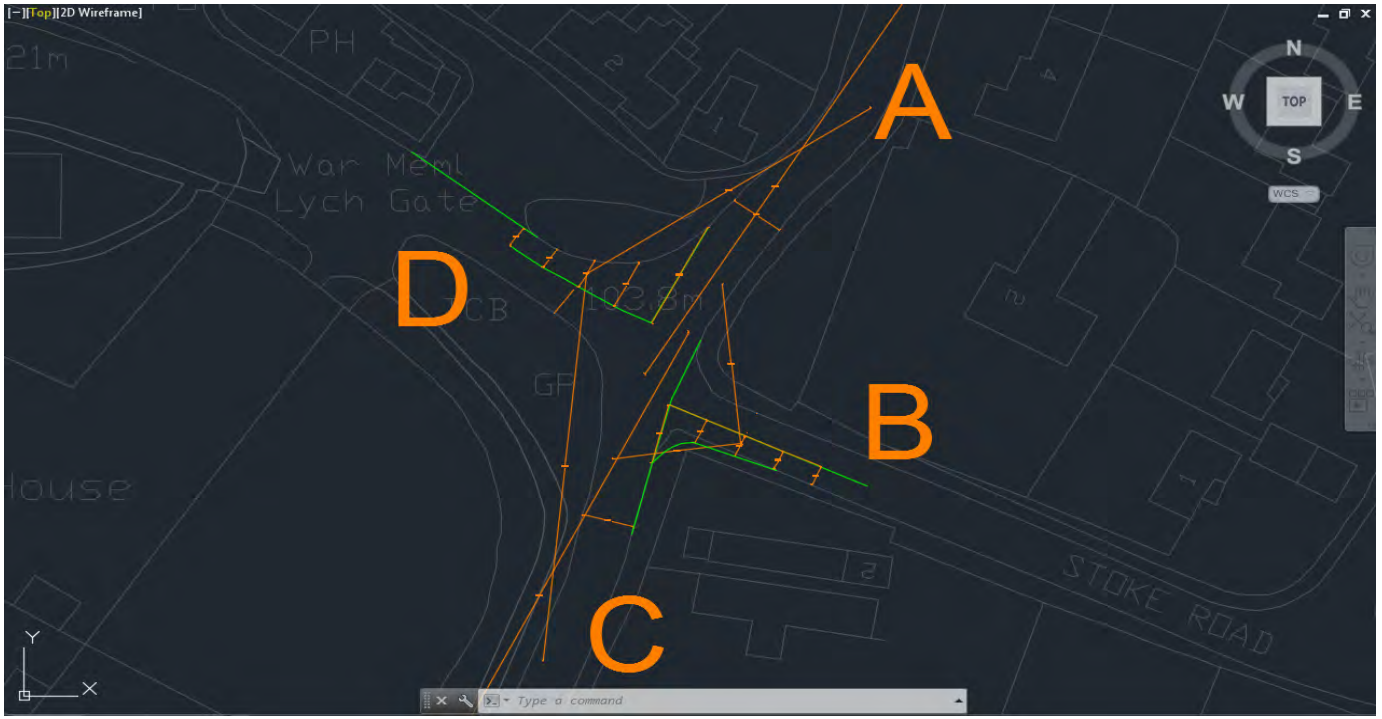
Main carriageway opp. Arm B		
Width carriage	5.795	m
kerbed central reserve	-	m
Right turners into B		
Visibility along A fo C-B turn	155.58	m
Right turn bay for C-B traffic	-	m
C-B traffic Blocks C-A traffic	0	PCU

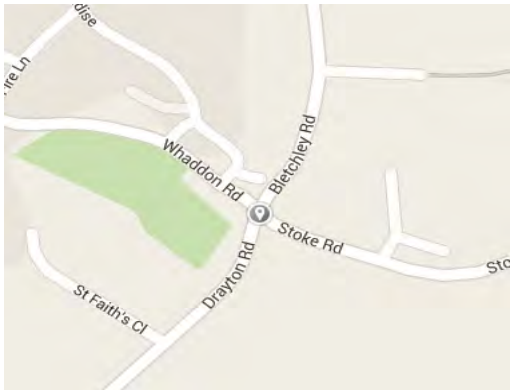
Minor arm measurements

Arm B		
Visibility to Left	22.3	m
Visibility to Right	83.58	m
Lane Width - One lane plus flare		
Width at give way	10.95	m
Width at 5 m	3.95	m
Width at 10 m	3	m
Width at 15 m	2.34	m
Width at 20 m	2.25	m

A	Whaddon Road (E)
B	Westbrook End
C	Whaddon Road (W)

Bletchley Road/Whaddon Road
Crossroads





Major arm measurements

Opposite Arm B		
Width carriage	6.535	m
kerbed central reserve	-	m
Right turners into B		
Visibility along A fo C-B turn	58.97	m
Right turn bay for C-B traffic	-	
C-B traffic Blocks C-A traffic	0	PCU

Opposite Arm D		
Width carriage	6.535	m
kerbed central reserve	-	m
Right turners into D		
Visibility along C fo A-D turn	79.29	m
Right turn bay for A-D traffic	-	
C-B traffic Blocks A-C traffic	0	PCU

A	Bletchley Road
B	Stoke Road
C	Drayton Road
D	Whaddon Road

Minor arm measurements

Arm B		
Visibility to Left	15.59	m
Visibility to Right	21.61	m
Lane Width - One lane plus flare		
Width at give way	8.03	m
Width at 5 m	3.37	m
Width at 10 m	3.01	m
Width at 15 m	2.63	m
Width at 20 m	2.64	m

Arm D		
Visibility to Left	40.65	m
Visibility to Right	51.98	m
Lane Width - One lane plus flare		
Width at give way	14.54	m
Width at 5 m	6.62	m
Width at 10 m	4.05	m
Width at 15 m	2.97	m
Width at 20 m	2.85	m

Appendix P Model Validation Checks

Junction Model Validation

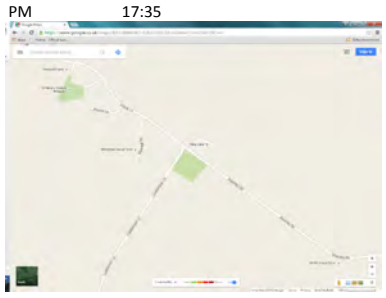
Queue in Vehicles - 2015 Base

Site 1 Shenley Road/Stock Road/Coddimoor Lane

	AM (08:15-08:30)			PM (17:30-17:45)		
	Junctions	Google	Diference	Junctions	Google	Diference
Arm 1	0.00	0.00	0.00	0.00	0.00	0.00
Arm 2	0.12	0.00	-0.12	0.11	0.00	-0.11
Arm 3	0.32	0.00	-0.32	0.10	0.00	-0.10

AM 08:20

PM 17:35

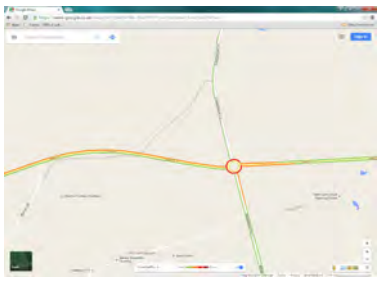


Site 2 Whaddon Crossroads

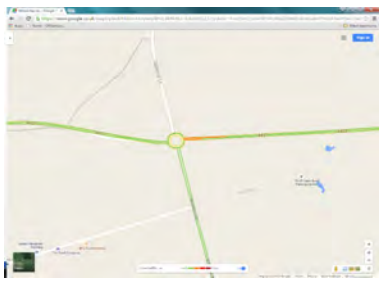
	AM (08:30-08:45)			PM (17:15-17:30)		
	Junctions	Google	Diference	Junctions	Google	Diference
Arm 1	0.27	0.00	-0.27	0.15	0.00	-0.15
Arm 2	3.86	0.00	-3.86	5.93	0.00	-5.93
Arm 3	0.65	0.00	-0.65	0.35	0.00	-0.35
Arm 4	53.73	0.00	-53.73	4.22	0.00	-4.22

Arm 4 Delay 124.69
Arm 4 RFC 1.07

AM 08:30



PM 17:15



Site 2 **Calibrated**

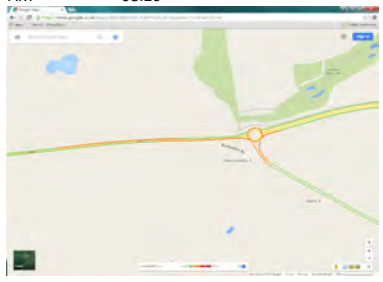
	AM (08:30-08:45)			PM (17:15-17:30)		
	Junctions	Google	Diference	Junctions	Google	Diference
Arm 1	0.30	0.00	-0.30	0.15	0.00	-0.15
Arm 2	3.88	0.00	-3.88	5.93	0.00	-5.93
Arm 3	0.65	0.00	-0.65	0.35	0.00	-0.35
Arm 4	14.50	0.00	-14.50	2.76	0.00	-2.76

Arm 4 Delay 39.22
Arm 4 RFC 0.96

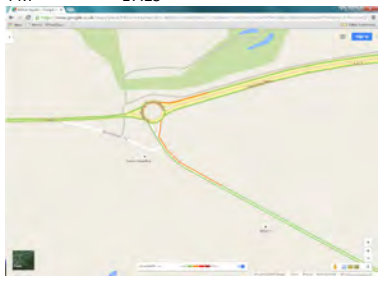
Site 3 Bottledump Roundabout

	AM (08:15-08:30)			PM (17:15-17:30)		
	Junctions	Google	Diference	Junctions	Google	Diference
Arm 1	1.19	0.00	-1.19	1.53	0.00	-1.53
Arm 2	0.49	0.00	-0.49	0.18	0.00	-0.18
Arm 3	5.28	0.00	-5.28	1.84	0.00	-1.84

AM 08:20



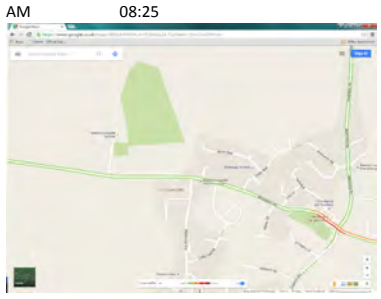
PM 17:25



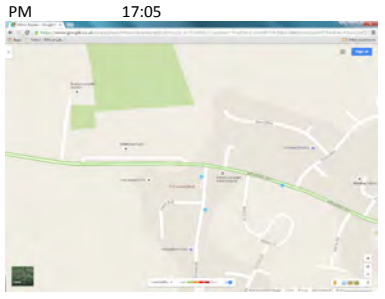
Site 4 Whaddon Road/Westbrook End

	AM (08:15-08:30)			PM (17:00-17:15)		
	Junctions	Google	Diference	Junctions	Google	Diference
Arm 1	0.00	0.00	0.00	0.00	0.00	0.00
Arm 2	0.09	0.00	-0.09	0.00	0.04	0.04
Arm 3	0.05	0.00	-0.05	0.00	0.08	0.08

AM 08:25



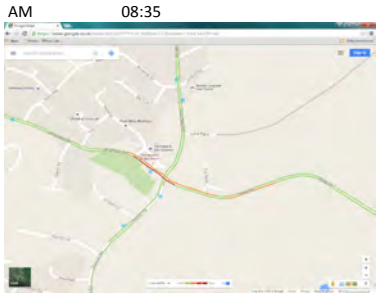
PM 17:05



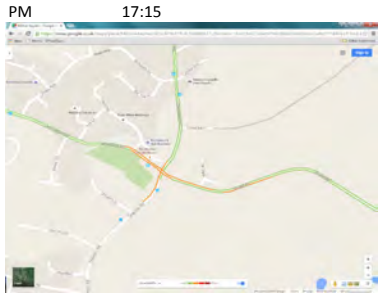
Site5 Bletchley Road/Whaddon Road/Drayton Road/Stoke Road

	AM (08:30-08:45)			PM (17:15-17:30)		
	Junctions	Google	Diference	Junctions	Google	Diference
Arm 1	0.09	0.00	-0.09	0.05	0.00	-0.05
Arm 2	1.00	2.73	1.73	0.24	0.00	-0.24
Arm 3	0.08	0.00	-0.08	0.04	0.00	-0.04
Arm 4	0.35	0.00	-0.35	0.23	0.00	-0.23

AM 08:35



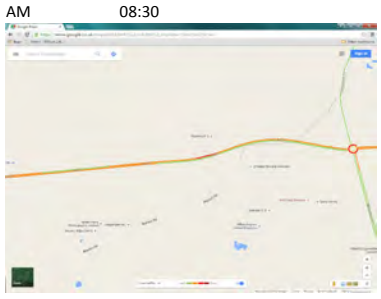
PM 17:15



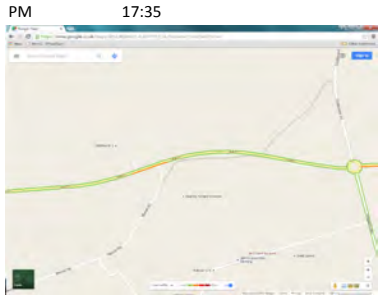
Site 9 A421/Warren Road

	AM (08:30-08:45)			PM (17:30-17:45)		
	Junctions	Google	Diference	Junctions	Google	Diference
Arm 1	0.00	0.00	0.00	0.00	0.00	0.00
Arm 2	1.88	0.00	-1.88	0.28	0.00	-0.28
Arm 3	0.00	0.00	0.00	0.01	0.00	-0.01

AM 08:30



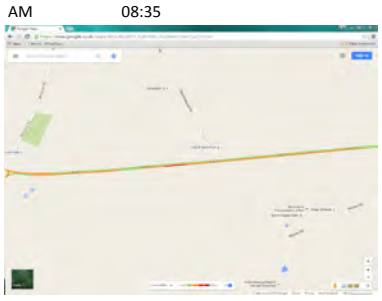
PM 17:35



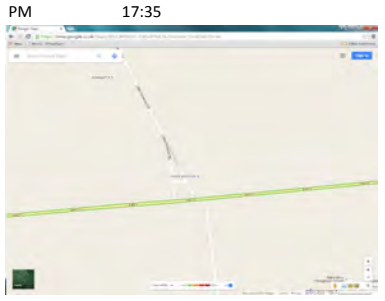
Site 10 A421/Shucklow Hill/Little Horwood Road

	AM (08:30-08:45)			PM (17:30-17:45)		
	Junctions	Google	Diference	Junctions	Google	Diference
Arm 1	0.00	0.00	0.00	0.00	0.00	0.00
Arm 2	0.49	0.00	-0.49	0.09	0.00	-0.09
Arm 3	0.00	0.00	0.00	0.00	0.00	0.00
Arm 4	0.15	0.00	-0.15	0.06	0.00	-0.06

AM 08:35



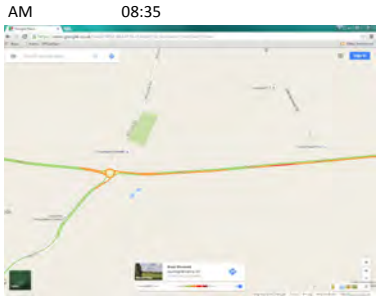
PM 17:35



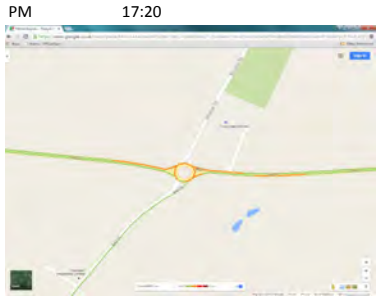
Site 11 A421/Nash Road/Winslow Road

	AM (08:30-08:45)			PM (17:15-17:30)		
	Junctions	Google	Diference	Junctions	Google	Diference
Arm 1	2.06	0.00	-2.06	2.33	0.00	-2.33
Arm 2	0.66	0.00	-0.66	0.37	0.00	-0.37
Arm 3	1.19	0.00	-1.19	1.28	0.00	-1.28
Arm 4	0.16	0.00	-0.16	0.12	0.00	-0.12

AM 08:35



PM 17:20



Appendix Q Junction Modelling Results

Bleak Hall Roundabout
Existing Junction Layout

Junctions 8

ARCADY 8 - Roundabout Module

Filename: Bleak Hall Roundabout.arc8
Path: P:\data\W50---\SW Milton Keynes\ARCADY\Bleak Hall Roundabout
Report generation date: 12/11/2014 14:35:05

File summary

Title	Bleak Hall Roundabout
Location	Grafton Street / Standing Way
Site Number	
Date	06/11/2014
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	A Lechmere
Description	

Analysis Options

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

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, AM	Scenario 1 - 2026 Forecast + Committed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			175.87	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Grafton Street (W)	
2	2	Standing Way (N)	
3	3	Grafton Street (E)	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.50	11.90	4.80	28.80	55.00	39.00	
2	6.70	7.60	7.70	53.50	55.00	36.00	
3	7.10	9.30	4.00	28.00	55.00	29.00	
4	7.20	8.50	3.50	55.00	55.00	36.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.738	2568.913
2		(calculated)	(calculated)	0.687	2250.407
3		(calculated)	(calculated)	0.723	2434.556
4		(calculated)	(calculated)	0.712	2385.900

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	951.00	100.000
2	ONE HOUR	✓	1399.00	100.000
3	ONE HOUR	✓	1206.00	100.000
4	ONE HOUR	✓	1659.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	31.000	41.000	595.000	284.000
	2	244.000	0.000	200.000	955.000
	3	819.000	74.000	0.000	313.000
	4	477.000	951.000	213.000	18.000

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

		To			
		1	2	3	4
From	1	0.03	0.04	0.63	0.30
	2	0.17	0.00	0.14	0.68
	3	0.68	0.06	0.00	0.26
	4	0.29	0.57	0.13	0.01

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.61	5.44	1.57	A
2	1.09	151.01	72.46	F
3	1.02	85.62	33.02	F
4	1.21	360.15	163.77	F

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	715.96	713.48	938.45	0.00	1876.54	0.382	0.62	3.123	A
2	1053.24	1046.38	855.30	0.00	1662.75	0.633	1.72	5.842	A
3	907.94	902.75	1146.56	0.00	1605.99	0.565	1.30	5.138	A
4	1248.98	1239.42	874.21	0.00	1763.60	0.708	2.39	6.825	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	854.93	853.57	1112.55	0.00	1748.09	0.489	0.96	4.063	A
2	1257.67	1248.18	1021.28	0.00	1548.71	0.812	4.09	11.752	B
3	1084.17	1077.73	1368.41	0.00	1445.68	0.750	2.91	9.725	A
4	1491.41	1468.71	1043.54	0.00	1643.07	0.908	8.06	18.837	C

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1047.07	1044.65	1159.04	0.00	1713.79	0.611	1.56	5.419	A
2	1540.33	1393.94	1211.05	0.00	1418.32	1.086	40.69	68.516	F
3	1327.83	1257.06	1557.16	0.00	1309.28	1.014	20.60	44.989	E
4	1826.59	1518.52	1207.98	0.00	1526.01	1.197	85.08	119.240	F

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1047.07	1047.04	1155.59	0.00	1716.34	0.610	1.57	5.437	A
2	1540.33	1413.25	1212.41	0.00	1417.38	1.087	72.46	151.007	F
3	1327.83	1278.16	1574.43	0.00	1296.79	1.024	33.02	85.621	F
4	1826.59	1511.85	1227.05	0.00	1512.44	1.208	163.77	300.201	F

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	854.93	857.11	1171.13	0.00	1704.88	0.501	1.03	4.305	A
2	1257.67	1518.57	1034.78	0.00	1539.43	0.817	7.23	100.048	F
3	1084.17	1188.78	1602.10	0.00	1276.80	0.849	6.87	52.495	F
4	1491.41	1541.37	1173.04	0.00	1550.88	0.962	151.28	360.151	F

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	715.96	716.82	1292.60	0.00	1615.26	0.443	0.81	4.056	A
2	1053.24	1074.40	927.38	0.00	1613.22	0.653	1.94	7.012	A
3	907.94	929.90	1177.05	0.00	1583.96	0.573	1.38	5.747	A
4	1248.98	1734.15	899.31	0.00	1745.74	0.715	29.99	190.911	F

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, PM	Scenario 1 - 2026 Forecast + Committed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			187.46	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Grafton Street (W)	
2	2	Standing Way (N)	
3	3	Grafton Street (E)	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.50	11.90	4.80	28.80	55.00	39.00	
2	6.70	7.60	7.70	53.50	55.00	36.00	
3	7.10	9.30	4.00	28.00	55.00	29.00	
4	7.20	8.50	3.50	55.00	55.00	36.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.738	2568.913
2		(calculated)	(calculated)	0.687	2250.407
3		(calculated)	(calculated)	0.723	2434.556
4		(calculated)	(calculated)	0.712	2385.900

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	1507.00	100.000
2	ONE HOUR	✓	1017.00	100.000
3	ONE HOUR	✓	1198.00	100.000
4	ONE HOUR	✓	1572.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	47.000	857.000	603.000
	2	17.000	0.000	17.000	983.000
	3	531.000	184.000	0.000	483.000
	4	204.000	846.000	518.000	4.000

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

		To			
		1	2	3	4
From	1	0.00	0.03	0.57	0.40
	2	0.02	0.00	0.02	0.97
	3	0.44	0.15	0.00	0.40
	4	0.13	0.54	0.33	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	1.26	370.02	174.53	F
2	1.14	318.95	79.44	F
3	0.97	51.03	17.94	F
4	0.95	31.37	14.19	D

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1134.55	1126.75	1162.53	0.00	1711.22	0.663	1.95	6.147	A
2	765.65	759.15	1482.67	0.00	1231.70	0.622	1.62	7.596	A
3	901.92	896.51	1200.31	0.00	1567.15	0.576	1.35	5.385	A
4	1183.48	1177.66	547.75	0.00	1995.99	0.593	1.45	4.417	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1354.76	1337.36	1389.66	0.00	1543.65	0.878	6.30	16.426	C
2	914.26	896.49	1763.22	0.00	1038.93	0.880	6.07	23.171	C
3	1076.98	1069.85	1420.21	0.00	1408.24	0.765	3.13	10.540	B
4	1413.20	1408.07	653.50	0.00	1920.71	0.736	2.74	7.030	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1659.24	1329.23	1671.31	0.00	1335.85	1.242	88.80	137.940	F
2	1119.74	967.15	1850.69	0.00	978.84	1.144	44.21	106.479	F
3	1319.02	1276.72	1487.17	0.00	1359.86	0.970	13.71	33.457	D
4	1730.80	1695.21	778.15	0.00	1831.98	0.945	11.64	22.408	C

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1659.24	1316.31	1697.28	0.00	1316.70	1.260	174.53	353.169	F
2	1119.74	979.85	1846.59	0.00	981.65	1.141	79.19	239.057	F
3	1319.02	1302.08	1494.55	0.00	1354.52	0.974	17.94	51.029	F
4	1730.80	1720.57	793.50	0.00	1821.06	0.950	14.19	31.370	D

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1354.76	1496.14	1442.31	0.00	1504.80	0.900	139.19	370.020	F
2	914.26	913.25	1933.51	0.00	921.93	0.992	79.44	318.946	F
3	1076.98	1131.56	1500.35	0.00	1350.33	0.798	4.30	20.020	C
4	1413.20	1457.68	690.62	0.00	1894.29	0.746	3.07	9.145	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1134.55	1680.14	1175.22	0.00	1701.86	0.667	2.79	152.860	F
2	765.65	849.76	2022.82	0.00	860.57	0.890	58.41	293.392	F
3	901.92	910.61	1510.86	0.00	1342.73	0.672	2.12	8.585	A
4	1183.48	1189.76	557.68	0.00	1988.92	0.595	1.50	4.590	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, AM	Scenario 2 - 2026 Forecast + Committed + Development	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			199.40	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Grafton Street (W)	
2	2	Standing Way (N)	
3	3	Grafton Street (E)	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.50	11.90	4.80	28.80	55.00	39.00	
2	6.70	7.60	7.70	53.50	55.00	36.00	
3	7.10	9.30	4.00	28.00	55.00	29.00	
4	7.20	8.50	3.50	55.00	55.00	36.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.738	2568.913
2		(calculated)	(calculated)	0.687	2250.407
3		(calculated)	(calculated)	0.723	2434.556
4		(calculated)	(calculated)	0.712	2385.900

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	1030.00	100.000
2	ONE HOUR	✓	1381.00	100.000
3	ONE HOUR	✓	1224.00	100.000
4	ONE HOUR	✓	1688.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	34.000	41.000	622.000	333.000
	2	239.000	0.000	167.000	975.000
	3	824.000	75.000	0.000	325.000
	4	472.000	1010.000	185.000	21.000

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

		To			
		1	2	3	4
From	1	0.03	0.04	0.60	0.32
	2	0.17	0.00	0.12	0.71
	3	0.67	0.06	0.00	0.27
	4	0.28	0.60	0.11	0.01

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.67	6.47	2.02	A
2	1.11	174.63	83.00	F
3	1.07	133.55	54.95	F
4	1.21	385.13	170.07	F

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	775.44	772.56	964.26	0.00	1857.50	0.417	0.72	3.346	A
2	1039.69	1032.75	895.65	0.00	1635.02	0.636	1.73	5.976	A
3	921.49	915.81	1198.82	0.00	1568.23	0.588	1.42	5.532	A
4	1270.81	1260.64	876.88	0.00	1761.70	0.721	2.54	7.126	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	925.95	924.21	1140.49	0.00	1727.48	0.536	1.16	4.520	A
2	1241.49	1231.39	1069.29	0.00	1515.72	0.819	4.26	12.382	B
3	1100.35	1092.05	1430.33	0.00	1400.93	0.785	3.50	11.486	B
4	1517.48	1490.29	1045.70	0.00	1641.53	0.924	9.34	21.092	C

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1134.05	1130.67	1184.25	0.00	1695.20	0.669	2.00	6.409	A
2	1520.51	1355.34	1273.43	0.00	1375.46	1.105	45.55	76.769	F
3	1347.65	1237.86	1613.45	0.00	1268.59	1.062	30.94	61.780	F
4	1858.52	1538.63	1181.06	0.00	1545.17	1.203	89.31	124.051	F

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1134.05	1133.98	1182.81	0.00	1696.26	0.669	2.02	6.470	A
2	1520.51	1370.71	1276.23	0.00	1373.54	1.107	83.00	174.633	F
3	1347.65	1251.61	1628.11	0.00	1258.01	1.071	54.95	133.552	F
4	1858.52	1535.47	1193.93	0.00	1536.01	1.210	170.07	309.110	F

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	925.95	929.11	1181.83	0.00	1696.98	0.546	1.23	4.758	A
2	1241.49	1490.38	1079.75	0.00	1508.53	0.823	20.78	129.115	F
3	1100.35	1212.41	1660.33	0.00	1234.72	0.891	26.94	124.060	F
4	1517.48	1537.44	1179.09	0.00	1546.58	0.981	165.08	385.127	F

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	775.44	776.63	1276.66	0.00	1627.02	0.477	0.93	4.285	A
2	1039.69	1115.08	951.38	0.00	1596.73	0.651	1.93	8.792	A
3	921.49	1022.79	1277.93	0.00	1511.06	0.610	1.61	9.172	A
4	1270.81	1685.21	969.83	0.00	1695.53	0.750	61.48	243.898	F

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, PM	Scenario 2 - 2026 Forecast + Committed + Development	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			199.05	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Grafton Street (W)	
2	2	Standing Way (N)	
3	3	Grafton Street (E)	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.50	11.90	4.80	28.80	55.00	39.00	
2	6.70	7.60	7.70	53.50	55.00	36.00	
3	7.10	9.30	4.00	28.00	55.00	29.00	
4	7.20	8.50	3.50	55.00	55.00	36.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.738	2568.913
2		(calculated)	(calculated)	0.687	2250.407
3		(calculated)	(calculated)	0.723	2434.556
4		(calculated)	(calculated)	0.712	2385.900

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	1540.00	100.000
2	ONE HOUR	✓	1044.00	100.000
3	ONE HOUR	✓	1235.00	100.000
4	ONE HOUR	✓	1577.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	51.000	910.000	579.000
	2	23.000	0.000	18.000	1003.000
	3	539.000	192.000	0.000	504.000
	4	236.000	873.000	463.000	5.000

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

		To			
		1	2	3	4
From	1	0.00	0.03	0.59	0.38
	2	0.02	0.00	0.02	0.96
	3	0.44	0.16	0.00	0.41
	4	0.15	0.55	0.29	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	1.27	395.36	183.60	F
2	1.14	307.58	79.61	F
3	1.01	72.78	27.86	F
4	0.96	34.40	15.68	D

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1159.39	1151.23	1148.16	0.00	1721.82	0.673	2.04	6.293	A
2	785.98	779.21	1463.68	0.00	1244.74	0.631	1.69	7.711	A
3	929.77	923.95	1202.35	0.00	1565.68	0.594	1.46	5.622	A
4	1187.25	1181.30	564.06	0.00	1984.38	0.598	1.49	4.499	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1384.43	1365.01	1372.22	0.00	1556.51	0.889	6.90	17.485	C
2	938.53	919.37	1738.92	0.00	1055.63	0.889	6.48	23.986	C
3	1110.24	1101.82	1421.20	0.00	1407.52	0.789	3.56	11.598	B
4	1417.69	1412.28	672.42	0.00	1907.24	0.743	2.84	7.273	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1695.57	1349.12	1645.24	0.00	1355.09	1.251	93.51	142.973	F
2	1149.47	996.41	1808.17	0.00	1008.05	1.140	44.75	105.266	F
3	1359.76	1298.43	1491.84	0.00	1356.47	1.002	18.89	41.990	E
4	1736.31	1697.40	790.50	0.00	1823.19	0.952	12.57	23.840	C

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1695.57	1335.21	1671.72	0.00	1335.55	1.270	183.60	366.610	F
2	1149.47	1010.02	1802.58	0.00	1011.89	1.136	79.61	233.562	F
3	1359.76	1323.91	1500.08	0.00	1350.52	1.007	27.86	72.780	F
4	1736.31	1723.87	805.88	0.00	1812.25	0.958	15.68	34.396	D

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1384.43	1502.46	1434.28	0.00	1510.73	0.916	154.09	395.357	F
2	938.53	939.30	1888.08	0.00	953.15	0.985	79.42	307.578	F
3	1110.24	1201.26	1492.64	0.00	1355.90	0.819	5.10	32.399	D
4	1417.69	1467.08	731.72	0.00	1865.03	0.760	3.33	10.217	B

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1159.39	1700.48	1161.97	0.00	1711.64	0.677	18.82	186.174	F
2	785.98	866.16	1998.63	0.00	877.19	0.896	59.37	289.730	F
3	929.77	941.07	1494.35	0.00	1354.66	0.686	2.28	9.027	A
4	1187.25	1194.40	576.11	0.00	1975.81	0.601	1.54	4.700	A

Elfield Park Roundabout
Existing Junction Layout

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

Filename: IMP Elfield Park Roundabout - M-measures.arc8
Path: L:\106xxx\1067760 South West Milton Keynes\09 Docs\C-Cals\Roundabout improvements
Report generation date: 10/05/2016 05:25:09

File summary

Title	Elfield Park Roundabout
Location	Watling Street / Standing Way
Site Number	
Date	06/11/2014
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	A Lechmere
Description	

Analysis Options

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

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, AM	Scenario 1 - 2026 Forecast + Committed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Elfield Park Roundabout	Roundabout	1,2,3,4			574.66	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Watling Street (W)	
2	2	Standing Way (N)	
3	3	Watling Street (E)	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	4.60	8.10	7.90	44.80	56.00	16.00	
2	7.20	8.60	11.10	30.40	56.00	23.00	
3	4.90	9.70	15.00	111.90	56.00	16.00	
4	7.50	9.60	24.40	23.70	56.00	40.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.649	1971.059
2		(calculated)	(calculated)	0.750	2585.706
3		(calculated)	(calculated)	0.729	2398.796
4		(calculated)	(calculated)	0.751	2696.388

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	729.00	100.000
2	ONE HOUR	✓	1519.00	100.000
3	ONE HOUR	✓	1496.00	100.000
4	ONE HOUR	✓	2166.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	194.000	467.000	68.000
	2	226.000	0.000	63.000	1230.000
	3	752.000	359.000	133.000	252.000
	4	239.000	1106.000	795.000	26.000

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

		To			
		1	2	3	4
From	1	0.00	0.27	0.64	0.09
	2	0.15	0.00	0.04	0.81
	3	0.50	0.24	0.09	0.17
	4	0.11	0.51	0.37	0.01

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	1.15	306.14	62.99	F
2	1.03	88.18	43.68	F
3	1.36	624.80	243.10	F
4	1.36	971.56	436.77	F

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	548.83	540.60	1796.05	0.00	806.31	0.681	2.06	13.320	B
2	1143.58	1136.19	1104.79	0.00	1757.38	0.651	1.85	5.792	A
3	1126.27	1115.96	1158.77	0.00	1553.91	0.725	2.58	8.131	A
4	1630.68	1606.27	1097.02	0.00	1872.39	0.871	6.10	12.703	B

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	655.36	631.46	1954.97	0.00	703.24	0.932	8.03	41.366	E
2	1365.55	1355.64	1229.62	0.00	1663.79	0.821	4.33	11.457	B
3	1344.87	1302.62	1378.91	0.00	1393.40	0.965	13.14	31.230	D
4	1947.19	1715.90	1284.89	0.00	1731.28	1.125	63.92	82.281	F

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	802.64	689.83	1962.48	0.00	698.37	1.149	36.23	131.641	F
2	1672.45	1580.59	1279.40	0.00	1626.46	1.028	27.29	46.298	E
3	1647.13	1229.50	1600.40	0.00	1231.91	1.337	117.55	200.471	F
4	2384.81	1751.37	1257.56	0.00	1751.81	1.361	222.28	298.804	F

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	802.64	695.64	1963.95	0.00	697.42	1.151	62.99	268.605	F
2	1672.45	1606.90	1285.14	0.00	1622.16	1.031	43.68	88.185	F
3	1647.13	1212.89	1626.25	0.00	1213.06	1.358	226.10	506.078	F
4	2384.81	1759.17	1247.66	0.00	1759.25	1.356	378.69	622.730	F

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	655.36	689.90	1958.47	0.00	700.97	0.935	54.35	306.137	F
2	1365.55	1515.92	1275.32	0.00	1629.52	0.838	6.09	47.154	E
3	1344.87	1276.89	1538.16	0.00	1277.29	1.053	243.10	624.799	F
4	1947.19	1729.35	1287.34	0.00	1729.44	1.126	433.15	876.262	F

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	548.83	701.12	1938.13	0.00	714.17	0.768	16.28	187.140	F
2	1143.58	1158.36	1262.38	0.00	1639.22	0.698	2.39	7.789	A
3	1126.27	1521.08	1195.12	0.00	1527.41	0.737	144.40	459.502	F
4	1630.68	1616.21	1437.20	0.00	1616.88	1.009	436.77	971.561	F

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, PM	Scenario 1 - 2026 Forecast + Committed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Elfield Park Roundabout	Roundabout	1,2,3,4			216.14	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Watling Street (W)	
2	2	Standing Way (N)	
3	3	Watling Street (E)	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	4.60	8.10	7.90	44.80	56.00	16.00	
2	7.20	8.60	11.10	30.40	56.00	23.00	
3	4.90	9.70	15.00	111.90	56.00	16.00	
4	7.50	9.60	24.40	23.70	56.00	40.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.649	1971.059
2		(calculated)	(calculated)	0.750	2585.706
3		(calculated)	(calculated)	0.729	2398.796
4		(calculated)	(calculated)	0.751	2696.388

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	594.00	100.000
2	ONE HOUR	✓	2095.00	100.000
3	ONE HOUR	✓	524.00	100.000
4	ONE HOUR	✓	1748.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	128.000	355.000	111.000
	2	353.000	0.000	94.000	1648.000
	3	335.000	164.000	24.000	1.000
	4	34.000	1279.000	343.000	92.000

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

		To			
		1	2	3	4
From	1	0.00	0.22	0.60	0.19
	2	0.17	0.00	0.04	0.79
	3	0.64	0.31	0.05	0.00
	4	0.02	0.73	0.20	0.05

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	1.06	133.14	26.16	F
2	1.25	447.83	240.41	F
3	0.61	9.65	1.53	A
4	0.95	28.56	14.34	D

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	447.19	444.21	1425.41	0.00	1046.67	0.427	0.75	6.013	A
2	1577.23	1564.62	692.48	0.00	2066.51	0.763	3.15	7.086	A
3	394.49	392.52	1646.38	0.00	1198.39	0.329	0.49	4.505	A
4	1315.99	1310.06	655.41	0.00	2204.10	0.597	1.48	4.045	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	533.99	530.67	1703.84	0.00	866.10	0.617	1.58	10.744	B
2	1883.36	1841.16	827.50	0.00	1965.28	0.958	13.70	23.833	C
3	471.07	469.38	1940.13	0.00	984.21	0.479	0.91	7.047	A
4	1571.42	1565.90	778.71	0.00	2111.48	0.744	2.86	6.604	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	654.01	601.51	2056.22	0.00	637.58	1.026	14.70	65.584	F
2	2306.64	1856.15	967.74	0.00	1860.13	1.240	126.32	142.811	F
3	576.93	574.53	1984.58	0.00	951.80	0.606	1.52	9.585	A
4	1924.58	1886.79	886.19	0.00	2030.76	0.948	12.31	21.265	C

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	654.01	608.19	2086.18	0.00	618.15	1.058	26.16	133.136	F
2	2306.64	1850.28	980.48	0.00	1850.58	1.246	240.41	358.646	F
3	576.93	576.88	1981.78	0.00	953.84	0.605	1.53	9.650	A
4	1924.58	1916.49	887.55	0.00	2029.73	0.948	14.34	28.563	D

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	533.99	631.03	1754.66	0.00	833.14	0.641	1.90	27.443	D
2	1883.36	1894.37	918.97	0.00	1896.70	0.993	237.66	447.829	F
3	471.07	472.98	2012.36	0.00	931.54	0.506	1.05	7.969	A
4	1571.42	1616.41	791.27	0.00	2102.05	0.748	3.09	8.160	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	447.19	451.69	1437.88	0.00	1038.58	0.431	0.77	6.249	A
2	1577.23	2051.10	701.40	0.00	2059.83	0.766	119.19	314.233	F
3	394.49	395.21	2113.05	0.00	858.13	0.460	0.87	7.875	A
4	1315.99	1321.80	740.06	0.00	2140.52	0.615	1.63	4.476	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, AM	Scenario 2 - 2026 Forecast + Committed + Development	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Elfield Park Roundabout	Roundabout	1,2,3,4			619.69	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Watling Street (W)	
2	2	Standing Way (N)	
3	3	Watling Street (E)	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	4.60	8.10	7.90	44.80	56.00	16.00	
2	7.20	8.60	11.10	30.40	56.00	23.00	
3	4.90	9.70	15.00	111.90	56.00	16.00	
4	7.50	9.60	24.40	23.70	56.00	40.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.649	1971.059
2		(calculated)	(calculated)	0.750	2585.706
3		(calculated)	(calculated)	0.729	2398.796
4		(calculated)	(calculated)	0.751	2696.388

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	779.00	100.000
2	ONE HOUR	✓	1599.00	100.000
3	ONE HOUR	✓	1472.00	100.000
4	ONE HOUR	✓	2179.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	223.000	474.000	82.000
	2	238.000	0.000	61.000	1300.000
	3	735.000	364.000	150.000	223.000
	4	245.000	1100.000	810.000	24.000

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

		To			
		1	2	3	4
From	1	0.00	0.29	0.61	0.11
	2	0.15	0.00	0.04	0.81
	3	0.50	0.25	0.10	0.15
	4	0.11	0.50	0.37	0.01

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	1.24	521.62	100.39	F
2	1.09	149.41	81.58	F
3	1.35	683.53	254.78	F
4	1.37	956.72	444.79	F

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	586.47	575.77	1815.92	0.00	793.42	0.739	2.67	16.025	C
2	1203.81	1194.79	1140.62	0.00	1730.52	0.696	2.25	6.687	A
3	1108.20	1097.28	1227.60	0.00	1503.73	0.737	2.73	8.735	A
4	1640.47	1614.27	1108.89	0.00	1863.48	0.880	6.55	13.449	B

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	700.31	656.41	1965.21	0.00	696.60	1.005	13.65	60.400	F
2	1437.47	1421.83	1254.21	0.00	1645.35	0.874	6.16	15.310	C
3	1323.30	1268.69	1455.57	0.00	1337.51	0.989	16.38	37.865	E
4	1958.88	1715.03	1288.12	0.00	1728.86	1.133	67.51	86.440	F

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	857.69	688.52	1972.69	0.00	691.75	1.240	55.94	196.327	F
2	1760.53	1601.57	1283.36	0.00	1623.49	1.084	45.91	68.608	F
3	1620.70	1206.79	1632.20	0.00	1208.73	1.341	119.86	212.116	F
4	2399.12	1747.82	1262.35	0.00	1748.21	1.372	230.34	311.421	F

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	857.69	690.65	1973.49	0.00	691.23	1.241	97.70	410.657	F
2	1760.53	1617.84	1285.71	0.00	1621.73	1.086	81.58	149.406	F
3	1620.70	1196.95	1648.12	0.00	1197.12	1.354	225.80	523.653	F
4	2399.12	1752.59	1256.43	0.00	1752.66	1.369	391.97	643.383	F

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	700.31	689.55	1972.69	0.00	691.75	1.012	100.39	521.619	F
2	1437.47	1603.10	1284.07	0.00	1622.96	0.886	40.17	138.999	F
3	1323.30	1207.36	1633.77	0.00	1207.58	1.096	254.78	683.534	F
4	1958.88	1747.59	1263.06	0.00	1747.68	1.121	444.79	885.244	F

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	586.47	694.73	1957.31	0.00	701.73	0.836	73.33	451.470	F
2	1203.81	1352.53	1272.82	0.00	1631.40	0.738	2.99	20.923	C
3	1108.20	1378.11	1392.38	0.00	1383.58	0.801	187.30	578.041	F
4	1640.47	1663.08	1370.65	0.00	1666.86	0.984	439.14	956.719	F

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, PM	Scenario 2 - 2026 Forecast + Committed + Development	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Elfield Park Roundabout	Roundabout	1,2,3,4			232.28	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Watling Street (W)	
2	2	Standing Way (N)	
3	3	Watling Street (E)	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	4.60	8.10	7.90	44.80	56.00	16.00	
2	7.20	8.60	11.10	30.40	56.00	23.00	
3	4.90	9.70	15.00	111.90	56.00	16.00	
4	7.50	9.60	24.40	23.70	56.00	40.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.649	1971.059
2		(calculated)	(calculated)	0.750	2585.706
3		(calculated)	(calculated)	0.729	2398.796
4		(calculated)	(calculated)	0.751	2696.388

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	564.00	100.000
2	ONE HOUR	✓	2106.00	100.000
3	ONE HOUR	✓	499.00	100.000
4	ONE HOUR	✓	1839.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	85.000	365.000	114.000
	2	319.000	0.000	25.000	1762.000
	3	346.000	142.000	11.000	0.000
	4	39.000	1349.000	359.000	92.000

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

		To			
		1	2	3	4
From	1	0.00	0.15	0.65	0.20
	2	0.15	0.00	0.01	0.84
	3	0.69	0.28	0.02	0.00
	4	0.02	0.73	0.20	0.05

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	1.06	130.05	24.18	F
2	1.26	480.16	256.80	F
3	0.60	9.95	1.50	A
4	0.98	40.09	21.63	E

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	424.61	421.77	1463.37	0.00	1022.05	0.415	0.71	6.036	A
2	1585.51	1572.40	704.39	0.00	2057.58	0.771	3.28	7.316	A
3	375.67	373.74	1707.92	0.00	1153.51	0.326	0.48	4.656	A
4	1384.50	1378.01	611.91	0.00	2236.77	0.619	1.62	4.208	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	507.02	503.83	1748.80	0.00	836.94	0.606	1.51	10.824	B
2	1893.25	1845.00	841.59	0.00	1954.71	0.969	15.34	25.987	D
3	448.59	446.86	2007.32	0.00	935.22	0.480	0.92	7.425	A
4	1653.22	1646.71	726.32	0.00	2150.83	0.769	3.25	7.127	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	620.98	573.61	2095.83	0.00	611.89	1.015	13.35	63.746	F
2	2318.75	1845.87	982.31	0.00	1849.21	1.254	133.56	152.079	F
3	549.41	547.12	2038.45	0.00	912.52	0.602	1.49	9.897	A
4	2024.78	1969.86	826.72	0.00	2075.42	0.976	16.98	26.354	D

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	620.98	577.64	2132.05	0.00	588.40	1.055	24.18	130.051	F
2	2318.75	1839.67	994.69	0.00	1839.93	1.260	253.33	380.305	F
3	549.41	549.36	2034.95	0.00	915.07	0.600	1.50	9.947	A
4	2024.78	2006.16	828.02	0.00	2074.45	0.976	21.63	40.095	E

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	507.02	596.00	1827.13	0.00	786.15	0.645	1.94	28.557	D
2	1893.25	1879.37	939.30	0.00	1881.46	1.006	256.80	480.160	F
3	448.59	450.45	2063.86	0.00	894.00	0.502	1.04	8.241	A
4	1653.22	1725.61	735.13	0.00	2144.22	0.771	3.54	10.159	B

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	424.61	429.41	1477.39	0.00	1012.95	0.419	0.74	6.288	A
2	1585.51	2042.15	714.25	0.00	2050.19	0.773	142.64	352.966	F
3	375.67	376.29	2174.32	0.00	813.46	0.462	0.88	8.339	A
4	1384.50	1391.53	685.62	0.00	2181.40	0.635	1.78	4.649	A

Emerson Roundabout
Existing Junction Layout

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

Filename: IMP Emerson Roundabout - Mouchel measurements.arc8
Path: L:\106xxx\1067760 South West Milton Keynes\09 Docs\C-Cals\Roundabout improvements
Report generation date: 09/05/2016 14:35:23

File summary

Title	Emerson Roundabout
Location	Fulmer Street / Standing Way / Shenley Road
Site Number	
Date	06/11/2014
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	A Lechmere
Description	

Analysis Options

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

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, AM	Scenario 1 - 2026 Forecast + Committed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			85.87	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Fulmer Street	
2	2	Standing Way (N)	
3	3	Shenley Way	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.11	8.03	23.73	116.75	56.00	21.00	
2	7.58	9.41	22.80	46.47	56.00	20.00	
3	3.64	7.91	11.23	43.43	56.00	12.00	
4	7.48	11.00	10.88	31.84	56.00	25.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.647	1970.427
2		(calculated)	(calculated)	0.814	2909.185
3		(calculated)	(calculated)	0.628	1836.411
4		(calculated)	(calculated)	0.803	2889.629

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	380.00	100.000
2	ONE HOUR	✓	1280.00	100.000
3	ONE HOUR	✓	1144.00	100.000
4	ONE HOUR	✓	1511.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	15.000	318.000	47.000
	2	124.000	0.000	186.000	970.000
	3	343.000	621.000	0.000	180.000
	4	5.000	1298.000	208.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.04	0.84	0.12
	2	0.10	0.00	0.15	0.76
	3	0.30	0.54	0.00	0.16
	4	0.00	0.86	0.14	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.79	31.63	3.48	D
2	0.59	3.68	1.43	A
3	1.20	297.51	113.31	F
4	0.80	8.89	4.02	A

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	286.08	284.33	1592.97	0.00	939.25	0.305	0.44	5.543	A
2	963.65	961.22	429.13	0.00	2559.92	0.376	0.61	2.274	A
3	861.26	853.51	856.71	0.00	1298.53	0.663	1.94	8.045	A
4	1137.56	1133.41	812.33	0.00	2237.33	0.508	1.04	3.285	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	341.61	339.96	1901.44	0.00	739.57	0.462	0.85	9.070	A
2	1150.69	1149.67	513.11	0.00	2491.56	0.462	0.86	2.711	A
3	1028.43	1014.28	1024.66	0.00	1193.08	0.862	5.48	19.011	C
4	1358.36	1355.34	966.06	0.00	2113.88	0.643	1.79	4.779	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	418.39	409.23	2214.72	0.00	536.77	0.779	3.14	26.858	D
2	1409.31	1407.08	620.93	0.00	2403.81	0.586	1.42	3.644	A
3	1259.57	1040.80	1253.23	0.00	1049.57	1.200	60.17	124.833	F
4	1663.64	1655.22	1013.35	0.00	2075.91	0.801	3.90	8.484	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	418.39	417.04	2226.01	0.00	529.46	0.790	3.48	31.628	D
2	1409.31	1409.25	629.52	0.00	2396.82	0.588	1.43	3.684	A
3	1259.57	1046.99	1256.05	0.00	1047.80	1.202	113.31	297.511	F
4	1663.64	1663.17	1018.78	0.00	2071.55	0.803	4.02	8.887	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	341.61	351.28	2001.70	0.00	674.66	0.506	1.06	11.572	B
2	1150.69	1152.91	525.41	0.00	2481.55	0.464	0.88	2.745	A
3	1028.43	1179.93	1028.83	0.00	1190.46	0.864	75.44	286.462	F
4	1358.36	1365.72	1105.97	0.00	2001.54	0.679	2.18	5.788	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	286.08	288.18	1763.94	0.00	828.57	0.345	0.54	6.762	A
2	963.65	964.71	433.88	0.00	2556.05	0.377	0.61	2.288	A
3	861.26	1154.40	860.17	0.00	1296.35	0.664	2.15	77.557	F
4	1137.56	1141.08	1066.22	0.00	2033.46	0.559	1.30	4.094	A

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, PM	Scenario 1 - 2026 Forecast + Committed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			224.67	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Fulmer Street	
2	2	Standing Way (N)	
3	3	Shenley Way	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.11	8.03	23.73	116.75	56.00	21.00	
2	7.58	9.41	22.80	46.47	56.00	20.00	
3	3.64	7.91	11.23	43.43	56.00	12.00	
4	7.48	11.00	10.88	31.84	56.00	25.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.647	1970.427
2		(calculated)	(calculated)	0.814	2909.185
3		(calculated)	(calculated)	0.628	1836.411
4		(calculated)	(calculated)	0.803	2889.629

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	671.00	100.000
2	ONE HOUR	✓	1995.00	100.000
3	ONE HOUR	✓	1035.00	100.000
4	ONE HOUR	✓	1146.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	205.000	408.000	58.000
	2	307.000	17.000	391.000	1280.000
	3	510.000	408.000	0.000	117.000
	4	0.000	1002.000	144.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.31	0.61	0.09
	2	0.15	0.01	0.20	0.64
	3	0.49	0.39	0.00	0.11
	4	0.00	0.87	0.13	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.77	15.96	3.19	C
2	0.93	20.11	11.55	C
3	1.65	998.27	253.54	F
4	0.60	4.29	1.49	A

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	505.16	502.29	1175.69	0.00	1209.37	0.418	0.72	5.127	A
2	1501.94	1496.13	456.91	0.00	2537.31	0.592	1.45	3.475	A
3	779.20	768.32	1246.32	0.00	1053.91	0.739	2.72	12.319	B
4	862.77	860.07	924.45	0.00	2147.30	0.402	0.68	2.821	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	603.22	601.00	1384.68	0.00	1074.08	0.562	1.27	7.658	A
2	1793.46	1788.69	546.67	0.00	2464.25	0.728	2.65	5.348	A
3	930.44	864.01	1490.07	0.00	900.87	1.033	19.33	61.016	F
4	1030.23	1028.84	1056.83	0.00	2040.99	0.505	1.02	3.591	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	738.78	731.46	1555.39	0.00	963.58	0.767	3.10	15.221	C
2	2196.54	2165.76	666.30	0.00	2366.88	0.928	10.34	16.115	C
3	1139.56	702.79	1804.52	0.00	703.44	1.620	128.52	392.029	F
4	1261.77	1259.89	975.08	0.00	2106.64	0.599	1.49	4.289	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	738.78	738.45	1552.41	0.00	965.51	0.765	3.19	15.958	C
2	2196.54	2191.67	671.39	0.00	2362.74	0.930	11.55	20.109	C
3	1139.56	689.93	1825.96	0.00	689.98	1.652	240.93	854.786	F
4	1261.77	1261.76	967.88	0.00	2112.42	0.597	1.49	4.278	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	603.22	610.60	1394.46	0.00	1067.75	0.565	1.34	8.085	A
2	1793.46	1828.53	553.73	0.00	2458.51	0.729	2.79	6.087	A
3	930.44	880.00	1522.94	0.00	880.24	1.057	253.54	998.273	F
4	1030.23	1031.98	1077.49	0.00	2024.41	0.509	1.06	3.675	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	505.16	507.25	1288.12	0.00	1136.59	0.444	0.82	5.803	A
2	1501.94	1507.15	460.81	0.00	2534.13	0.593	1.49	3.560	A
3	779.20	1043.91	1255.61	0.00	1048.07	0.743	187.36	760.955	F
4	862.77	863.76	1170.68	0.00	1949.58	0.443	0.81	3.354	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, AM	Scenario 2 - 2026 Forecast + Committed + Development	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			90.44	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Fulmer Street	
2	2	Standing Way (N)	
3	3	Shenley Way	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.11	8.03	23.73	116.75	56.00	21.00	
2	7.58	9.41	22.80	46.47	56.00	20.00	
3	3.64	7.91	11.23	43.43	56.00	12.00	
4	7.48	11.00	10.88	31.84	56.00	25.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.647	1970.427
2		(calculated)	(calculated)	0.814	2909.185
3		(calculated)	(calculated)	0.628	1836.411
4		(calculated)	(calculated)	0.803	2889.629

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	386.00	100.000
2	ONE HOUR	✓	1398.00	100.000
3	ONE HOUR	✓	1090.00	100.000
4	ONE HOUR	✓	1614.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	34.000	294.000	58.000
	2	124.000	0.000	211.000	1063.000
	3	339.000	552.000	0.000	199.000
	4	6.000	1401.000	201.000	6.000

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

		To			
		1	2	3	4
From	1	0.00	0.09	0.76	0.15
	2	0.09	0.00	0.15	0.76
	3	0.31	0.51	0.00	0.18
	4	0.00	0.87	0.12	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.84	41.32	4.56	E
2	0.64	4.18	1.77	A
3	1.23	337.74	121.04	F
4	0.83	9.90	4.76	A

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	290.60	288.76	1617.77	0.00	923.20	0.315	0.46	5.721	A
2	1052.49	1049.69	418.58	0.00	2568.50	0.410	0.70	2.392	A
3	820.61	813.03	939.15	0.00	1246.76	0.658	1.90	8.254	A
4	1215.10	1210.53	757.70	0.00	2281.20	0.533	1.14	3.386	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	347.01	345.17	1930.81	0.00	720.55	0.482	0.92	9.650	A
2	1256.77	1255.51	500.40	0.00	2501.91	0.502	1.01	2.917	A
3	979.89	965.07	1123.26	0.00	1131.17	0.866	5.60	20.319	C
4	1450.95	1447.46	900.24	0.00	2166.74	0.670	2.02	5.036	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	424.99	412.83	2249.92	0.00	513.98	0.827	3.96	32.792	D
2	1539.23	1536.29	603.05	0.00	2418.36	0.636	1.75	4.112	A
3	1200.11	967.17	1373.02	0.00	974.36	1.232	63.84	140.704	F
4	1777.05	1766.70	926.86	0.00	2145.36	0.828	4.60	9.364	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	424.99	422.60	2261.71	0.00	506.35	0.839	4.56	41.322	E
2	1539.23	1539.13	613.20	0.00	2410.10	0.639	1.77	4.178	A
3	1200.11	971.30	1376.93	0.00	971.90	1.235	121.04	337.745	F
4	1777.05	1776.43	930.49	0.00	2142.44	0.829	4.76	9.901	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	347.01	360.67	2021.05	0.00	662.14	0.524	1.14	12.589	B
2	1256.77	1259.71	516.19	0.00	2489.06	0.505	1.04	2.966	A
3	979.89	1118.10	1129.21	0.00	1127.44	0.869	86.48	330.538	F
4	1450.95	1460.25	1025.70	0.00	2065.99	0.702	2.44	6.099	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	290.60	292.86	1800.72	0.00	804.77	0.361	0.58	7.142	A
2	1052.49	1053.81	423.40	0.00	2564.58	0.410	0.71	2.412	A
3	820.61	1157.78	943.30	0.00	1244.16	0.660	2.19	111.754	F
4	1215.10	1218.93	1039.88	0.00	2054.61	0.591	1.48	4.376	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, PM	Scenario 2 - 2026 Forecast + Committed + Development	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			314.24	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Fulmer Street	
2	2	Standing Way (N)	
3	3	Shenley Way	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.11	8.03	23.73	116.75	56.00	21.00	
2	7.58	9.41	22.80	46.47	56.00	20.00	
3	3.64	7.91	11.23	43.43	56.00	12.00	
4	7.48	11.00	10.88	31.84	56.00	25.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.647	1970.427
2		(calculated)	(calculated)	0.814	2909.185
3		(calculated)	(calculated)	0.628	1836.411
4		(calculated)	(calculated)	0.803	2889.629

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	651.00	100.000
2	ONE HOUR	✓	2148.00	100.000
3	ONE HOUR	✓	1021.00	100.000
4	ONE HOUR	✓	1284.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	194.000	391.000	66.000
	2	296.000	17.000	372.000	1463.000
	3	477.000	395.000	0.000	149.000
	4	0.000	1129.000	155.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.30	0.60	0.10
	2	0.14	0.01	0.17	0.68
	3	0.47	0.39	0.00	0.15
	4	0.00	0.88	0.12	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.80	19.99	3.84	C
2	1.00	52.23	34.82	F
3	1.92	1442.54	347.09	F
4	0.64	4.56	1.78	A

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	490.11	487.13	1268.10	0.00	1149.55	0.426	0.74	5.471	A
2	1617.13	1610.10	458.27	0.00	2536.20	0.638	1.76	3.901	A
3	768.66	754.48	1380.64	0.00	969.58	0.793	3.55	16.011	C
4	966.66	963.47	878.99	0.00	2183.80	0.443	0.80	2.975	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	585.24	582.85	1472.21	0.00	1017.42	0.575	1.34	8.328	A
2	1931.01	1923.84	548.31	0.00	2462.92	0.784	3.55	6.662	A
3	917.86	786.48	1649.75	0.00	800.62	1.146	36.39	110.309	F
4	1154.29	1152.72	952.04	0.00	2125.14	0.543	1.19	3.736	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	716.76	707.26	1663.94	0.00	893.31	0.802	3.72	18.682	C
2	2364.99	2282.80	666.87	0.00	2366.42	0.999	24.10	29.854	D
3	1124.14	606.15	1959.16	0.00	606.35	1.854	165.89	620.305	F
4	1413.71	1411.37	850.33	0.00	2206.81	0.641	1.78	4.561	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	716.76	716.26	1658.54	0.00	896.80	0.799	3.84	19.992	C
2	2364.99	2322.12	673.47	0.00	2361.05	1.002	34.82	52.229	F
3	1124.14	585.35	1992.58	0.00	585.37	1.920	300.59	1442.544	F
4	1413.71	1413.71	838.30	0.00	2216.48	0.638	1.78	4.533	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	585.24	595.15	1456.05	0.00	1027.88	0.569	1.36	8.596	A
2	1931.01	2054.74	557.42	0.00	2455.50	0.786	3.89	12.000	B
3	917.86	731.84	1759.23	0.00	731.88	1.254	347.09	1432.516	F
4	1154.29	1156.66	924.45	0.00	2147.29	0.538	1.19	3.681	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	490.11	492.25	1351.43	0.00	1095.61	0.447	0.83	6.055	A
2	1617.13	1625.44	462.38	0.00	2532.85	0.638	1.81	4.048	A
3	768.66	958.49	1393.85	0.00	961.28	0.800	299.63	1214.873	F
4	966.66	967.74	1055.47	0.00	2042.09	0.473	0.92	3.393	A

Furzton Roundabout
Existing Junction Layout

Junctions 8

ARCADY 8 - Roundabout Module

Filename: Furzton Roundabout.arc8
Path: P:\data\W50---\SW Milton Keynes\ARCADY\Furzton Roundabout
Report generation date: 07/11/2014 16:20:20

File summary

Title	Furzton Roundabout
Location	Fulmer Street / Chaffron Way
Site Number	
Date	06/11/2014
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	A Lechmere
Description	

Analysis Options

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

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, AM	Scenario 1 - 2026 Forecast + Committed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			8.92	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Fulmer Street (W)	
2	2	Chaffron Way (N)	
3	3	Fulmer Street (E)	
4	4	Chaffron Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.70	7.90	17.20	41.40	56.00	24.00	
2	3.70	7.90	18.50	66.40	56.00	29.00	
3	3.80	7.70	8.40	44.50	56.00	37.00	
4	3.70	7.90	6.00	34.60	56.00	22.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.631	1920.094
2		(calculated)	(calculated)	0.630	1928.149
3		(calculated)	(calculated)	0.567	1631.079
4		(calculated)	(calculated)	0.572	1587.141

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	560.00	100.000
2	ONE HOUR	✓	420.00	100.000
3	ONE HOUR	✓	1094.00	100.000
4	ONE HOUR	✓	354.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	133.000	400.000	27.000
	2	35.000	0.000	171.000	214.000
	3	657.000	364.000	0.000	73.000
	4	66.000	261.000	27.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.24	0.71	0.05
	2	0.08	0.00	0.41	0.51
	3	0.60	0.33	0.00	0.07
	4	0.19	0.74	0.08	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.42	4.28	0.73	A
2	0.29	3.16	0.41	A
3	0.83	14.18	4.59	B
4	0.42	6.83	0.73	A

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	421.60	420.17	488.27	0.00	1611.87	0.262	0.36	3.049	A
2	316.20	315.29	340.61	0.00	1713.42	0.185	0.23	2.602	A
3	823.62	818.85	207.18	0.00	1513.54	0.544	1.19	5.204	A
4	266.51	265.28	790.49	0.00	1135.04	0.235	0.31	4.178	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	503.43	502.92	584.74	0.00	1550.97	0.325	0.48	3.470	A
2	377.57	377.31	407.71	0.00	1671.12	0.226	0.29	2.813	A
3	983.48	980.58	247.94	0.00	1490.41	0.660	1.92	7.097	A
4	318.24	317.72	946.59	0.00	1045.77	0.304	0.44	4.996	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	616.57	615.60	713.61	0.00	1469.62	0.420	0.72	4.257	A
2	462.43	461.99	499.04	0.00	1613.55	0.287	0.40	3.161	A
3	1204.52	1194.50	303.57	0.00	1458.85	0.826	4.42	13.286	B
4	389.76	388.62	1153.30	0.00	927.55	0.420	0.72	6.740	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	616.57	616.55	717.61	0.00	1467.10	0.420	0.73	4.278	A
2	462.43	462.42	499.85	0.00	1613.04	0.287	0.41	3.162	A
3	1204.52	1203.84	303.88	0.00	1458.67	0.826	4.59	14.182	B
4	389.76	389.72	1162.04	0.00	922.54	0.422	0.73	6.830	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	503.43	504.39	590.50	0.00	1547.34	0.325	0.49	3.494	A
2	377.57	378.01	408.95	0.00	1670.34	0.226	0.30	2.818	A
3	983.48	993.82	248.42	0.00	1490.14	0.660	2.01	7.481	A
4	318.24	319.37	959.00	0.00	1038.67	0.306	0.45	5.069	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	421.60	422.12	492.35	0.00	1609.29	0.262	0.36	3.068	A
2	316.20	316.46	342.23	0.00	1712.40	0.185	0.23	2.607	A
3	823.62	826.76	207.97	0.00	1513.09	0.544	1.22	5.326	A
4	266.51	267.06	797.96	0.00	1130.77	0.236	0.31	4.216	A

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, PM	Scenario 1 - 2026 Forecast + Committed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			30.48	D

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Fulmer Street (W)	
2	2	Chaffron Way (N)	
3	3	Fulmer Street (E)	
4	4	Chaffron Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.70	7.90	17.20	41.40	56.00	24.00	
2	3.70	7.90	18.50	66.40	56.00	29.00	
3	3.80	7.70	8.40	44.50	56.00	37.00	
4	3.70	7.90	6.00	34.60	56.00	22.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.631	1920.094
2		(calculated)	(calculated)	0.630	1928.149
3		(calculated)	(calculated)	0.567	1631.079
4		(calculated)	(calculated)	0.572	1587.141

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	661.00	100.000
2	ONE HOUR	✓	1197.00	100.000
3	ONE HOUR	✓	954.00	100.000
4	ONE HOUR	✓	273.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	43.000	526.000	92.000
	2	232.000	0.000	378.000	587.000
	3	724.000	217.000	0.000	13.000
	4	33.000	221.000	19.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.07	0.80	0.14
	2	0.19	0.00	0.32	0.49
	3	0.76	0.23	0.00	0.01
	4	0.12	0.81	0.07	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.45	4.15	0.83	A
2	0.89	20.79	7.22	C
3	0.99	67.74	19.42	F
4	0.35	6.49	0.54	A

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	497.64	495.98	341.99	0.00	1704.21	0.292	0.42	3.008	A
2	901.16	896.20	477.95	0.00	1626.84	0.554	1.24	4.948	A
3	718.22	712.80	682.22	0.00	1244.02	0.577	1.36	6.786	A
4	205.53	204.59	876.78	0.00	1085.69	0.189	0.23	4.126	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	594.23	593.65	409.30	0.00	1661.72	0.358	0.56	3.405	A
2	1076.08	1072.40	572.08	0.00	1567.50	0.686	2.16	7.293	A
3	857.63	852.37	816.37	0.00	1167.91	0.734	2.67	11.346	B
4	245.42	245.03	1048.60	0.00	987.42	0.249	0.33	4.900	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	727.77	726.70	492.26	0.00	1609.35	0.452	0.83	4.118	A
2	1317.92	1299.74	700.29	0.00	1486.68	0.886	6.70	17.954	C
3	1050.37	1005.37	990.44	0.00	1069.15	0.982	13.92	41.451	E
4	300.58	299.82	1243.58	0.00	875.91	0.343	0.52	6.310	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	727.77	727.75	498.11	0.00	1605.66	0.453	0.83	4.145	A
2	1317.92	1315.85	701.32	0.00	1486.03	0.887	7.22	20.791	C
3	1050.37	1028.36	1001.61	0.00	1062.82	0.988	19.42	67.740	F
4	300.58	300.52	1269.39	0.00	861.15	0.349	0.54	6.491	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	594.23	595.27	426.36	0.00	1650.95	0.360	0.57	3.450	A
2	1076.08	1095.86	573.68	0.00	1566.50	0.687	2.28	8.042	A
3	857.63	923.11	832.65	0.00	1158.68	0.740	3.05	19.407	C
4	245.42	246.14	1122.93	0.00	944.91	0.260	0.36	5.215	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	497.64	498.24	345.96	0.00	1701.70	0.292	0.42	3.027	A
2	901.16	905.18	480.17	0.00	1625.45	0.554	1.27	5.082	A
3	718.22	724.77	688.68	0.00	1240.36	0.579	1.42	7.145	A
4	205.53	206.00	890.33	0.00	1077.94	0.191	0.24	4.176	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, AM	Scenario 2 - 2026 Forecast + Committed + Development	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			8.91	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Fulmer Street (W)	
2	2	Chaffron Way (N)	
3	3	Fulmer Street (E)	
4	4	Chaffron Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.70	7.90	17.20	41.40	56.00	24.00	
2	3.70	7.90	18.50	66.40	56.00	29.00	
3	3.80	7.70	8.40	44.50	56.00	37.00	
4	3.70	7.90	6.00	34.60	56.00	22.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.631	1920.094
2		(calculated)	(calculated)	0.630	1928.149
3		(calculated)	(calculated)	0.567	1631.079
4		(calculated)	(calculated)	0.572	1587.141

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	545.00	100.000
2	ONE HOUR	✓	414.00	100.000
3	ONE HOUR	✓	1085.00	100.000
4	ONE HOUR	✓	410.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	121.000	392.000	32.000
	2	35.000	0.000	163.000	216.000
	3	648.000	363.000	0.000	74.000
	4	79.000	294.000	37.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.22	0.72	0.06
	2	0.08	0.00	0.39	0.52
	3	0.60	0.33	0.00	0.07
	4	0.19	0.72	0.09	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.42	4.34	0.72	A
2	0.28	3.16	0.40	A
3	0.82	13.89	4.46	B
4	0.49	7.62	0.95	A

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	410.30	408.91	519.70	0.00	1592.03	0.258	0.35	3.071	A
2	311.68	310.78	345.84	0.00	1710.13	0.182	0.22	2.600	A
3	816.84	812.14	212.43	0.00	1510.56	0.541	1.18	5.178	A
4	308.67	307.18	783.03	0.00	1139.31	0.271	0.37	4.365	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	489.94	489.44	622.40	0.00	1527.20	0.321	0.47	3.505	A
2	372.18	371.92	413.98	0.00	1667.17	0.223	0.29	2.809	A
3	975.39	972.55	254.22	0.00	1486.84	0.656	1.89	7.037	A
4	368.58	367.91	937.66	0.00	1050.87	0.351	0.54	5.323	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	600.06	599.09	759.61	0.00	1440.58	0.417	0.72	4.321	A
2	455.82	455.39	506.68	0.00	1608.73	0.283	0.40	3.156	A
3	1194.61	1184.93	311.27	0.00	1454.48	0.821	4.31	13.052	B
4	451.42	449.86	1142.61	0.00	933.66	0.484	0.93	7.499	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	600.06	600.04	763.85	0.00	1437.91	0.417	0.72	4.343	A
2	455.82	455.82	507.55	0.00	1608.18	0.283	0.40	3.157	A
3	1194.61	1193.97	311.59	0.00	1454.30	0.821	4.46	13.892	B
4	451.42	451.36	1151.07	0.00	928.82	0.486	0.95	7.619	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	489.94	490.90	628.49	0.00	1523.36	0.322	0.48	3.527	A
2	372.18	372.61	415.31	0.00	1666.33	0.223	0.29	2.813	A
3	975.39	985.36	254.73	0.00	1486.56	0.656	1.97	7.402	A
4	368.58	370.14	949.66	0.00	1044.01	0.353	0.56	5.412	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	410.30	410.82	524.08	0.00	1589.27	0.258	0.35	3.091	A
2	311.68	311.94	347.53	0.00	1709.06	0.182	0.23	2.605	A
3	816.84	819.91	213.25	0.00	1510.09	0.541	1.21	5.298	A
4	308.67	309.38	790.36	0.00	1135.12	0.272	0.38	4.412	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, PM	Scenario 2 - 2026 Forecast + Committed + Development	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			35.74	E

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Fulmer Street (W)	
2	2	Chaffron Way (N)	
3	3	Fulmer Street (E)	
4	4	Chaffron Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.70	7.90	17.20	41.40	56.00	24.00	
2	3.70	7.90	18.50	66.40	56.00	29.00	
3	3.80	7.70	8.40	44.50	56.00	37.00	
4	3.70	7.90	6.00	34.60	56.00	22.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.631	1920.094
2		(calculated)	(calculated)	0.630	1928.149
3		(calculated)	(calculated)	0.567	1631.079
4		(calculated)	(calculated)	0.572	1587.141

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	674.00	100.000
2	ONE HOUR	✓	1246.00	100.000
3	ONE HOUR	✓	925.00	100.000
4	ONE HOUR	✓	288.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	44.000	530.000	100.000
	2	240.000	0.000	364.000	642.000
	3	685.000	227.000	0.000	13.000
	4	37.000	232.000	19.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.07	0.79	0.15
	2	0.19	0.00	0.29	0.52
	3	0.74	0.25	0.00	0.01
	4	0.13	0.81	0.07	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.47	4.28	0.88	A
2	0.93	30.07	10.74	D
3	1.00	75.39	21.32	F
4	0.36	6.49	0.57	A

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	507.42	505.70	357.69	0.00	1694.30	0.299	0.43	3.058	A
2	938.05	932.58	486.93	0.00	1621.18	0.579	1.37	5.246	A
3	696.39	691.04	735.17	0.00	1213.98	0.574	1.34	6.893	A
4	216.82	215.83	860.96	0.00	1094.74	0.198	0.25	4.137	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	605.91	605.30	428.04	0.00	1649.89	0.367	0.58	3.482	A
2	1120.13	1115.63	582.84	0.00	1560.72	0.718	2.49	8.095	A
3	831.56	826.22	879.53	0.00	1132.08	0.735	2.67	11.696	B
4	258.91	258.49	1029.50	0.00	998.35	0.259	0.35	4.917	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	742.09	740.94	513.88	0.00	1595.70	0.465	0.87	4.253	A
2	1371.87	1344.11	713.43	0.00	1478.39	0.928	9.43	23.418	C
3	1018.44	970.74	1061.38	0.00	1028.90	0.990	14.60	44.280	E
4	317.09	316.29	1215.99	0.00	891.69	0.356	0.55	6.316	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	742.09	742.06	519.63	0.00	1592.07	0.466	0.88	4.281	A
2	1371.87	1366.65	714.53	0.00	1477.70	0.928	10.74	30.072	D
3	1018.44	991.54	1077.50	0.00	1019.76	0.999	21.32	75.393	F
4	317.09	317.03	1240.84	0.00	877.48	0.361	0.57	6.494	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	605.91	607.03	448.21	0.00	1637.16	0.370	0.60	3.538	A
2	1120.13	1152.43	584.53	0.00	1559.65	0.718	2.66	9.608	A
3	831.56	904.29	905.83	0.00	1117.16	0.744	3.14	22.396	C
4	258.91	259.65	1113.56	0.00	950.27	0.272	0.38	5.277	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	507.42	508.07	362.02	0.00	1691.56	0.300	0.44	3.078	A
2	938.05	943.06	489.24	0.00	1619.73	0.579	1.41	5.419	A
3	696.39	703.36	742.94	0.00	1209.57	0.576	1.40	7.287	A
4	216.82	217.33	875.12	0.00	1086.64	0.200	0.25	4.190	A

Westcroft Roundabout
Existing Junction Layout

Junctions 8

ARCADY 8 - Roundabout Module

Filename: Westcroft Roundabout.arc8
Path: P:\data\W50---\SW Milton Keynes\ARCADY\Westcroft Roundabout
Report generation date: 07/11/2014 17:30:44

File summary

Title	Westcroft Roundabout
Location	Tattenhoe Street / Chaffron Way
Site Number	
Date	06/11/2014
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	A Lechmere
Description	

Analysis Options

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

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, AM	Scenario 1 - 2026 Forecast + Committed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			3.64	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Tattenhoe Street (W)	
2	2	Chaffron Way (N)	
3	3	Fulmer Street (E)	
4	4	Tattenhoe Street (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.76	7.70	20.80	85.70	66.00	16.00	
2	3.70	7.90	20.20	31.70	66.00	25.00	
3	3.90	7.10	21.30	47.10	66.00	33.00	
4	3.80	7.80	18.80	87.30	66.00	43.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.602	2044.587
2		(calculated)	(calculated)	0.574	1952.000
3		(calculated)	(calculated)	0.557	1869.056
4		(calculated)	(calculated)	0.549	1858.583

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	171.00	100.000
2	ONE HOUR	✓	582.00	100.000
3	ONE HOUR	✓	714.00	100.000
4	ONE HOUR	✓	288.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	32.000	124.000	15.000
	2	154.000	0.000	170.000	258.000
	3	387.000	289.000	0.000	38.000
	4	8.000	206.000	74.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.19	0.73	0.09
	2	0.26	0.00	0.29	0.44
	3	0.54	0.40	0.00	0.05
	4	0.03	0.72	0.26	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.11	2.46	0.13	A
2	0.35	3.09	0.55	A
3	0.49	4.43	0.96	A
4	0.23	3.50	0.31	A

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	128.74	128.42	426.96	0.00	1787.51	0.072	0.08	2.193	A
2	438.16	436.92	159.93	0.00	1860.13	0.236	0.31	2.555	A
3	537.54	535.66	320.56	0.00	1690.64	0.318	0.47	3.145	A
4	216.82	216.15	622.76	0.00	1516.91	0.143	0.17	2.796	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	153.73	153.65	511.05	0.00	1736.88	0.089	0.10	2.298	A
2	523.21	522.85	191.37	0.00	1842.07	0.284	0.40	2.759	A
3	641.87	641.20	383.61	0.00	1655.55	0.388	0.64	3.586	A
4	258.91	258.70	745.43	0.00	1449.61	0.179	0.22	3.055	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	188.27	188.15	625.62	0.00	1667.90	0.113	0.13	2.459	A
2	640.79	640.20	234.33	0.00	1817.39	0.353	0.55	3.090	A
3	786.13	784.84	469.71	0.00	1607.63	0.489	0.96	4.416	A
4	317.09	316.74	912.47	0.00	1357.97	0.234	0.31	3.495	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	188.27	188.27	626.47	0.00	1667.39	0.113	0.13	2.460	A
2	640.79	640.79	234.52	0.00	1817.28	0.353	0.55	3.092	A
3	786.13	786.11	470.13	0.00	1607.39	0.489	0.96	4.431	A
4	317.09	317.09	913.83	0.00	1357.22	0.234	0.31	3.498	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	153.73	153.85	512.37	0.00	1736.09	0.089	0.10	2.301	A
2	523.21	523.79	191.67	0.00	1841.89	0.284	0.40	2.761	A
3	641.87	643.15	384.29	0.00	1655.17	0.388	0.64	3.602	A
4	258.91	259.25	747.51	0.00	1448.47	0.179	0.22	3.060	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	128.74	128.82	428.85	0.00	1786.38	0.072	0.08	2.195	A
2	438.16	438.52	160.47	0.00	1859.81	0.236	0.31	2.562	A
3	537.54	538.22	321.73	0.00	1689.99	0.318	0.47	3.163	A
4	216.82	217.03	625.61	0.00	1515.35	0.143	0.17	2.805	A

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, PM	Scenario 1 - 2026 Forecast + Committed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			3.48	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Tattenhoe Street (W)	
2	2	Chaffron Way (N)	
3	3	Fulmer Street (E)	
4	4	Tattenhoe Street (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.76	7.70	20.80	85.70	66.00	16.00	
2	3.70	7.90	20.20	31.70	66.00	25.00	
3	3.90	7.10	21.30	47.10	66.00	33.00	
4	3.80	7.80	18.80	87.30	66.00	43.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.602	2044.587
2		(calculated)	(calculated)	0.574	1952.000
3		(calculated)	(calculated)	0.557	1869.056
4		(calculated)	(calculated)	0.549	1858.583

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	352.00	100.000
2	ONE HOUR	✓	748.00	100.000
3	ONE HOUR	✓	421.00	100.000
4	ONE HOUR	✓	330.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	32.000	278.000	42.000
	2	21.000	0.000	186.000	541.000
	3	207.000	146.000	0.000	68.000
	4	8.000	261.000	61.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.09	0.79	0.12
	2	0.03	0.00	0.25	0.72
	3	0.49	0.35	0.00	0.16
	4	0.02	0.79	0.18	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.22	2.70	0.29	A
2	0.48	4.10	0.93	A
3	0.31	3.51	0.45	A
4	0.22	2.87	0.29	A

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	265.00	264.32	351.32	0.00	1833.06	0.145	0.17	2.318	A
2	563.13	561.28	286.09	0.00	1787.65	0.315	0.46	2.964	A
3	316.95	315.97	453.25	0.00	1616.79	0.196	0.25	2.797	A
4	248.44	247.75	280.69	0.00	1704.58	0.146	0.17	2.497	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	316.44	316.26	420.44	0.00	1791.44	0.177	0.22	2.467	A
2	672.44	671.79	342.31	0.00	1755.35	0.383	0.62	3.357	A
3	378.47	378.17	542.48	0.00	1567.13	0.242	0.32	3.061	A
4	296.66	296.48	335.95	0.00	1674.27	0.177	0.22	2.641	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	387.56	387.26	514.82	0.00	1734.61	0.223	0.29	2.701	A
2	823.56	822.34	419.17	0.00	1711.20	0.481	0.93	4.088	A
3	463.53	463.01	664.06	0.00	1499.46	0.309	0.45	3.509	A
4	363.34	363.05	411.31	0.00	1632.92	0.223	0.29	2.866	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	387.56	387.56	515.27	0.00	1734.34	0.223	0.29	2.701	A
2	823.56	823.55	419.49	0.00	1711.02	0.481	0.93	4.100	A
3	463.53	463.52	665.00	0.00	1498.93	0.309	0.45	3.514	A
4	363.34	363.33	411.78	0.00	1632.67	0.223	0.29	2.866	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	316.44	316.73	421.17	0.00	1791.00	0.177	0.22	2.468	A
2	672.44	673.65	342.83	0.00	1755.06	0.383	0.63	3.371	A
3	378.47	378.98	543.93	0.00	1566.32	0.242	0.32	3.068	A
4	296.66	296.94	336.68	0.00	1673.87	0.177	0.22	2.643	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	265.00	265.19	352.62	0.00	1832.28	0.145	0.17	2.322	A
2	563.13	563.79	287.04	0.00	1787.11	0.315	0.47	2.978	A
3	316.95	317.25	455.24	0.00	1615.68	0.196	0.25	2.803	A
4	248.44	248.62	281.84	0.00	1703.95	0.146	0.17	2.500	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, AM	Scenario 2 - 2026 Forecast + Committed + Development	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			4.17	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Tattenhoe Street (W)	
2	2	Chaffron Way (N)	
3	3	Fulmer Street (E)	
4	4	Tattenhoe Street (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.76	7.70	20.80	85.70	66.00	16.00	
2	3.70	7.90	20.20	31.70	66.00	25.00	
3	3.90	7.10	21.30	47.10	66.00	33.00	
4	3.80	7.80	18.80	87.30	66.00	43.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.602	2044.587
2		(calculated)	(calculated)	0.574	1952.000
3		(calculated)	(calculated)	0.557	1869.056
4		(calculated)	(calculated)	0.549	1858.583

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	190.00	100.000
2	ONE HOUR	✓	600.00	100.000
3	ONE HOUR	✓	847.00	100.000
4	ONE HOUR	✓	283.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	34.000	141.000	15.000
	2	151.000	0.000	190.000	259.000
	3	449.000	356.000	0.000	42.000
	4	8.000	204.000	71.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.18	0.74	0.08
	2	0.25	0.00	0.32	0.43
	3	0.53	0.42	0.00	0.05
	4	0.03	0.72	0.25	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.13	2.57	0.15	A
2	0.37	3.17	0.58	A
3	0.58	5.38	1.38	A
4	0.24	3.75	0.32	A

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	143.04	142.69	473.36	0.00	1759.58	0.081	0.09	2.251	A
2	451.71	450.41	170.43	0.00	1854.09	0.244	0.32	2.590	A
3	637.67	635.23	319.05	0.00	1691.48	0.377	0.61	3.439	A
4	213.06	212.37	717.09	0.00	1465.16	0.145	0.17	2.903	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	170.81	170.71	566.63	0.00	1703.42	0.100	0.11	2.374	A
2	539.39	539.01	203.94	0.00	1834.84	0.294	0.42	2.808	A
3	761.44	760.46	381.80	0.00	1656.56	0.460	0.85	4.057	A
4	254.41	254.19	858.40	0.00	1387.63	0.183	0.23	3.210	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	209.19	209.05	693.49	0.00	1627.04	0.129	0.15	2.566	A
2	660.61	659.97	249.72	0.00	1808.55	0.365	0.58	3.167	A
3	932.56	930.48	467.49	0.00	1608.87	0.580	1.38	5.349	A
4	311.59	311.20	1050.43	0.00	1282.27	0.243	0.32	3.745	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	209.19	209.19	694.72	0.00	1626.29	0.129	0.15	2.567	A
2	660.61	660.61	249.93	0.00	1808.42	0.365	0.58	3.170	A
3	932.56	932.53	467.93	0.00	1608.62	0.580	1.38	5.383	A
4	311.59	311.58	1052.54	0.00	1281.12	0.243	0.32	3.753	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	170.81	170.95	568.50	0.00	1702.29	0.100	0.11	2.378	A
2	539.39	540.02	204.28	0.00	1834.65	0.294	0.42	2.814	A
3	761.44	763.50	382.51	0.00	1656.16	0.460	0.87	4.087	A
4	254.41	254.79	861.55	0.00	1385.90	0.184	0.23	3.220	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	143.04	143.14	475.69	0.00	1758.18	0.081	0.09	2.255	A
2	451.71	452.10	171.03	0.00	1853.75	0.244	0.33	2.596	A
3	637.67	638.67	320.23	0.00	1690.82	0.377	0.62	3.464	A
4	213.06	213.28	720.78	0.00	1463.13	0.146	0.17	2.914	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, PM	Scenario 2 - 2026 Forecast + Committed + Development	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			3.83	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Tattenhoe Street (W)	
2	2	Chaffron Way (N)	
3	3	Fulmer Street (E)	
4	4	Tattenhoe Street (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.76	7.70	20.80	85.70	66.00	16.00	
2	3.70	7.90	20.20	31.70	66.00	25.00	
3	3.90	7.10	21.30	47.10	66.00	33.00	
4	3.80	7.80	18.80	87.30	66.00	43.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.602	2044.587
2		(calculated)	(calculated)	0.574	1952.000
3		(calculated)	(calculated)	0.557	1869.056
4		(calculated)	(calculated)	0.549	1858.583

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	388.00	100.000
2	ONE HOUR	✓	816.00	100.000
3	ONE HOUR	✓	494.00	100.000
4	ONE HOUR	✓	337.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	30.000	316.000	42.000
	2	20.000	0.000	223.000	573.000
	3	252.000	171.000	0.000	71.000
	4	8.000	267.000	62.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.08	0.81	0.11
	2	0.02	0.00	0.27	0.70
	3	0.51	0.35	0.00	0.14
	4	0.02	0.79	0.18	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.25	2.83	0.34	A
2	0.53	4.62	1.15	A
3	0.37	3.89	0.59	A
4	0.23	2.98	0.31	A

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	292.11	291.34	375.30	0.00	1818.62	0.161	0.19	2.381	A
2	614.33	612.19	315.35	0.00	1770.84	0.347	0.53	3.136	A
3	371.91	370.69	476.43	0.00	1603.89	0.232	0.30	2.948	A
4	253.71	252.99	332.42	0.00	1676.20	0.151	0.18	2.556	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	348.80	348.59	449.16	0.00	1774.15	0.197	0.25	2.552	A
2	733.57	732.76	377.34	0.00	1735.23	0.423	0.74	3.626	A
3	444.10	443.70	570.24	0.00	1551.68	0.286	0.40	3.285	A
4	302.96	302.76	397.89	0.00	1640.29	0.185	0.23	2.720	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	427.20	426.84	549.96	0.00	1713.46	0.249	0.33	2.828	A
2	898.43	896.81	462.05	0.00	1686.57	0.533	1.14	4.599	A
3	543.90	543.18	697.93	0.00	1480.61	0.367	0.58	3.880	A
4	371.04	370.73	487.10	0.00	1591.34	0.233	0.31	2.981	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	427.20	427.19	550.50	0.00	1713.13	0.249	0.34	2.829	A
2	898.43	898.41	462.43	0.00	1686.35	0.533	1.15	4.618	A
3	543.90	543.90	699.13	0.00	1479.94	0.368	0.59	3.888	A
4	371.04	371.04	487.74	0.00	1590.99	0.233	0.31	2.982	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	348.80	349.15	450.04	0.00	1773.62	0.197	0.25	2.555	A
2	733.57	735.17	377.95	0.00	1734.88	0.423	0.75	3.648	A
3	444.10	444.81	572.05	0.00	1550.67	0.286	0.41	3.295	A
4	302.96	303.26	398.90	0.00	1639.73	0.185	0.23	2.723	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	292.11	292.32	376.76	0.00	1817.74	0.161	0.19	2.387	A
2	614.33	615.15	316.43	0.00	1770.22	0.347	0.54	3.152	A
3	371.91	372.31	478.68	0.00	1602.64	0.232	0.31	2.958	A
4	253.71	253.91	333.88	0.00	1675.40	0.151	0.18	2.560	A

Kingsmead Roundabout
Existing Junction Layout

Junctions 8

ARCADY 8 - Roundabout Module

Filename: Kingsmead Roundabout.arc8
Path: P:\data\W50---\SW Milton Keynes\ARCADY\Kingsmead Roundabout
Report generation date: 07/11/2014 12:32:11

File summary

Title	Kingsmead Roundabout
Location	Snelshall Street / Chaffron Way
Site Number	
Date	06/11/2014
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	A Lechmere
Description	

Analysis Options

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

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, AM	Scenario 1 - 2026 Forecast + Committed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			5.17	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Snelshall Street (W)	
2	2	Chaffron Way (N)	
3	3	Snelshall Street (E)	
4	4	Chaffron Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.80	7.20	5.30	39.60	56.00	28.00	
2	3.60	7.30	4.20	31.50	56.00	38.00	
3	3.60	7.40	6.00	20.20	56.00	42.00	
4	3.70	7.30	3.50	34.30	56.00	34.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.558	1535.225
2		(calculated)	(calculated)	0.517	1370.639
3		(calculated)	(calculated)	0.516	1410.669
4		(calculated)	(calculated)	0.524	1384.230

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	264.00	100.000
2	ONE HOUR	✓	323.00	100.000
3	ONE HOUR	✓	135.00	100.000
4	ONE HOUR	✓	701.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	6.000	150.000	108.000
	2	6.000	0.000	157.000	160.000
	3	59.000	24.000	0.000	52.000
	4	437.000	150.000	114.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.02	0.57	0.41
	2	0.02	0.00	0.49	0.50
	3	0.44	0.18	0.00	0.39
	4	0.62	0.21	0.16	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.21	3.41	0.27	A
2	0.31	4.53	0.45	A
3	0.12	3.29	0.14	A
4	0.58	6.49	1.38	A

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	198.75	198.09	215.79	0.00	1414.84	0.140	0.16	2.989	A
2	243.17	242.18	279.00	0.00	1226.39	0.198	0.25	3.694	A
3	101.64	101.29	205.50	0.00	1304.69	0.078	0.09	3.024	A
4	527.75	525.17	66.78	0.00	1349.24	0.391	0.64	4.404	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	237.33	237.16	258.53	0.00	1391.00	0.171	0.21	3.154	A
2	290.37	290.08	334.10	0.00	1197.90	0.242	0.32	4.008	A
3	121.36	121.28	246.10	0.00	1283.75	0.095	0.11	3.130	A
4	630.18	629.22	79.95	0.00	1342.34	0.469	0.89	5.096	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	290.67	290.40	316.35	0.00	1358.75	0.214	0.27	3.406	A
2	355.63	355.14	409.00	0.00	1159.18	0.307	0.44	4.523	A
3	148.64	148.52	301.32	0.00	1255.28	0.118	0.14	3.288	A
4	771.82	769.89	97.91	0.00	1332.93	0.579	1.37	6.442	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	290.67	290.67	317.08	0.00	1358.34	0.214	0.27	3.408	A
2	355.63	355.62	409.57	0.00	1158.88	0.307	0.45	4.530	A
3	148.64	148.64	301.67	0.00	1255.10	0.118	0.14	3.288	A
4	771.82	771.77	97.99	0.00	1332.89	0.579	1.38	6.486	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	237.33	237.59	259.64	0.00	1390.38	0.171	0.21	3.159	A
2	290.37	290.85	334.99	0.00	1197.44	0.242	0.33	4.018	A
3	121.36	121.48	246.68	0.00	1283.46	0.095	0.11	3.131	A
4	630.18	632.08	80.09	0.00	1342.27	0.469	0.90	5.140	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	198.75	198.92	217.21	0.00	1414.05	0.141	0.17	2.997	A
2	243.17	243.47	280.39	0.00	1225.67	0.198	0.25	3.705	A
3	101.64	101.72	206.50	0.00	1304.18	0.078	0.09	3.026	A
4	527.75	528.75	67.06	0.00	1349.09	0.391	0.65	4.443	A

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, PM	Scenario 1 - 2026 Forecast + Committed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			4.66	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Snelshall Street (W)	
2	2	Chaffron Way (N)	
3	3	Snelshall Street (E)	
4	4	Chaffron Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.80	7.20	5.30	39.60	56.00	28.00	
2	3.60	7.30	4.20	31.50	56.00	38.00	
3	3.60	7.40	6.00	20.20	56.00	42.00	
4	3.70	7.30	3.50	34.30	56.00	34.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.558	1535.225
2		(calculated)	(calculated)	0.517	1370.639
3		(calculated)	(calculated)	0.516	1410.669
4		(calculated)	(calculated)	0.524	1384.230

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	183.00	100.000
2	ONE HOUR	✓	527.00	100.000
3	ONE HOUR	✓	261.00	100.000
4	ONE HOUR	✓	420.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	6.000	39.000	138.000
	2	7.000	0.000	32.000	488.000
	3	60.000	79.000	0.000	122.000
	4	146.000	256.000	18.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.03	0.21	0.75
	2	0.01	0.00	0.06	0.93
	3	0.23	0.30	0.00	0.47
	4	0.35	0.61	0.04	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.15	3.26	0.18	A
2	0.46	5.36	0.86	A
3	0.27	4.76	0.38	A
4	0.36	4.34	0.56	A

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	137.77	137.33	264.69	0.00	1387.57	0.099	0.11	2.911	A
2	396.75	394.98	146.32	0.00	1294.99	0.306	0.44	4.035	A
3	196.49	195.68	474.55	0.00	1165.94	0.169	0.20	3.747	A
4	316.20	314.94	109.46	0.00	1326.88	0.238	0.31	3.591	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	164.51	164.40	317.03	0.00	1358.37	0.121	0.14	3.047	A
2	473.76	473.18	175.18	0.00	1280.07	0.370	0.59	4.508	A
3	234.63	234.38	568.42	0.00	1117.53	0.210	0.27	4.120	A
4	377.57	377.21	131.11	0.00	1315.54	0.287	0.40	3.879	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	201.49	201.32	388.14	0.00	1318.70	0.153	0.18	3.256	A
2	580.24	579.18	214.51	0.00	1259.73	0.461	0.85	5.339	A
3	287.37	286.93	695.82	0.00	1051.83	0.273	0.38	4.756	A
4	462.43	461.83	160.50	0.00	1300.14	0.356	0.55	4.339	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	201.49	201.49	388.65	0.00	1318.41	0.153	0.18	3.257	A
2	580.24	580.22	214.70	0.00	1259.64	0.461	0.86	5.356	A
3	287.37	287.36	696.93	0.00	1051.26	0.273	0.38	4.764	A
4	462.43	462.42	160.75	0.00	1300.01	0.356	0.56	4.345	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	164.51	164.68	317.85	0.00	1357.91	0.121	0.14	3.052	A
2	473.76	474.80	175.49	0.00	1279.91	0.370	0.60	4.526	A
3	234.63	235.07	570.16	0.00	1116.64	0.210	0.27	4.130	A
4	377.57	378.16	131.50	0.00	1315.33	0.287	0.41	3.887	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	137.77	137.88	266.07	0.00	1386.79	0.099	0.11	2.916	A
2	396.75	397.35	146.93	0.00	1294.67	0.306	0.45	4.058	A
3	196.49	196.75	477.20	0.00	1164.58	0.169	0.21	3.763	A
4	316.20	316.56	110.06	0.00	1326.56	0.238	0.32	3.606	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, AM	Scenario 2 - 2026 Forecast + Committed + Development	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			5.25	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Snelshall Street (W)	
2	2	Chaffron Way (N)	
3	3	Snelshall Street (E)	
4	4	Chaffron Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.80	7.20	5.30	39.60	56.00	28.00	
2	3.60	7.30	4.20	31.50	56.00	38.00	
3	3.60	7.40	6.00	20.20	56.00	42.00	
4	3.70	7.30	3.50	34.30	56.00	34.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.558	1535.225
2		(calculated)	(calculated)	0.517	1370.639
3		(calculated)	(calculated)	0.516	1410.669
4		(calculated)	(calculated)	0.524	1384.230

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	292.00	100.000
2	ONE HOUR	✓	337.00	100.000
3	ONE HOUR	✓	206.00	100.000
4	ONE HOUR	✓	690.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	6.000	178.000	108.000
	2	6.000	0.000	170.000	161.000
	3	118.000	29.000	0.000	59.000
	4	435.000	149.000	106.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.02	0.61	0.37
	2	0.02	0.00	0.50	0.48
	3	0.57	0.14	0.00	0.29
	4	0.63	0.22	0.15	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.24	3.50	0.31	A
2	0.32	4.69	0.48	A
3	0.18	3.54	0.22	A
4	0.59	6.79	1.42	A

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	219.83	219.09	212.78	0.00	1416.53	0.155	0.18	3.038	A
2	253.71	252.65	294.00	0.00	1218.64	0.208	0.26	3.765	A
3	155.09	154.54	206.24	0.00	1304.31	0.119	0.14	3.163	A
4	519.47	516.88	114.78	0.00	1324.09	0.392	0.65	4.494	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	262.50	262.31	254.92	0.00	1393.01	0.188	0.23	3.218	A
2	302.96	302.64	352.06	0.00	1188.62	0.255	0.34	4.107	A
3	185.19	185.05	246.99	0.00	1283.30	0.144	0.17	3.313	A
4	620.30	619.30	137.44	0.00	1312.22	0.473	0.90	5.245	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	321.50	321.19	311.91	0.00	1361.23	0.236	0.31	3.499	A
2	371.04	370.50	430.98	0.00	1147.81	0.323	0.48	4.679	A
3	226.81	226.60	302.40	0.00	1254.72	0.181	0.22	3.539	A
4	759.70	757.66	168.30	0.00	1296.05	0.586	1.41	6.734	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	321.50	321.49	312.67	0.00	1360.80	0.236	0.31	3.501	A
2	371.04	371.04	431.59	0.00	1147.50	0.323	0.48	4.687	A
3	226.81	226.81	302.78	0.00	1254.53	0.181	0.22	3.540	A
4	759.70	759.66	168.45	0.00	1295.97	0.586	1.42	6.786	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	262.50	262.81	256.08	0.00	1392.37	0.189	0.24	3.224	A
2	302.96	303.49	353.01	0.00	1188.13	0.255	0.35	4.118	A
3	185.19	185.40	247.60	0.00	1282.98	0.144	0.17	3.315	A
4	620.30	622.31	137.70	0.00	1312.08	0.473	0.92	5.293	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	219.83	220.03	214.21	0.00	1415.73	0.155	0.19	3.043	A
2	253.71	254.03	295.47	0.00	1217.88	0.208	0.27	3.779	A
3	155.09	155.22	207.27	0.00	1303.78	0.119	0.14	3.170	A
4	519.47	520.50	115.29	0.00	1323.82	0.392	0.66	4.536	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, PM	Scenario 2 - 2026 Forecast + Committed + Development	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			4.99	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Snelshall Street (W)	
2	2	Chaffron Way (N)	
3	3	Snelshall Street (E)	
4	4	Chaffron Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.80	7.20	5.30	39.60	56.00	28.00	
2	3.60	7.30	4.20	31.50	56.00	38.00	
3	3.60	7.40	6.00	20.20	56.00	42.00	
4	3.70	7.30	3.50	34.30	56.00	34.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.558	1535.225
2		(calculated)	(calculated)	0.517	1370.639
3		(calculated)	(calculated)	0.516	1410.669
4		(calculated)	(calculated)	0.524	1384.230

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	213.00	100.000
2	ONE HOUR	✓	569.00	100.000
3	ONE HOUR	✓	293.00	100.000
4	ONE HOUR	✓	438.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	7.000	74.000	132.000
	2	7.000	0.000	40.000	522.000
	3	67.000	85.000	0.000	141.000
	4	158.000	258.000	22.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.03	0.35	0.62
	2	0.01	0.00	0.07	0.92
	3	0.23	0.29	0.00	0.48
	4	0.36	0.59	0.05	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.18	3.38	0.22	A
2	0.50	5.92	1.02	A
3	0.31	5.11	0.46	A
4	0.37	4.49	0.60	A

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	160.36	159.83	273.66	0.00	1382.56	0.116	0.13	2.974	A
2	428.37	426.36	171.07	0.00	1282.19	0.334	0.50	4.244	A
3	220.59	219.64	495.43	0.00	1155.17	0.191	0.24	3.886	A
4	329.75	328.41	119.19	0.00	1321.78	0.249	0.33	3.659	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	191.48	191.35	327.79	0.00	1352.37	0.142	0.17	3.134	A
2	511.52	510.81	204.82	0.00	1264.75	0.404	0.68	4.824	A
3	263.40	263.09	593.48	0.00	1104.61	0.238	0.31	4.324	A
4	393.75	393.36	142.77	0.00	1309.43	0.301	0.43	3.971	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	234.52	234.31	401.29	0.00	1311.36	0.179	0.22	3.379	A
2	626.48	625.13	250.79	0.00	1240.97	0.505	1.02	5.896	A
3	322.60	322.04	726.39	0.00	1036.07	0.311	0.45	5.089	A
4	482.25	481.59	174.76	0.00	1292.67	0.373	0.60	4.483	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	234.52	234.52	401.86	0.00	1311.04	0.179	0.22	3.380	A
2	626.48	626.45	251.03	0.00	1240.85	0.505	1.02	5.923	A
3	322.60	322.59	727.75	0.00	1035.37	0.312	0.46	5.105	A
4	482.25	482.24	175.06	0.00	1292.51	0.373	0.60	4.491	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	191.48	191.69	328.70	0.00	1351.86	0.142	0.17	3.139	A
2	511.52	512.84	205.20	0.00	1264.55	0.405	0.69	4.851	A
3	263.40	263.95	595.59	0.00	1103.53	0.239	0.32	4.337	A
4	393.75	394.40	143.24	0.00	1309.18	0.301	0.44	3.982	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	160.36	160.49	275.14	0.00	1381.74	0.116	0.13	2.979	A
2	428.37	429.10	171.80	0.00	1281.81	0.334	0.51	4.273	A
3	220.59	220.90	498.40	0.00	1153.65	0.191	0.24	3.904	A
4	329.75	330.15	119.88	0.00	1321.42	0.250	0.34	3.672	A

Windmill Hill Roundabout
Existing Junction Layout

Junctions 8

ARCADY 8 - Roundabout Module

Filename: Windmill Roundabout.arc8
Path: P:\data\W50---\SW Milton Keynes\ARCADY\Windmill Hill Roundabout
Report generation date: 14/11/2014 10:49:14

File summary

Title	Windmill Hill Roundabout
Location	Tattenhoe Street / Standing Way
Site Number	5
Date	06/11/2014
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	A Lechmere
Description	

Analysis Options

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

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, AM	Scenario 1 - 2026 Forecast + Committed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Windmill Hill Roundabout	Roundabout	1,2,3,4			4.95	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Tattenhoe Way (W)	
2	2	Standing Way (N)	
3	3	Tattenhoe Way (E)	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.65	7.00	5.80	28.80	56.00	29.00	
2	7.40	9.00	25.00	48.00	56.00	39.00	
3	3.70	7.60	10.00	31.80	56.00	46.00	
4	7.30	9.00	17.50	46.90	56.00	29.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.546	1489.247
2		(calculated)	(calculated)	0.747	2637.437
3		(calculated)	(calculated)	0.548	1585.220
4		(calculated)	(calculated)	0.765	2686.946

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	464.00	100.000
2	ONE HOUR	✓	1198.00	100.000
3	ONE HOUR	✓	437.00	100.000
4	ONE HOUR	✓	866.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	261.000	119.000	84.000
	2	211.000	0.000	69.000	918.000
	3	207.000	124.000	0.000	106.000
	4	47.000	804.000	15.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.56	0.26	0.18
	2	0.18	0.00	0.06	0.77
	3	0.47	0.28	0.00	0.24
	4	0.05	0.93	0.02	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.55	8.84	1.24	A
2	0.54	3.19	1.17	A
3	0.56	9.78	1.29	A
4	0.43	2.85	0.75	A

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	349.32	347.46	708.00	0.00	1102.60	0.317	0.47	4.808	A
2	901.92	899.67	163.28	0.00	2515.44	0.359	0.56	2.250	A
3	329.00	327.25	910.75	0.00	1085.97	0.303	0.44	4.786	A
4	651.97	650.45	406.33	0.00	2375.94	0.274	0.38	2.107	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	417.13	416.25	846.99	0.00	1026.70	0.406	0.68	5.953	A
2	1076.98	1076.16	195.59	0.00	2491.31	0.432	0.77	2.570	A
3	392.85	391.96	1089.54	0.00	987.97	0.398	0.66	6.098	A
4	778.52	778.00	486.42	0.00	2314.64	0.336	0.51	2.368	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	510.87	508.70	1036.66	0.00	923.12	0.553	1.23	8.737	A
2	1319.02	1317.44	239.06	0.00	2458.83	0.536	1.16	3.184	A
3	481.15	478.69	1333.66	0.00	854.15	0.563	1.27	9.631	A
4	953.48	952.53	594.62	0.00	2231.83	0.427	0.75	2.844	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	510.87	510.81	1038.23	0.00	922.26	0.554	1.24	8.843	A
2	1319.02	1319.00	240.00	0.00	2458.12	0.537	1.17	3.194	A
3	481.15	481.08	1335.51	0.00	853.13	0.564	1.29	9.778	A
4	953.48	953.47	596.70	0.00	2230.23	0.428	0.75	2.850	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	417.13	419.29	849.33	0.00	1025.42	0.407	0.70	6.027	A
2	1076.98	1078.54	196.94	0.00	2490.29	0.432	0.77	2.580	A
3	392.85	395.31	1092.33	0.00	986.44	0.398	0.68	6.183	A
4	778.52	779.47	489.38	0.00	2312.37	0.337	0.52	2.375	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	349.32	350.23	710.70	0.00	1101.13	0.317	0.47	4.852	A
2	901.92	902.74	164.53	0.00	2514.51	0.359	0.57	2.260	A
3	329.00	329.93	914.15	0.00	1084.11	0.303	0.44	4.833	A
4	651.97	652.49	408.90	0.00	2373.98	0.275	0.38	2.114	A

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, PM	Scenario 1 - 2026 Forecast + Committed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Windmill Hill Roundabout	Roundabout	1,2,3,4			4.84	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Tattenhoe Way (W)	
2	2	Standing Way (N)	
3	3	Tattenhoe Way (E)	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.65	7.00	5.80	28.80	56.00	29.00	
2	7.40	9.00	25.00	48.00	56.00	39.00	
3	3.70	7.60	10.00	31.80	56.00	46.00	
4	7.30	9.00	17.50	46.90	56.00	29.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.546	1489.247
2		(calculated)	(calculated)	0.747	2637.437
3		(calculated)	(calculated)	0.548	1585.220
4		(calculated)	(calculated)	0.765	2686.946

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	453.00	100.000
2	ONE HOUR	✓	1455.00	100.000
3	ONE HOUR	✓	237.00	100.000
4	ONE HOUR	✓	984.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	297.000	127.000	29.000
	2	254.000	0.000	108.000	1093.000
	3	104.000	106.000	0.000	27.000
	4	115.000	775.000	94.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.66	0.28	0.06
	2	0.17	0.00	0.07	0.75
	3	0.44	0.45	0.00	0.11
	4	0.12	0.79	0.10	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.55	9.00	1.23	A
2	0.66	4.39	1.94	A
3	0.35	7.37	0.53	A
4	0.47	3.00	0.90	A

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	341.04	339.21	732.08	0.00	1089.45	0.313	0.46	4.839	A
2	1095.40	1092.26	187.41	0.00	2497.41	0.439	0.79	2.585	A
3	178.43	177.57	1032.90	0.00	1019.02	0.175	0.21	4.321	A
4	740.81	739.03	348.02	0.00	2420.57	0.306	0.44	2.163	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	407.24	406.37	875.79	0.00	1010.97	0.403	0.67	6.011	A
2	1308.02	1306.64	224.39	0.00	2469.79	0.530	1.13	3.124	A
3	213.06	212.68	1235.67	0.00	907.87	0.235	0.31	5.233	A
4	884.60	883.97	416.55	0.00	2368.12	0.374	0.60	2.450	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	498.76	496.59	1072.06	0.00	903.79	0.552	1.22	8.890	A
2	1601.98	1598.81	274.39	0.00	2432.42	0.659	1.92	4.349	A
3	260.94	260.07	1511.93	0.00	756.43	0.345	0.53	7.318	A
4	1083.40	1082.22	509.55	0.00	2296.94	0.472	0.90	2.993	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	498.76	498.70	1073.48	0.00	903.01	0.552	1.23	8.999	A
2	1601.98	1601.93	275.23	0.00	2431.80	0.659	1.94	4.385	A
3	260.94	260.92	1514.95	0.00	754.77	0.346	0.53	7.369	A
4	1083.40	1083.39	510.85	0.00	2295.94	0.472	0.90	3.000	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	407.24	409.41	877.93	0.00	1009.80	0.403	0.69	6.085	A
2	1308.02	1311.18	225.60	0.00	2468.88	0.530	1.15	3.151	A
3	213.06	213.93	1240.06	0.00	905.46	0.235	0.31	5.269	A
4	884.60	885.77	418.45	0.00	2366.67	0.374	0.61	2.459	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	341.04	341.94	734.76	0.00	1087.99	0.313	0.47	4.884	A
2	1095.40	1096.81	188.58	0.00	2496.54	0.439	0.79	2.604	A
3	178.43	178.81	1037.29	0.00	1016.61	0.176	0.22	4.345	A
4	740.81	741.44	349.91	0.00	2419.12	0.306	0.45	2.171	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, AM	Scenario 2 - 2026 Forecast + Committed + Development	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Windmill Hill Roundabout	Roundabout	1,2,3,4			6.83	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Tattenhoe Way (W)	
2	2	Standing Way (N)	
3	3	Tattenhoe Way (E)	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.65	7.00	5.80	28.80	56.00	29.00	
2	7.40	9.00	25.00	48.00	56.00	39.00	
3	3.70	7.60	10.00	31.80	56.00	46.00	
4	7.30	9.00	17.50	46.90	56.00	29.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.546	1489.247
2		(calculated)	(calculated)	0.747	2637.437
3		(calculated)	(calculated)	0.548	1585.220
4		(calculated)	(calculated)	0.765	2686.946

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	499.00	100.000
2	ONE HOUR	✓	1321.00	100.000
3	ONE HOUR	✓	478.00	100.000
4	ONE HOUR	✓	1142.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	246.000	120.000	133.000
	2	192.000	0.000	68.000	1061.000
	3	260.000	108.000	0.000	110.000
	4	159.000	968.000	15.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.49	0.24	0.27
	2	0.15	0.00	0.05	0.80
	3	0.54	0.23	0.00	0.23
	4	0.14	0.85	0.01	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.66	12.79	1.91	B
2	0.60	3.78	1.52	A
3	0.70	16.28	2.32	C
4	0.57	3.80	1.32	A

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	375.67	373.41	818.89	0.00	1042.05	0.361	0.56	5.424	A
2	994.52	991.84	200.59	0.00	2487.57	0.400	0.67	2.429	A
3	359.86	357.66	1040.31	0.00	1014.95	0.355	0.55	5.520	A
4	859.76	857.46	419.51	0.00	2365.85	0.363	0.57	2.410	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	448.59	447.31	979.66	0.00	954.24	0.470	0.88	7.163	A
2	1187.55	1186.48	240.27	0.00	2457.92	0.483	0.94	2.859	A
3	429.71	428.30	1244.62	0.00	902.95	0.476	0.90	7.645	A
4	1026.63	1025.70	502.18	0.00	2302.58	0.446	0.81	2.849	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	549.41	545.46	1198.27	0.00	834.86	0.658	1.87	12.408	B
2	1454.45	1452.17	293.04	0.00	2418.49	0.601	1.51	3.756	A
3	526.29	520.92	1522.80	0.00	750.47	0.701	2.25	15.507	C
4	1257.37	1255.36	612.11	0.00	2218.44	0.567	1.31	3.771	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	549.41	549.24	1201.11	0.00	833.31	0.659	1.91	12.791	B
2	1454.45	1454.41	294.99	0.00	2417.04	0.602	1.52	3.780	A
3	526.29	526.00	1525.93	0.00	748.75	0.703	2.32	16.285	C
4	1257.37	1257.33	616.34	0.00	2215.20	0.568	1.32	3.798	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	448.59	452.59	983.75	0.00	952.01	0.471	0.91	7.346	A
2	1187.55	1189.82	242.98	0.00	2455.89	0.484	0.95	2.879	A
3	429.71	435.24	1249.20	0.00	900.44	0.477	0.94	7.913	A
4	1026.63	1028.63	508.01	0.00	2298.12	0.447	0.82	2.870	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	375.67	377.02	822.53	0.00	1040.06	0.361	0.58	5.499	A
2	994.52	995.62	202.46	0.00	2486.17	0.400	0.68	2.443	A
3	359.86	361.36	1044.86	0.00	1012.46	0.355	0.56	5.604	A
4	859.76	860.72	422.91	0.00	2363.25	0.364	0.58	2.423	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, PM	Scenario 2 - 2026 Forecast + Committed + Development	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Windmill Hill Roundabout	Roundabout	1,2,3,4			7.92	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Tattenhoe Way (W)	
2	2	Standing Way (N)	
3	3	Tattenhoe Way (E)	
4	4	Standing Way (S)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.65	7.00	5.80	28.80	56.00	29.00	
2	7.40	9.00	25.00	48.00	56.00	39.00	
3	3.70	7.60	10.00	31.80	56.00	46.00	
4	7.30	9.00	17.50	46.90	56.00	29.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.546	1489.247
2		(calculated)	(calculated)	0.747	2637.437
3		(calculated)	(calculated)	0.548	1585.220
4		(calculated)	(calculated)	0.765	2686.946

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	528.00	100.000
2	ONE HOUR	✓	1678.00	100.000
3	ONE HOUR	✓	302.00	100.000
4	ONE HOUR	✓	1158.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	293.000	128.000	107.000
	2	243.000	0.000	104.000	1331.000
	3	161.000	106.000	0.000	35.000
	4	132.000	932.000	94.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.55	0.24	0.20
	2	0.14	0.00	0.06	0.79
	3	0.53	0.35	0.00	0.12
	4	0.11	0.80	0.08	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.72	15.93	2.50	C
2	0.78	7.00	3.53	A
3	0.58	15.24	1.38	C
4	0.56	3.70	1.31	A

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	397.51	394.97	849.71	0.00	1025.21	0.388	0.63	5.752	A
2	1263.29	1259.02	246.37	0.00	2453.36	0.515	1.07	3.036	A
3	227.36	225.99	1261.03	0.00	893.96	0.254	0.34	5.438	A
4	871.80	869.50	382.13	0.00	2394.47	0.364	0.58	2.384	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	474.66	473.09	1016.52	0.00	934.11	0.508	1.03	7.867	A
2	1508.49	1506.11	294.99	0.00	2417.04	0.624	1.66	3.985	A
3	271.49	270.63	1508.64	0.00	758.23	0.358	0.56	7.450	A
4	1041.02	1040.09	457.38	0.00	2336.87	0.445	0.81	2.805	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	581.34	575.74	1243.53	0.00	810.14	0.718	2.43	15.176	C
2	1847.51	1840.28	359.59	0.00	2368.77	0.780	3.47	6.795	A
3	332.51	329.39	1842.90	0.00	575.00	0.578	1.34	14.639	B
4	1274.98	1273.03	557.72	0.00	2260.07	0.564	1.30	3.679	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	581.34	581.02	1246.26	0.00	808.65	0.719	2.50	15.933	C
2	1847.51	1847.25	362.09	0.00	2366.90	0.781	3.53	6.995	A
3	332.51	332.34	1850.51	0.00	570.83	0.583	1.38	15.238	C
4	1274.98	1274.95	561.33	0.00	2257.30	0.565	1.31	3.704	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	474.66	480.41	1020.49	0.00	931.95	0.509	1.07	8.159	A
2	1508.49	1515.80	298.48	0.00	2414.43	0.625	1.70	4.083	A
3	271.49	274.69	1519.21	0.00	752.43	0.361	0.58	7.666	A
4	1041.02	1042.96	462.37	0.00	2333.05	0.446	0.82	2.827	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	397.51	399.18	853.39	0.00	1023.20	0.388	0.65	5.849	A
2	1263.29	1265.77	248.51	0.00	2451.76	0.515	1.08	3.074	A
3	227.36	228.28	1268.21	0.00	890.02	0.255	0.35	5.506	A
4	871.80	872.75	385.12	0.00	2392.17	0.364	0.58	2.398	A

Tattenhoe Roundabout
Existing Junction Layout

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.4.487 [15039,24/03/2014]

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

Filename: Tattenhoe Roundabout.arc8
Path: P:\data\W50---\SW Milton Keynes\ARCADY\Tattenhoe Roundabout
Report generation date: 12/11/2014 15:51:58

File summary

Title	Tattenhoe Roundabout
Location	Snelshall Street / Standing Way / Buckingham Road
Site Number	
Date	06/11/2014
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	A Lechmere
Description	

Analysis Options

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

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, AM	Scenario 1 - 2026 Forecast + Committed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			4.99	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Snelshall Street (N)	
2	2	Standing Way (E)	
3	3	Buckingham Road (S)	
4	4	Standing Way (W)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.76	7.70	7.70	24.70	56.00	33.00	
2	7.20	8.80	13.00	54.50	56.00	36.00	
3	3.40	7.30	19.60	53.70	56.00	47.00	
4	8.30	9.00	15.90	70.00	56.00	39.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.559	1590.171
2		(calculated)	(calculated)	0.736	2555.050
3		(calculated)	(calculated)	0.572	1702.595
4		(calculated)	(calculated)	0.762	2710.798

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	409.00	100.000
2	ONE HOUR	✓	1153.00	100.000
3	ONE HOUR	✓	486.00	100.000
4	ONE HOUR	✓	1035.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	98.000	156.000	155.000
	2	137.000	0.000	48.000	968.000
	3	113.000	30.000	0.000	343.000
	4	42.000	768.000	225.000	0.000

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

		To			
		1	2	3	4
From	1	0.00	0.24	0.38	0.38
	2	0.12	0.00	0.04	0.84
	3	0.23	0.06	0.00	0.71
	4	0.04	0.74	0.22	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.47	7.13	0.89	A
2	0.60	4.27	1.50	A
3	0.59	9.72	1.43	A
4	0.46	2.72	0.86	A

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	307.92	306.47	768.35	0.00	1160.69	0.265	0.36	4.254	A
2	868.04	865.53	402.04	0.00	2259.23	0.384	0.63	2.607	A
3	365.89	364.04	945.64	0.00	1161.89	0.315	0.46	4.552	A
4	779.20	777.43	209.96	0.00	2550.79	0.305	0.44	2.050	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	367.68	367.05	919.03	0.00	1076.47	0.342	0.52	5.126	A
2	1036.52	1035.46	481.25	0.00	2200.94	0.471	0.89	3.120	A
3	436.90	435.92	1131.45	0.00	1055.64	0.414	0.71	5.863	A
4	930.44	929.86	251.30	0.00	2519.28	0.369	0.59	2.290	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	450.32	448.88	1125.15	0.00	961.26	0.468	0.88	7.083	A
2	1269.48	1267.10	588.83	0.00	2121.79	0.598	1.49	4.246	A
3	535.10	532.31	1384.46	0.00	910.97	0.587	1.40	9.542	A
4	1139.56	1138.49	307.18	0.00	2476.69	0.460	0.86	2.717	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	450.32	450.29	1126.33	0.00	960.60	0.469	0.89	7.131	A
2	1269.48	1269.44	590.12	0.00	2120.83	0.599	1.50	4.274	A
3	535.10	535.01	1387.24	0.00	909.39	0.588	1.43	9.715	A
4	1139.56	1139.55	308.26	0.00	2475.87	0.460	0.86	2.723	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	367.68	369.11	920.85	0.00	1075.45	0.342	0.53	5.164	A
2	1036.52	1038.89	483.17	0.00	2199.53	0.471	0.91	3.143	A
3	436.90	439.71	1135.52	0.00	1053.32	0.415	0.72	5.959	A
4	930.44	931.50	252.82	0.00	2518.12	0.370	0.59	2.296	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	307.92	308.56	770.80	0.00	1159.32	0.266	0.37	4.280	A
2	868.04	869.13	404.15	0.00	2257.67	0.384	0.63	2.622	A
3	365.89	366.91	949.88	0.00	1159.46	0.316	0.47	4.599	A
4	779.20	779.80	211.23	0.00	2549.82	0.306	0.45	2.058	A

Existing Junction Layout - Scenario 1 - 2026 Forecast + Committed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1 - 2026 Forecast + Committed, PM	Scenario 1 - 2026 Forecast + Committed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			4.56	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Snelshall Street (N)	
2	2	Standing Way (E)	
3	3	Buckingham Road (S)	
4	4	Standing Way (W)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.76	7.70	7.70	24.70	56.00	33.00	
2	7.20	8.80	13.00	54.50	56.00	36.00	
3	3.40	7.30	19.60	53.70	56.00	47.00	
4	8.30	9.00	15.90	70.00	56.00	39.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.559	1590.171
2		(calculated)	(calculated)	0.736	2555.050
3		(calculated)	(calculated)	0.572	1702.595
4		(calculated)	(calculated)	0.762	2710.798

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	166.00	100.000
2	ONE HOUR	✓	1188.00	100.000
3	ONE HOUR	✓	349.00	100.000
4	ONE HOUR	✓	1421.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	67.000	71.000	28.000
	2	115.000	0.000	33.000	1040.000
	3	132.000	33.000	0.000	184.000
	4	64.000	941.000	394.000	22.000

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

		To			
		1	2	3	4
From	1	0.00	0.40	0.43	0.17
	2	0.10	0.00	0.03	0.88
	3	0.38	0.09	0.00	0.53
	4	0.05	0.66	0.28	0.02

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.25	6.59	0.33	A
2	0.61	4.39	1.58	A
3	0.41	6.50	0.69	A
4	0.63	3.99	1.73	A

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	124.97	124.40	1043.58	0.00	1006.85	0.124	0.14	4.121	A
2	894.39	891.77	386.53	0.00	2270.64	0.394	0.65	2.635	A
3	262.75	261.60	904.50	0.00	1185.41	0.222	0.29	3.935	A
4	1069.80	1066.90	210.00	0.00	2550.75	0.419	0.73	2.449	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	149.23	148.99	1248.36	0.00	892.38	0.167	0.20	4.895	A
2	1067.99	1066.86	462.47	0.00	2214.76	0.482	0.94	3.168	A
3	313.74	313.25	1082.12	0.00	1083.85	0.289	0.41	4.720	A
4	1277.45	1276.22	251.37	0.00	2519.22	0.507	1.03	2.925	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	182.77	182.25	1527.71	0.00	736.24	0.248	0.33	6.564	A
2	1308.01	1305.46	565.92	0.00	2138.64	0.612	1.57	4.355	A
3	384.26	383.16	1324.12	0.00	945.48	0.406	0.68	6.459	A
4	1564.55	1561.83	307.52	0.00	2476.44	0.632	1.71	3.967	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	182.77	182.76	1530.38	0.00	734.75	0.249	0.33	6.592	A
2	1308.01	1307.97	567.01	0.00	2137.84	0.612	1.58	4.385	A
3	384.26	384.23	1326.69	0.00	944.01	0.407	0.69	6.501	A
4	1564.55	1564.51	308.27	0.00	2475.86	0.632	1.73	3.993	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	149.23	149.74	1252.27	0.00	890.20	0.168	0.20	4.920	A
2	1067.99	1070.53	464.07	0.00	2213.58	0.482	0.95	3.192	A
3	313.74	314.84	1085.87	0.00	1081.71	0.290	0.42	4.754	A
4	1277.45	1280.16	252.48	0.00	2518.38	0.507	1.05	2.945	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	124.97	125.22	1047.71	0.00	1004.54	0.124	0.14	4.139	A
2	894.39	895.54	388.23	0.00	2269.39	0.394	0.66	2.652	A
3	262.75	263.25	908.37	0.00	1183.20	0.222	0.29	3.959	A
4	1069.80	1071.06	211.15	0.00	2549.88	0.420	0.73	2.464	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, AM	Scenario 2 - 2026 Forecast + Committed + Development	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			10.15	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Snelshall Street (N)	
2	2	Standing Way (E)	
3	3	Buckingham Road (S)	
4	4	Standing Way (W)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.76	7.70	7.70	24.70	56.00	33.00	
2	7.20	8.80	13.00	54.50	56.00	36.00	
3	3.40	7.30	19.60	53.70	56.00	47.00	
4	8.30	9.00	15.90	70.00	56.00	39.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.559	1590.171
2		(calculated)	(calculated)	0.736	2555.050
3		(calculated)	(calculated)	0.572	1702.595
4		(calculated)	(calculated)	0.762	2710.798

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	457.00	100.000
2	ONE HOUR	✓	1366.00	100.000
3	ONE HOUR	✓	796.00	100.000
4	ONE HOUR	✓	1059.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	95.000	331.000	31.000
	2	140.000	0.000	316.000	910.000
	3	211.000	267.000	2.000	316.000
	4	40.000	792.000	226.000	1.000

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

		To			
		1	2	3	4
From	1	0.00	0.21	0.72	0.07
	2	0.10	0.00	0.23	0.67
	3	0.27	0.34	0.00	0.40
	4	0.04	0.75	0.21	0.00

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.63	12.33	1.69	B
2	0.72	6.35	2.62	A
3	0.86	24.18	5.58	C
4	0.53	3.55	1.14	A

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	344.05	342.10	966.43	0.00	1049.98	0.328	0.49	5.130	A
2	1028.40	1024.95	442.94	0.00	2229.13	0.461	0.86	3.013	A
3	599.27	595.52	811.81	0.00	1238.41	0.484	0.94	5.629	A
4	797.27	795.21	464.16	0.00	2357.06	0.338	0.51	2.327	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	410.83	409.71	1156.16	0.00	943.92	0.435	0.77	6.799	A
2	1228.01	1226.20	530.23	0.00	2164.90	0.567	1.31	3.870	A
3	715.59	712.79	971.23	0.00	1147.26	0.624	1.64	8.321	A
4	952.02	951.21	555.49	0.00	2287.45	0.416	0.72	2.722	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	503.17	499.64	1411.74	0.00	801.07	0.628	1.65	11.937	B
2	1503.99	1498.91	647.52	0.00	2078.60	0.724	2.58	6.224	A
3	876.41	862.29	1187.16	0.00	1023.79	0.856	5.17	20.937	C
4	1165.98	1164.31	673.59	0.00	2197.45	0.531	1.13	3.516	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	503.17	503.00	1417.51	0.00	797.84	0.631	1.69	12.329	B
2	1503.99	1503.84	650.56	0.00	2076.36	0.724	2.62	6.353	A
3	876.41	874.75	1191.17	0.00	1021.49	0.858	5.58	24.179	C
4	1165.98	1165.94	681.62	0.00	2191.33	0.532	1.14	3.548	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	410.83	414.41	1164.69	0.00	939.16	0.437	0.80	6.983	A
2	1228.01	1233.12	534.53	0.00	2161.74	0.568	1.34	3.940	A
3	715.59	731.00	976.87	0.00	1144.03	0.626	1.73	9.125	A
4	952.02	953.68	567.18	0.00	2278.54	0.418	0.73	2.750	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	344.05	345.24	971.52	0.00	1047.13	0.329	0.50	5.195	A
2	1028.40	1030.28	446.07	0.00	2226.83	0.462	0.87	3.045	A
3	599.27	602.34	816.11	0.00	1235.95	0.485	0.96	5.771	A
4	797.27	798.11	468.81	0.00	2353.51	0.339	0.52	2.342	A

Existing Junction Layout - Scenario 2 - 2026 Forecast + Committed + Development, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Existing Junction Layout	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2 - 2026 Forecast + Committed + Development, PM	Scenario 2 - 2026 Forecast + Committed + Development	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Emerson Roundabout	Roundabout	1,2,3,4			9.10	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Snelshall Street (N)	
2	2	Standing Way (E)	
3	3	Buckingham Road (S)	
4	4	Standing Way (W)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.76	7.70	7.70	24.70	56.00	33.00	
2	7.20	8.80	13.00	54.50	56.00	36.00	
3	3.40	7.30	19.60	53.70	56.00	47.00	
4	8.30	9.00	15.90	70.00	56.00	39.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.559	1590.171
2		(calculated)	(calculated)	0.736	2555.050
3		(calculated)	(calculated)	0.572	1702.595
4		(calculated)	(calculated)	0.762	2710.798

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	227.00	100.000
2	ONE HOUR	✓	1518.00	100.000
3	ONE HOUR	✓	671.00	100.000
4	ONE HOUR	✓	1352.00	100.000

Turning Proportions

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

		To			
		1	2	3	4
From	1	0.000	62.000	154.000	11.000
	2	113.000	0.000	361.000	1044.000
	3	201.000	293.000	2.000	175.000
	4	47.000	871.000	414.000	20.000

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

		To			
		1	2	3	4
From	1	0.00	0.27	0.68	0.05
	2	0.07	0.00	0.24	0.69
	3	0.30	0.44	0.00	0.26
	4	0.03	0.64	0.31	0.01

Vehicle Mix

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

		To			
		1	2	3	4
From	1	1.011	1.011	1.011	1.011
	2	1.011	1.011	1.011	1.011
	3	1.011	1.011	1.011	1.011
	4	1.011	1.011	1.011	1.011

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.1	1.1	1.1	1.1
	2	1.1	1.1	1.1	1.1
	3	1.1	1.1	1.1	1.1
	4	1.1	1.1	1.1	1.1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.41	10.23	0.70	B
2	0.81	9.13	4.15	A
3	0.77	16.69	3.31	C
4	0.68	5.11	2.09	A

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	170.90	169.98	1200.33	0.00	919.23	0.186	0.23	4.851	A
2	1142.83	1138.59	450.81	0.00	2223.34	0.514	1.06	3.343	A
3	505.16	502.22	891.06	0.00	1193.09	0.423	0.73	5.246	A
4	1017.86	1014.81	456.00	0.00	2363.28	0.431	0.76	2.694	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	204.07	203.58	1436.09	0.00	787.46	0.259	0.35	6.228	A
2	1364.65	1362.03	539.46	0.00	2158.11	0.632	1.72	4.557	A
3	603.22	601.26	1065.95	0.00	1093.10	0.552	1.22	7.370	A
4	1215.42	1213.95	545.84	0.00	2294.81	0.530	1.13	3.363	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	249.93	248.57	1754.61	0.00	609.41	0.410	0.69	10.048	B
2	1671.35	1662.05	659.50	0.00	2069.78	0.808	4.04	8.732	A
3	738.78	731.04	1300.81	0.00	958.81	0.771	3.16	15.481	C
4	1488.58	1484.83	664.10	0.00	2204.68	0.675	2.07	5.030	A

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

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	249.93	249.88	1761.26	0.00	605.70	0.413	0.70	10.225	B
2	1671.35	1670.92	661.64	0.00	2068.21	0.808	4.15	9.134	A
3	738.78	738.18	1307.68	0.00	954.88	0.774	3.31	16.686	C
4	1488.58	1488.47	670.04	0.00	2200.15	0.677	2.09	5.112	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	204.07	205.44	1445.56	0.00	782.16	0.261	0.36	6.324	A
2	1364.65	1374.17	542.51	0.00	2155.87	0.633	1.77	4.710	A
3	603.22	611.33	1075.36	0.00	1087.71	0.555	1.28	7.766	A
4	1215.42	1219.18	554.19	0.00	2288.45	0.531	1.15	3.414	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	170.90	171.40	1206.97	0.00	915.52	0.187	0.23	4.894	A
2	1142.83	1145.58	453.33	0.00	2221.48	0.514	1.08	3.390	A
3	505.16	507.28	896.53	0.00	1189.97	0.425	0.75	5.347	A
4	1017.86	1019.39	460.26	0.00	2360.03	0.431	0.77	2.717	A

Buckingham Road Site Access
New Junction Layout

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

Filename: 2016-06-13 Roundabout Site Access_SH.arc8
Path: L:\106xxx\1067760 South West Milton Keynes\09 Docs\C-Cals\02 Jn Modelling\Access Junctions
Report generation date: 13/06/2016 13:18:36

Summary of junction performance

	AM			
	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2026 DS			
Arm A	0.10	3.58	0.08	A
Arm B	0.29	4.13	0.21	A
Arm C	0.30	3.97	0.21	A
Arm D	0.36	4.84	0.24	A

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

"D1 - 2026 DS, AM " model duration: 07:45 - 09:15
"D2 - 2026 DS, PM" model duration: 16:45 - 18:15

Run using Junctions 8.0.6.541 at 13/06/2016 13:18:35

File summary

Title	(untitled)
Location	
Site Number	
Date	08/12/2015
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	rprag
Description	

Analysis Options

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

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

(Default Analysis Set) - 2026 DS, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Profile Type	D1 - 2026 DS, AM	'Turning counts vary over time' option has been selected but all arms use ONE HOUR profile types. Are you sure this is correct?

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2026 DS, AM	2026 DS	AM		ONE HOUR	07:45	09:15	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	Buckingham Road Access	Roundabout	A,B,C,D				4.23	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
A	A	(untitled)	Buckingham Road (East)
B	B	(untitled)	Development Access SE
C	C	(untitled)	Development Access SW
D	D	untitled	Buckingham Road (West)

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
A	0.00	99999.00		0.00
B	0.00	99999.00		0.00
C	0.00	99999.00		0.00
D	0.00	99999.00		0.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A	3.64	5.39	3.72	23.28	44.00	22.00	
B	3.53	5.25	3.55	24.67	44.00	28.00	
C	4.09	4.79	1.89	37.50	44.00	19.00	
D	3.65	5.47	3.80	19.52	44.00	28.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A		(calculated)	(calculated)	0.575	1360.130
B		(calculated)	(calculated)	0.556	1293.453
C		(calculated)	(calculated)	0.594	1417.216
D		(calculated)	(calculated)	0.560	1331.327

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR		93.00	100.000
B	ONE HOUR		227.00	100.000
C	ONE HOUR		246.00	100.000
D	ONE HOUR		241.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
07:45-08:00	A	70.02	70.02		
07:45-08:00	B	170.90	170.90		
07:45-08:00	C	185.20	185.20		
07:45-08:00	D	181.44	181.44		
08:00-08:15	A	83.61	83.61		
08:00-08:15	B	204.07	204.07		
08:00-08:15	C	221.15	221.15		
08:00-08:15	D	216.65	216.65		
08:15-08:30	A	102.39	102.39		
08:15-08:30	B	249.93	249.93		
08:15-08:30	C	270.85	270.85		
08:15-08:30	D	265.35	265.35		
08:30-08:45	A	102.39	102.39		
08:30-08:45	B	249.93	249.93		
08:30-08:45	C	270.85	270.85		
08:30-08:45	D	265.35	265.35		
08:45-09:00	A	83.61	83.61		
08:45-09:00	B	204.07	204.07		
08:45-09:00	C	221.15	221.15		
08:45-09:00	D	216.65	216.65		
09:00-09:15	A	70.02	70.02		
09:00-09:15	B	170.90	170.90		
09:00-09:15	C	185.20	185.20		
09:00-09:15	D	181.44	181.44		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 - (07:45-08:00)

		To			
		A	B	C	D
From	A	0.000	135.380	104.920	0.000
	B	239.480	0.000	0.000	20.420
	C	72.980	0.000	0.000	6.800
	D	0.000	161.980	115.040	0.000

Turning Proportions (PCU) - Junction 1 - (07:45-08:00)

		To			
		A	B	C	D
From	A	0.00	0.56	0.44	0.00
	B	0.92	0.00	0.00	0.08
	C	0.91	0.00	0.00	0.09
	D	0.00	0.58	0.42	0.00

Turning Counts / Proportions (PCU/hr) - Junction 1 - (08:00-08:15)

		To			
		A	B	C	D
From	A	0.000	156.750	111.470	0.000
	B	191.580	0.000	0.000	34.380
	C	74.310	0.000	0.000	12.770
	D	0.000	143.980	103.340	0.000

Turning Proportions (PCU) - Junction 1 - (08:00-08:15)

		To			
		A	B	C	D
From	A	0.00	0.58	0.42	0.00
	B	0.85	0.00	0.00	0.15
	C	0.85	0.00	0.00	0.15
	D	0.00	0.58	0.42	0.00

Turning Counts / Proportions (PCU/hr) - Junction 1 - (08:15-08:30)

		To			
		A	B	C	D
From	A	0.000	153.870	109.420	0.000
	B	188.070	0.000	0.000	34.190
	C	72.950	0.000	0.000	12.540
	D	0.000	141.340	101.440	0.000

Turning Proportions (PCU) - Junction 1 - (08:15-08:30)

		To			
		A	B	C	D
From	A	0.00	0.58	0.42	0.00
	B	0.85	0.00	0.00	0.15
	C	0.85	0.00	0.00	0.15
	D	0.00	0.58	0.42	0.00

Turning Counts / Proportions (PCU/hr) - Junction 1 - (08:30-08:45)

		To			
		A	B	C	D
From	A	0.000	130.150	92.550	0.000
	B	159.070	0.000	0.000	28.920
	C	61.700	0.000	0.000	10.600
	D	0.000	119.540	85.800	0.000

Turning Proportions (PCU) - Junction 1 - (08:30-08:45)

		To			
		A	B	C	D
From	A	0.00	0.58	0.42	0.00
	B	0.85	0.00	0.00	0.15
	C	0.85	0.00	0.00	0.15
	D	0.00	0.58	0.42	0.00

Turning Counts / Proportions (PCU/hr) - Junction 1 - (08:45-09:00)

		To			
		A	B	C	D
From	A	0.000	99.230	70.560	0.000
	B	121.280	0.000	0.000	22.050
	C	47.040	0.000	0.000	8.090
	D	0.000	91.140	65.420	0.000

Turning Proportions (PCU) - Junction 1 - (08:45-09:00)

		To			
		A	B	C	D
From	A	0.00	0.58	0.42	0.00
	B	0.85	0.00	0.00	0.15
	C	0.85	0.00	0.00	0.15
	D	0.00	0.58	0.42	0.00

Turning Counts / Proportions (PCU/hr) - Junction 1 - (09:00-09:15)

		To			
		A	B	C	D
From	A	0.000	99.230	64.860	0.000
	B	173.250	0.000	0.000	13.930
	C	51.560	0.000	0.000	6.930
	D	0.000	190.570	47.400	0.000

Turning Proportions (PCU) - Junction 1 - (09:00-09:15)

		To			
		A	B	C	D
From	A	0.00	0.60	0.40	0.00
	B	0.93	0.00	0.00	0.07
	C	0.88	0.00	0.00	0.12
	D	0.00	0.80	0.20	0.00

Vehicle Mix

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

		To			
		A	B	C	D
From	A	1.100	1.100	1.100	1.100
	B	1.100	1.100	1.100	1.100
	C	1.100	1.100	1.100	1.100
	D	1.100	1.100	1.100	1.100

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	10.0	10.0	10.0	10.0
	B	10.0	10.0	10.0	10.0
	C	10.0	10.0	10.0	10.0
	D	10.0	10.0	10.0	10.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
A	0.08	3.58	0.10	A	85.34	128.01	7.37	3.45	0.08	7.37	3.45
B	0.21	4.13	0.29	A	208.30	312.45	20.34	3.90	0.23	20.34	3.91
C	0.21	3.97	0.30	A	225.73	338.60	21.03	3.73	0.23	21.03	3.73
D	0.24	4.84	0.36	A	221.15	331.72	24.55	4.44	0.27	24.55	4.44

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
A	70.02	17.50	69.76	325.58	180.62	0.00	1256.34	1125.38	0.056	0.00	0.06	3.337	A
B	170.90	42.72	170.19	144.91	105.46	0.00	1234.81	925.89	0.138	0.00	0.18	3.718	A
C	185.20	46.30	184.48	105.46	170.19	0.00	1316.18	867.54	0.141	0.00	0.18	3.497	A
D	181.44	45.36	180.62	29.10	325.58	0.00	1148.88	408.53	0.158	0.00	0.21	4.086	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
A	83.61	20.90	83.55	361.53	216.44	0.00	1235.76	1086.94	0.068	0.06	0.08	3.436	A
B	204.07	51.02	203.90	174.82	125.16	0.00	1223.86	931.81	0.167	0.18	0.22	3.882	A
C	221.15	55.29	220.97	125.16	203.90	0.00	1296.17	864.03	0.171	0.18	0.23	3.682	A
D	216.65	54.16	216.44	63.33	361.53	0.00	1128.73	475.43	0.192	0.21	0.26	4.339	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
A	102.39	25.60	102.31	442.14	264.97	0.00	1207.87	1086.41	0.085	0.08	0.10	3.581	A
B	249.93	62.48	249.67	214.05	153.23	0.00	1208.25	931.72	0.207	0.22	0.29	4.130	A
C	270.85	67.71	270.56	153.23	249.67	0.00	1269.00	864.08	0.213	0.23	0.30	3.965	A
D	265.35	66.34	264.97	78.09	442.14	0.00	1083.56	476.34	0.245	0.26	0.35	4.835	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
A	102.39	25.60	102.39	442.62	265.34	0.00	1207.66	1086.43	0.085	0.10	0.10	3.581	A
B	249.93	62.48	249.93	214.31	153.42	0.00	1208.14	931.72	0.207	0.29	0.29	4.132	A
C	270.85	67.71	270.85	153.42	249.93	0.00	1268.84	864.08	0.213	0.30	0.30	3.967	A
D	265.35	66.34	265.34	78.16	442.62	0.00	1083.29	476.31	0.245	0.35	0.36	4.840	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
A	83.61	20.90	83.69	361.83	217.02	0.00	1235.42	1086.39	0.068	0.10	0.08	3.437	A
B	204.07	51.02	204.33	175.25	125.47	0.00	1223.69	931.72	0.167	0.29	0.22	3.887	A
C	221.15	55.29	221.43	125.47	204.33	0.00	1295.91	864.08	0.171	0.30	0.23	3.688	A
D	216.65	54.16	217.02	63.93	361.83	0.00	1128.56	476.37	0.192	0.36	0.26	4.347	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
A	70.02	17.50	70.08	321.68	181.66	0.00	1255.74	1127.02	0.056	0.08	0.07	3.339	A
B	170.90	42.72	171.09	187.62	64.12	0.00	1257.80	1000.81	0.136	0.22	0.17	3.643	A
C	185.20	46.30	185.39	64.12	171.09	0.00	1315.65	823.07	0.141	0.23	0.18	3.503	A
D	181.44	45.36	181.66	34.79	321.68	0.00	1151.06	405.65	0.158	0.26	0.21	4.087	A

Queueing Delay Results for each time segment

Queueing Delay results: (07:45-08:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
A	0.95	0.06	3.337	A	A
B	2.58	0.17	3.718	A	A
C	2.64	0.18	3.497	A	A
D	3.01	0.20	4.086	A	A

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
A	1.18	0.08	3.436	A	A
B	3.24	0.22	3.882	A	A
C	3.33	0.22	3.682	A	A
D	3.84	0.26	4.339	A	A

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
A	1.50	0.10	3.581	A	A
B	4.21	0.28	4.130	A	A
C	4.38	0.29	3.965	A	A
D	5.21	0.35	4.835	A	A

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
A	1.52	0.10	3.581	A	A
B	4.29	0.29	4.132	A	A
C	4.46	0.30	3.967	A	A
D	5.33	0.36	4.840	A	A

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
A	1.22	0.08	3.437	A	A
B	3.37	0.22	3.887	A	A
C	3.46	0.23	3.688	A	A
D	4.02	0.27	4.347	A	A

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
A	0.99	0.07	3.339	A	A
B	2.64	0.18	3.643	A	A
C	2.75	0.18	3.503	A	A
D	3.15	0.21	4.087	A	A

(Default Analysis Set) - 2026 DS, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Profile Type	D2 - 2026 DS, PM	'Turning counts vary over time' option has been selected but all arms use ONE HOUR profile types. Are you sure this is correct?

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2026 DS, PM	2026 DS	PM		ONE HOUR	16:45	18:15	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	Buckingham Road Access	Roundabout	A,B,C,D				3.67	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
A	A	(untitled)	Buckingham Road (East)
B	B	(untitled)	Development Access SE
C	C	(untitled)	Development Access SW
D	D	untitled	Buckingham Road (West)

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
A	0.00	99999.00		0.00
B	0.00	99999.00		0.00
C	0.00	99999.00		0.00
D	0.00	99999.00		0.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A	3.64	5.39	3.72	23.28	44.00	22.00	
B	3.53	5.25	3.55	24.67	44.00	28.00	
C	4.09	4.79	1.89	37.50	44.00	19.00	
D	3.65	5.47	3.80	19.52	44.00	28.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A		(calculated)	(calculated)	0.575	1360.130
B		(calculated)	(calculated)	0.556	1293.453
C		(calculated)	(calculated)	0.594	1417.216
D		(calculated)	(calculated)	0.560	1331.327

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR		142.00	100.000
B	ONE HOUR		93.00	100.000
C	ONE HOUR		283.00	100.000
D	ONE HOUR		152.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:45-17:00	A	106.91	106.91		
16:45-17:00	B	70.02	70.02		
16:45-17:00	C	213.06	213.06		
16:45-17:00	D	114.43	114.43		
17:00-17:15	A	127.66	127.66		
17:00-17:15	B	83.61	83.61		
17:00-17:15	C	254.41	254.41		
17:00-17:15	D	136.64	136.64		
17:15-17:30	A	156.34	156.34		
17:15-17:30	B	102.39	102.39		
17:15-17:30	C	311.59	311.59		
17:15-17:30	D	167.36	167.36		
17:30-17:45	A	156.34	156.34		
17:30-17:45	B	102.39	102.39		
17:30-17:45	C	311.59	311.59		
17:30-17:45	D	167.36	167.36		
17:45-18:00	A	127.66	127.66		
17:45-18:00	B	83.61	83.61		
17:45-18:00	C	254.41	254.41		
17:45-18:00	D	136.64	136.64		
18:00-18:15	A	106.91	106.91		
18:00-18:15	B	70.02	70.02		
18:00-18:15	C	213.06	213.06		
18:00-18:15	D	114.43	114.43		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 - (16:45-17:00)

		To			
		A	B	C	D
From	A	0.000	180.590	55.970	0.000
	B	72.970	0.000	0.000	80.670
	C	61.960	0.000	0.000	65.990
	D	0.000	95.580	21.270	0.000

Turning Proportions (PCU) - Junction 1 - (16:45-17:00)

		To			
		A	B	C	D
From	A	0.00	0.76	0.24	0.00
	B	0.47	0.00	0.00	0.53
	C	0.48	0.00	0.00	0.52
	D	0.00	0.82	0.18	0.00

Turning Counts / Proportions (PCU/hr) - Junction 1 - (17:00-17:15)

		To			
		A	B	C	D
From	A	0.000	223.590	54.390	0.000
	B	63.450	0.000	0.000	89.640
	C	59.420	0.000	0.000	83.590
	D	0.000	73.520	18.130	0.000

Turning Proportions (PCU) - Junction 1 - (17:00-17:15)

		To			
		A	B	C	D
From	A	0.00	0.80	0.20	0.00
	B	0.41	0.00	0.00	0.59
	C	0.42	0.00	0.00	0.58
	D	0.00	0.80	0.20	0.00

Turning Counts / Proportions (PCU/hr) - Junction 1 - (17:15-17:30)

		To			
		A	B	C	D
From	A	0.000	274.330	66.730	0.000
	B	77.850	0.000	0.000	109.980
	C	72.910	0.000	0.000	102.560
	D	0.000	90.210	22.240	0.000

Turning Proportions (PCU) - Junction 1 - (17:15-17:30)

		To			
		A	B	C	D
From	A	0.00	0.80	0.20	0.00
	B	0.41	0.00	0.00	0.59
	C	0.42	0.00	0.00	0.58
	D	0.00	0.80	0.20	0.00

Turning Counts / Proportions (PCU/hr) - Junction 1 - (17:30-17:45)

		To			
		A	B	C	D
From	A	0.000	207.730	50.530	0.000
	B	58.950	0.000	0.000	83.280
	C	55.210	0.000	0.000	77.660
	D	0.000	68.310	16.840	0.000

Turning Proportions (PCU) - Junction 1 - (17:30-17:45)

		To			
		A	B	C	D
From	A	0.00	0.80	0.20	0.00
	B	0.41	0.00	0.00	0.59
	C	0.42	0.00	0.00	0.58
	D	0.00	0.80	0.20	0.00

Turning Counts / Proportions (PCU/hr) - Junction 1 - (17:45-18:00)

		To			
		A	B	C	D
From	A	0.000	182.360	44.360	0.000
	B	51.750	0.000	0.000	73.110
	C	48.460	0.000	0.000	68.180
	D	0.000	59.960	14.790	0.000

Turning Proportions (PCU) - Junction 1 - (17:45-18:00)

		To			
		A	B	C	D
From	A	0.00	0.80	0.20	0.00
	B	0.41	0.00	0.00	0.59
	C	0.42	0.00	0.00	0.58
	D	0.00	0.80	0.20	0.00

Turning Counts / Proportions (PCU/hr) - Junction 1 - (18:00-18:15)

		To			
		A	B	C	D
From	A	0.000	205.150	49.520	0.000
	B	61.610	0.000	0.000	92.060
	C	42.190	0.000	0.000	50.720
	D	0.000	85.660	11.500	0.000

Turning Proportions (PCU) - Junction 1 - (18:00-18:15)

		To			
		A	B	C	D
From	A	0.00	0.81	0.19	0.00
	B	0.40	0.00	0.00	0.60
	C	0.45	0.00	0.00	0.55
	D	0.00	0.88	0.12	0.00

Vehicle Mix

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

		To			
		A	B	C	D
From	A	1.100	1.100	1.100	1.100
	B	1.100	1.100	1.100	1.100
	C	1.100	1.100	1.100	1.100
	D	1.100	1.100	1.100	1.100