Appendices

Appendix A - Joint Statement with LCC

Joint Statement between Lancashire County Council and the Ministry of Justice

Land adjacent to HMP Garth and HMP Wymott, Ulnes Walton, Leyland

Appeal ref. APP/D2320/W/22/3295556

24th February 2023

Introduction

This Statement is made between the Local Highway Authority, Lancashire County Council (LCC) and the Ministry of Justice (MoJ) in support of the following development:

> *"Hybrid planning application seeking: Outline planning permission (with all matters reserved except for means of access, parking and landscaping) for a new prison (up to 74,531.71 sqm GEA) (Class C2A) within a secure perimeter fence following demolition of existing buildings and structures and together with associated engineering works; Outline planning permission for a replacement boiler house (with all matters reserved except for access); and Full planning permission for a replacement bowling green and club house (Class F2(c)) on land adjacent to HMP Garth and HMP Wymott, Leyland"*

Planning Application

The planning application (ref. 21/01028/OUTMAJ) was submitted in August 2021 and followed extensive pre-application engagement between LCC and the MoJ.

LCC submitted statutory consultee comments to the planning application, confirming on 8th December 2021 that they had no objections in relation to highway matters.

Chorley Council's Planning Committee determined to refuse planning permission at their meeting on 21st December 2021, contrary to their officer's recommendation. The decision notice was issued on 22nd December 2021.

The application was refused for the following reasons:

Reason for Refusal 1

> *The proposed development would have a greater impact on the openness of the Green Belt and the purpose of including land within it than the existing development on that part of the site that is previously developed and would encroach onto open countryside and is inappropriate development in the Green Belt. Substantial weight attaches to the harm to the Green Belt by reason of inappropriateness and further harm arising here by reason of the impact of the proposed development on the openness of the Green Belt and encroachment. The benefits associated with the proposed development would not clearly outweigh the resulting harm and, therefore, do not constitute, individually or cumulatively, very special circumstances required if inappropriate development is to be approved in the Green Belt in accordance with paragraph 148 of the National Planning Policy Framework.*

Reason for Refusal 2

The proposed development would have an unacceptable impact on highway safety by virtue of the increased traffic movements and inadequate highway infrastructure, contrary to paragraph 109 of the National Planning Policy Framework and policy BNE1 of the Chorley Local Plan 2012 - 2026.

Reason for Refusal 3

The potential noise nuisance and disturbance associated with the vehicular traffic movements that would be generated throughout the use of the development would result in a harmful impact on the amenity of residents in the locality contrary to policy BNE1 of the Chorley Local Plan 2012 - 2026.

Planning Appeal

An appeal was submitted by the MoJ in March 2022 and a public local inquiry held between 12-15, 19-20 and 22 July 2022.

On 29th June 2022, the appeal was recovered for the Secretary of State's (SoS) determination. The Inspector recommended dismissal however the Secretary of State directed on 19th January 2023 that a 'minded to grant' decision be issued.

The SoS decided to give the appellant and other parties the opportunity to provide further evidence on highways issues and allow each party to respond to any such evidence, before reaching a final decision on the appeal.

Subject to that further evidence demonstrating that the outstanding highways matters can be satisfactorily addressed, the SoS is minded to allow the appeal and grant planning permission, subject to conditions.

As part of preparing the further evidence, the MoJ has continued to engage with LCC to discuss the proposals and amendments to the highway's mitigation works.

Matter 1 - Ulnes Walton Lane Carriageway Markings and Traffic Calming

As reflected in LCC's statutory consultee comments (CD/B1), LCC support the proposal in principle for traffic calming measures at the Moss Lane/ Ulnes Walton Lane junction. LCC also support the proposed measures for traffic calming along Ulnes Walton Lane.

LCC has reviewed the detailed proposals now submitted by the MoJ and is supportive of the additional traffic calming measures proposed along Ulnes Walton Lane.

With reference to the Stage 1 Road Safety Audit (RSA) undertaken, LCC recognise that the RSA did not identify any concerns with the submitted proposals and are therefore of the opinion that the proposals suitably mitigate the impact of the development.

With regards to the Moss Lane/ Ulnes Walton Lane junction, LCC recognises the findings of the swept path analysis undertaken and with consideration of the Personal Injury Accident (PIA) data analysis outlined within the original Transport Assessment, agrees that it is not necessary to amend the existing carriageway markings at this junction.

Matter 2 - Footway between Ulnes Walton Lane and Moss Lane

LCC's statutory comments requested that a pedestrian footway be provided from the existing access junction for HMP Garth and HMP Wymott on Moss Lane to the existing northbound bus stop on Ulnes Walton Lane, just beyond the junction with Moss Lane.

Whilst the MoJ did not originally consider this footway necessary to be provided, further investigatory work has now been undertaken and in light of the SoS' concerns regarding pedestrian safety in this location, the footway is now proposed to be provided.

LCC support the proposed new 2m footway which will be provided within the existing highway boundary.

With reference to the Stage 1 Road Safety Audit (RSA) undertaken, LCC recognise that the RSA did not identify any concerns with the submitted proposals and are therefore of the opinion that the proposals will not result in any adverse impact on highway safety.

Where there are existing utility features associated with the existing street lighting and road signage in the verge where the footway is proposed, LCC can confirm that these features can be satisfactorily relocated at the detailed design stage to enable the provision of the footway.

Matter 3 - Moss Lane Traffic Calming

LCC have reviewed the revised and additional traffic calming measures proposed by the MoJ along Moss Lane in response to the SoS and Inspector's comments regarding potential for traffic to speed along the southern section of Moss Lane.

LCC can confirm agreement to and support for the proposed measures (including the resurfacing of Moss Lane) and consider that, with reference also to the Stage 1 RSA undertaken, that these measures will be effective in reducing speeds.

Matter 4 – A581/ Ulnes Walton Lane Mitigation

LCC have reviewed the amended information submitted by the MoJ. LCC can concur that the proposed mini-roundabout scheme will suitably address the capacity issues set out within the originally submitted Transport Assessment and are in line with the wider corridor scheme which LCC are looking to implement along the A581 to improve highway safety.

LCC note the contents of the RSA and the designer response to the in principle design which would be followed up with a detailed design and a Stage 2 RSA. LCC can confirm that the mini roundabout as presented is entirely within the adopted highway and could be delivered under a s278 agreement instead of a financial contribution via a s106. LCC can advise that the delivery of the proposed mini-roundabout will not prejudice the delivery of the wider A581 Corridor Improvement Scheme and other changes/improvements (in the area) .

Matter 5 – Construction Phase Impacts

LCC have reviewed the additional evidence prepared regarding construction phase impacts and can confirm that the impact of construction traffic will not give rise to any unacceptable highway safety impacts.

LCC are committed to continue working positively with the MoJ should the appeal be allowed, regarding the Construction Traffic Management Plan for each phase of development, as required by proposed condition 20. This will include careful analysis of the routing of construction vehicles, deliveries, their adherence to agreed routes, necessary restrictions, and vehicle caps (HGV's).

Conclusion

In summary, LCC can confirm that, in its capacity as Highway Authority, it continues to have no objection to the proposed development.

The additional evidence prepared and submitted by the MoJ is considered to satisfactorily respond to the SoS' concerns and demonstrates that the proposed development will not have an unacceptable adverse impact on highway safety in accordance with paragraph 111 of the NPPF and Policy BNE1 of the Chorley Local Plan.

Signed by:

…………………………………………………

On behalf of the Ministry of Justice

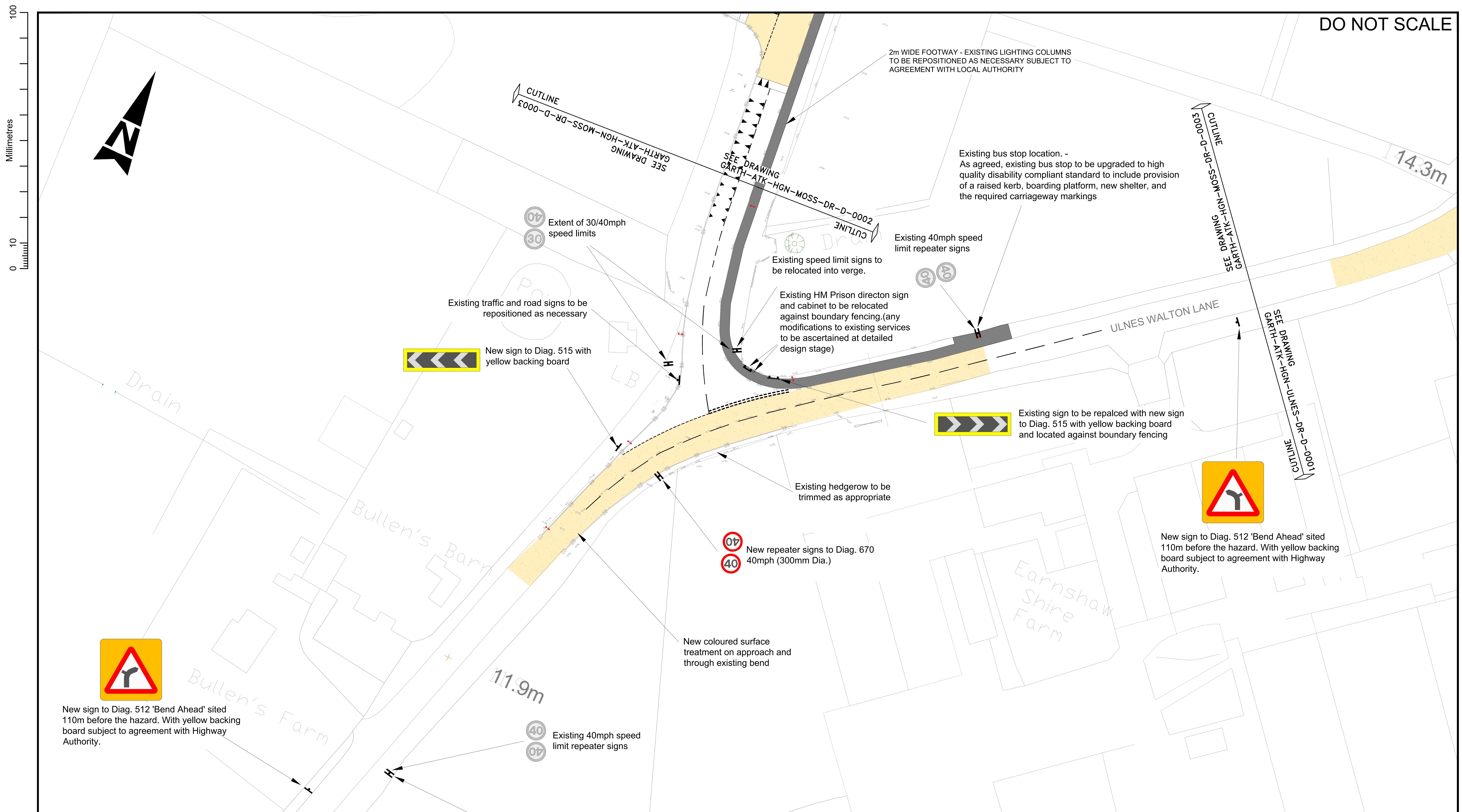
And:

Neil J Stevens

…………………………………………………

On behalf of Lancashire County Council

Appendix B - GARTH_ATK_HGN_MOSS_DR_D_0003



Key:

- Red carriageway surfacing
- Proposed footway
- Raised table
- Proposed/ Existing Sign face
- Existing lighting column

Notes:

1. Layout is preliminary design 'for information' only and subject to approval from Highway Authority.
2. Layout is based on Ordnance Survey. Subject to detailed design on Topographical Survey base.
3. All proposed road markings and signage to be in accordance with the 'Traffic Signs Regulations and General Directions 2016'.
4. On completion of works all affected infrastructure including hedging, fencing, ditches, footways, kerbing, verges and road surfacing shall be reinstated in accordance with the Overseeing Organisation's requirements.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

NONE

MAINTENANCE/CLEANING

NONE

DECOMMISSIONING/DEMOLITION

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Rev.	Date	Description	By	Chk'd	App'd
P1	27.01.23	DRAWING CREATED	JA	PDE	TR

Drawing Status: FIT FOR INFORMATION

Suitability: S2

ATKINS

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www.atkinsglobal.com

Client: MINISTRY OF JUSTICE

Project Title: HMP GARTH

Drawing Title: PROPOSED NEW TRAFFIC CALMING

Scale	Designed	Drawn	Checked	Authorised
AS SHOWN	JA	JA	PDE	TR
Original Size	Date	Date	Date	Date
A2	27.01.23	27.01.23	27.01.23	27.01.23

Drawing Number (HA PIN / Location - Originator - Volume - Type - Role - Number): GARTH MOSS - ATK - HGN - DR - D - 0003

Project Ref. No.: 5200124

Revision: P1

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Appendix C - Stage 1 Road Safety Audit – Hydrock

Matt Chamberlain Associates Ltd
International Road Safety Consultants

STAGE 1 ROAD SAFETY AUDIT

Garth Wymott 2

Leyland

Lancashire

FINAL

February 2023

Project Title: STAGE 1 ROAD SAFETY AUDIT GARTH WYMOTT 2

Client: HYDROCK

This document has been issued and amended as follows:

Rev	Issue	Prepared by	Reviewed by	Approved by	Date
1.0	Final	M Chamberlain	Paul Fenton	M Chamberlain	03/02/23
2.0	Final	M Chamberlain	Paul Fenton	M Chamberlain	21/02/23

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1.2	**Approach**	**4**
1.3	**Scheme Location**	**5**
2	**Items Raised at this Stage 1 Road Safety Audit**	**6**
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1 INTRODUCTION

1.1 Scheme Description

This report results from a Stage 1 Road Safety Audit carried out on the proposed highway improvements associated with a new prison development adjacent to the existing Garth and Wymott Prisons. A previous RSA 1 on this scheme was undertaken in early Feb 2023 Report Ref: MCA.HYD.054.

The works consist of:

- A581/Ulnes Walton Lane – Introduction of a raised mini-roundabout to replace the existing priority-controlled junction. Traffic calming on the A581 to include speed cushions and dragons teeth on both junction approaches.
- Moss Lane/Ulnes Walton Lane – Introduction of traffic calming measures along Ulnes Walton Lane (to the south of Moss Lane), introduction of a new footway between the NB bus stop on Ulnes Walton Lane and Moss Lane, and the introduction of traffic calming measures along Moss Lane.

This Audit has been carried out on the instruction of Hydrock. The overseeing organisation is Lancashire County Council

A road safety audit brief was provided by Atkins (RSA Stage 1, HMP Garth Wymott 2, Secretary of State, Highways Evidence) and this was considered adequate to undertake the audit.

The Audit Team membership was as follows: -

- Audit Team Leader: Matt Chamberlain BSc (Hons) CMILT FIHE MCIHT MSoRSA HE RSA CERT COMP
- Audit Team Member: Paul Fenton MITAI FIHE FCIHT FSoRSA CMILT HE RSA CERT COMP

The Audit Team has examined and reported only on the road safety implications of the scheme as presented and how it impacts on all road users and has not examined or verified the compliance of the designs to any other criteria. However, to clearly explain a safety problem or the recommendation to resolve a problem the Audit Team may, on occasion, have referred to a design standard without touching on technical audit. An absence of comment relating to specific road users / modes in this report does not imply that they have not been considered; instead, the Audit Team feels they are not adversely affected by the proposed changes.

This Safety Audit is not intended to identify pre-existing hazards which remain unchanged due to the proposals; hence they will not be raised in this report as they fall outside the remit of Road Safety Audit in general as specified in GG119.

Nothing in this Audit should be regarded as a direct instruction to include or remove a measure from within the scheme. Responsibility for designing the scheme lies with the Designer and as such the Audit Team accepts no design responsibility for any changes made to the scheme as a result of this Audit.

The Audit was carried out at home office locations and a visit to the site was made on **Tuesday 21st February 2023** between **10.00** and **11.00** hours when the weather was overcast, and the road surface was damp.

Traffic conditions were moderate at the time of the site visit with little pedestrian activity and no observed cycle movements.

ATC and speed data from March 2021 provided in the Transport Assessment shows that Moss Lane has an average 85%ile speed of 39mph northbound and 41.4mph southbound with an AADT of approx. 400 vehicles per day.

ATC and speed data from March 2013 also provided in the Transport Assessment shows that the A581 east of the Ulnes Walton Lane junction has an average 85%ile speed of 36.5mph eastbound and 36.1mph westbound with an AADT of 9,195 westbound and 12,028 eastbound.

Collision data for period for the five-year period 2016-2020 shows one slight collision within the scheme extents at the junction of Ulnes Walton Lane and the A581.

The prison development is expected to create an additional 765 trips onto the local road network.

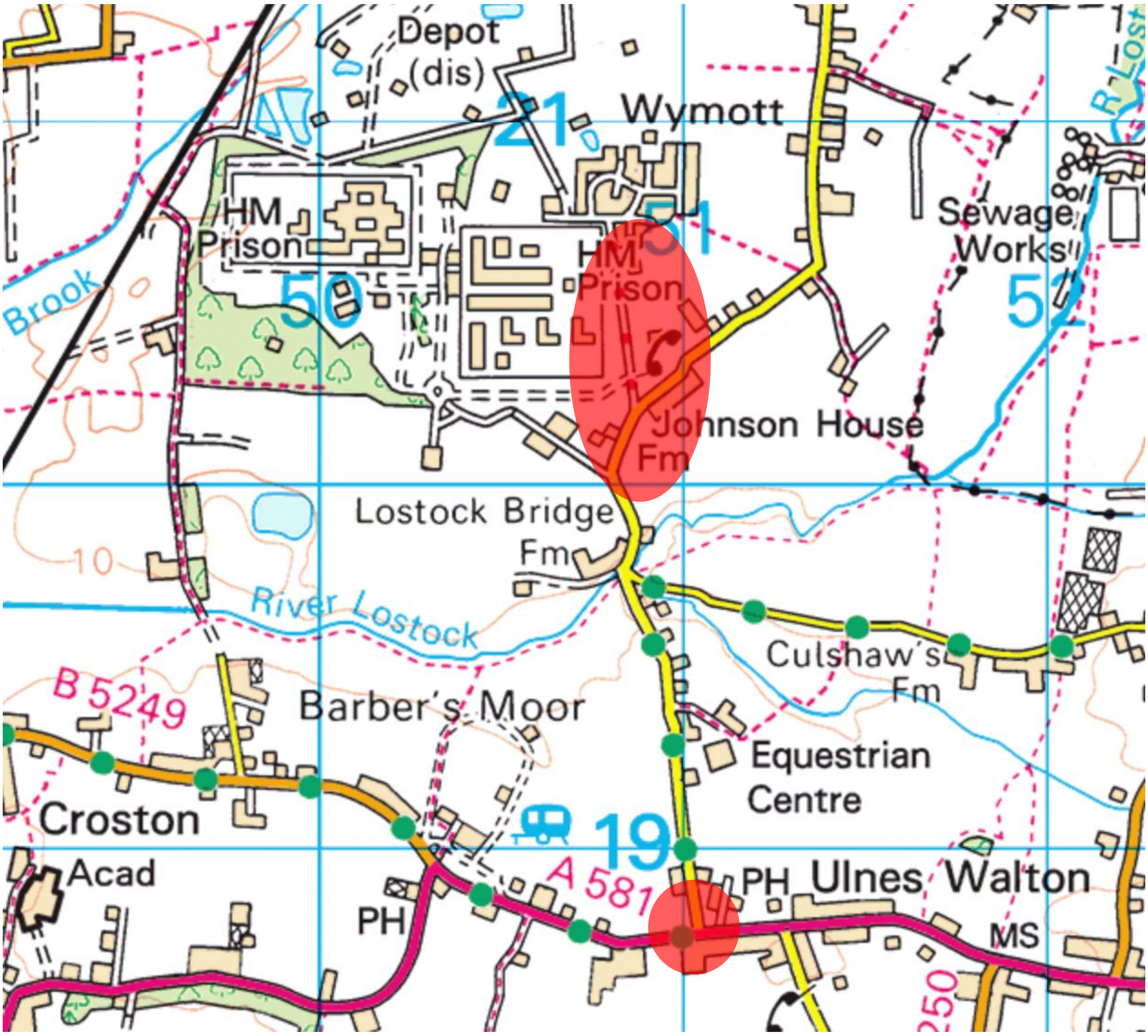
A Departure from Standard is being sought from Lancashire County Council for the visibility splays from Ulnes Walton Lane onto the A581 at the proposed mini roundabout.

1.2 Approach

The following drawings and documents were submitted to the Audit Team for review:

- Road Safety Audit Brief Stage 1 Garth Wymott 2
- Transport Assessment - 608623-0000-ATK-GHX0000-XX-RP-X-0001
- Proposed Mitigation Works Ulnes Walton Lane / A581 Proposed Mini-Roundabout – GARTH_ATK_HGN_A581_DR_D_0005_P3
- Swept Path Analysis A581/Ulnes Walton Lane – DWG: GARTH_ATK_SPA_A581_DR_D_0005_P1 – SPA
- Preliminary Highway Design Moss Lane/Ulnes Walton Lane – DWG: GARTH_ATK_HGN_MOSS_DR_D_0003
- Preliminary Highway Design Moss Lane – DWG: GARTH_ATK_HGN_MOSS_DR_D_0002_P3

1.3 Scheme Location



2 Items Raised at this Stage 1 Road Safety Audit

2.1 PROBLEM

Location: Proposed traffic calming on Moss Lane

Summary: Poor road surface condition could reduce longevity of proposed road markings and reducing their effectiveness

As part of the proposals dragons’ teeth and red pads with SLOW markings are proposed on Moss Lane as part a package of traffic calming measures. The road surface is badly crazed which will affect the longevity of any proposed markings or high friction surfacing. This could reduce the effectiveness of the proposed measures and given the high 85%ile percentile speeds increase the risk of collisions at the proposed and existing junction.

Recommendation: It is recommended that the road surface is improved before any road markings or high friction surfacing are applied.

2.2 PROBLEM

Location: Junction of Ulnes Walton Road and A581

Summary: Lack of available road space could increase the risk of collisions at the new mini roundabout

From the drawings provided and site visit it is not clear how the necessary road space will be obtained for the mini roundabout. Currently large vehicles turning left from Ulnes Walton Lane on to the A581 overrun the opposing lane and the provided swept path analysis provided shows this will also happen with the proposed solution. This could increase the risk of collisions between large vehicles turning left from Ulnes Walton Road and vehicles travelling west on the A581.

Recommendation: It is recommended that an alternative junction solution such as a sheltered right lane is provided at this location.

2.3 PROBLEM

Location: Junction of Ulnes Walton Road and A581

Summary: Long vehicles could become unbalanced when turning left from Ulnes Walton Road

Under the proposals the roundabout will be raised, and the ramp set back from the mini roundabout. No details of the ramp profiles have been provided and there is a risk larger loaded vehicles could become unbalanced when negotiating the junction turning left onto the A581 from Ulnes Walton Road.

Recommendation: It is recommended that an appropriate ramp profile is chosen, and the ramp set back far enough from the roundabout to fully accommodate a large vehicle.

2.4 PROBLEM

Location: Junction of Ulnes Walton Road and A581

Summary: Lack of kerb definition could lead to overrunning of private driveway/footway

Under the proposals the roundabout will be raised there are private driveways incorporating dropped kerbs on the south side of the junction and it is unclear how these could tie in with a raised surface. If the carriageway is at the same level, there is a risk that drivers may inadvertently overrun the footway or driveway.

Recommendation: It is recommended that an appropriate kerb upstand is provided, and other measures introduced to ensure the kerb is conspicuous to road users entering the roundabout.

3 Audit Team Statement

I certify that this audit has been carried out in accordance with DMRB GG119.

Audit Team Leader

Name: Matt Chamberlain

Signed:

Dated: 21/02/2023

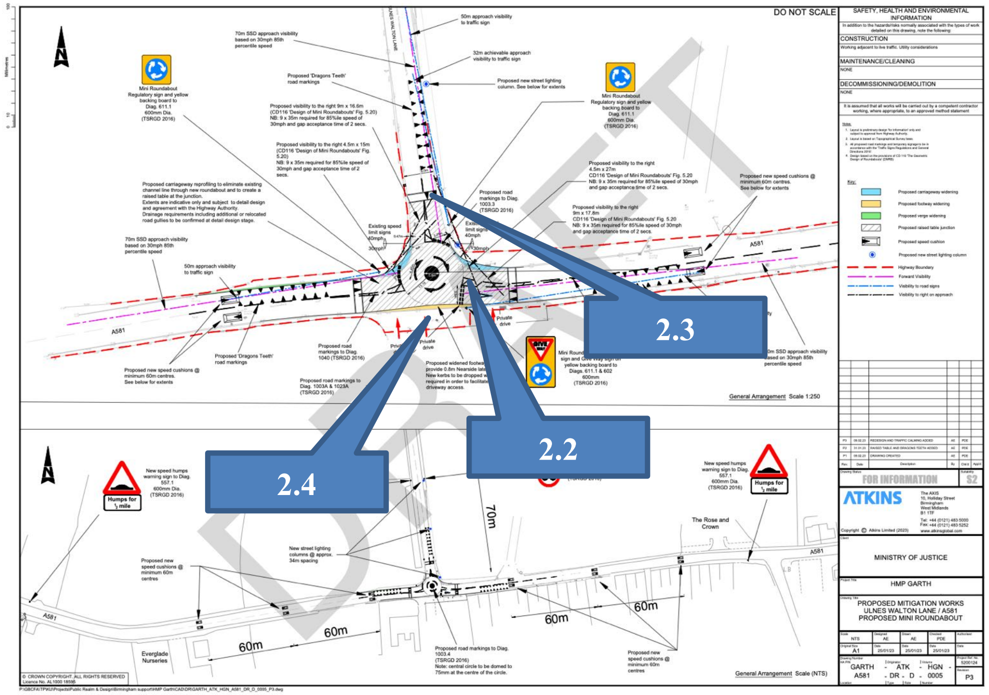
Audit Team Member

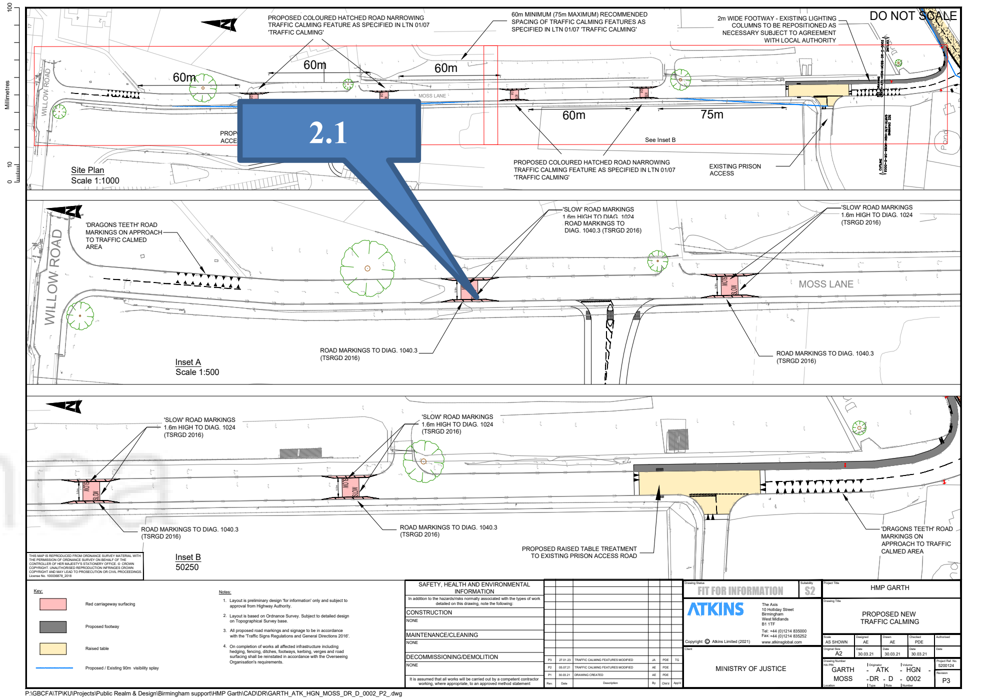
Name: Paul Fenton

Signed:

Dated: 21/02/2023

Appendix A - Audit Key Plan


DO NOT SCALE
2.3
2.2
2.4
DRAFT
ATKINS
MINISTRY OF JUSTICE
HMP GARTH
PROPOSED MITIGATION WORKS ULNES WALTON LANE / A581 PROPOSED MINI ROUNDABOUT
60m
70m
A581
General Arrangement Scale 1:250
General Arrangement Scale (NTS)


DO NOT SCALE
2.1
60m
75m
Site Plan
Scale 1:1000
WILLOW ROAD
MOSS LANE
Inset A
Scale 1:500
Inset B
50250
FIT FOR INFORMATION
ATKINS
MINISTRY OF JUSTICE
HMP GARTH
PROPOSED NEW TRAFFIC CALMING

Appendix D - Stage 1 Road Safety Audit – VIA East Midlands Ltd

A581 Southport Road / Ulnes Walton Lane, Ulnes Walton

Proposed Mini-Roundabout

Road Safety Audit
Stage 1 - Completion of Preliminary Design

SA2616A

1. Project Details

Report title:	A581 Southport Road / Ulnes Walton Lane, Ulnes Walton
Audit Stage:	Stage 1 Road Safety Audit
Report date:	February 2023
Document reference:	SA2616A
Prepared by:	Via East Midlands Ltd (Safer Highways)
Prepared for:	Mark Blackburn of HSP Ltd

2. Introduction

2.1 This report results from a Stage 1 Road Safety Audit carried out on a proposed mini-roundabout at the junction of the A581 Southport Road with Ulnes Walton Lane just west of Ulnes Walton in Lancashire.

2.2 The Road Safety Audit has been carried out following a request received from Mark Blackburn of HSP Ltd on 14th February 2023.

2.3 The Road Safety Audit Team membership approved by Kendrick Hourd, Head of Safer Highways at Via East Midlands, consisted of:

Gareth Coles - Audit Team Leader, Via East Midlands
Simon Taylor - Audit Team Member, Via East Midlands

2.4 The Audit Team Leader and Audit Team Member personally hold a Certificate of Competency in Road Safety Audit in accordance with the requirements of the European Directive on Road Infrastructure Safety Management 2008/96/EC.

2.5 The Road Safety Audit comprised an examination of the following documents provided:

GARTH – ATK – HGN – A581 – DR – D – 0005 rev P3
"PROPOSED MITIGATION WORKS ULNES WALTON LANE / A581 PROPOSED MINI ROUNDABOUT"

GARTH – ATK – SPA – A581 – DR – D – 0005 rev P1
"PROPOSED MITIGATION WORKS ULNES WALTON LANE / A581 PROPOSED MINI ROUNDABOUT SWEPT ATH ANALYSIS". (It is noted that the Swept Path Analysis shown in this drawing is based on a previous layout design.)

2.6 The Road Safety Audit took place at private locations away from Trent Bridge House, the Via East Midlands Ltd. offices in West Bridgford, Nottingham between 20th and 21st February 2023. The Audit Team visited the site of the proposed mini-roundabout on 20th February 2023 at around 13:30hrs. During the site visit the weather was dry and overcast and the road surface was predominantly dry. Traffic was relatively light, although there were occasional busier periods where traffic was more 'platooned'.

2.7 Site visits were undertaken in accordance with Via Highways Risk Assessment VRA-047 "Site Visits for Crash Site Investigations and Road Safety Audits".

2.8 The audit has been carried out in accordance with DMRB GG 119. The audit has been carried out with the sole purpose of identifying features of the scheme which could, in our view, lead to road safety problems. 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.

2.9 Road Safety Audit is only concerned with road safety matters. It does not consider structural safety nor health and safety issues connected with construction, maintenance and operation.

2.10 All comments and recommendations are referenced to the design drawings and the locations are indicated on a plan within this report.

2.11 The recommendations made in this report should not be regarded as direct instructions to amend the scheme. However, the Designer should consider the recommendations and obtain agreement with the Client as necessary, with a view to amending the scheme to address the road safety problems identified.

3. Items raised in previous road safety audit(s)

3.1 The Audit Team is not aware of any other Road Safety Audits having been carried out on this proposal.

4. Items raised at this Stage 1 Audit

4.1 Problem

Location: Ulnes Walton Lane entry onto mini-roundabout

Summary: Emerging side road vehicles collide with A581 traffic due to restricted visibility.

Visibility to the right for drivers emerging from the Ulnes Walton Lane entry appears insufficient for safe operation.

The proposed design includes speed cushions on the A581 approaches, and the mini-roundabout is to be constructed on a 'raised table', which will result in a reduction in traffic speeds. However, based on experience, it will be difficult to reduce 85%ile traffic speeds on the A581 to much below 25mph. Even at this comparatively low speed the available visibility may still be too restricted.

It may be difficult to predict in advance the amount of speed reduction obtained in practice, since this is often affected by site specific factors. For example, compared to cars, lorries or motorcycles may be less affected by the speed cushions. On a designated A road a proportion of these less affected vehicle types will use the junction on a regular basis. As a result, the restricted view may result in a greater risk of conflict than in a typical residential setting where traffic calming of this sort is normally used.

Drivers attempting to enter the mini-roundabout from Ulnes Walton Lane with insufficient visibility are likely to be involved in collisions with previously unseen main road traffic. This may result in injury to vehicle occupants or riders.

The view is limited largely by the existing boundary of an adjacent field, and the fact that the side road Give Way is well set back from the main road, to cater for circulating manoeuvres on the mini-roundabout. As a further consequence of this, it will be difficult for approaching main road drivers to see vehicles on the side road. This may reduce their ability to slow or brake in time to avoid a collision as the side road vehicle emerges. This is especially concerning for the A581 eastbound direction, since these drivers will often be able to see that there is no opposing westbound A581 traffic, and thus enter the junction without slowing, knowing they have right of way. This will exacerbate the problem of side road visibility, and further increase the risk of accidents.

It was observed on site that a partial improvement in the view to the right could be obtained by looking through the boundary fence. However this additional visibility could be removed if the landowner were to replace the relatively open fence with a hedge, or plant crops, for example. Junction visibility should therefore only be measured across land within the Highway Authority's control, and we note that this is the approach wisely taken by the current design. Unfortunately the view obtained may be insufficient.

Recommendation

In the current design, it is noted that a considerable effort has been made to reduce approach speeds, and to make the junction as conspicuous as possible. However we do not envisage the 85%ile speed being reduced much below 25mph. Recommending further mitigation measures would be unlikely to improve this in our view. Therefore the available visibility is likely to remain below the level required to ensure safe operation.

It is recommended that the visibility is improved by acquisition of a portion of the adjacent land, to allow the highway boundary to be set back, preferably on both sides of the junction. Should this not be possible, a redesigned layout may be required, or failing that, an alternative method of junction control may need to be explored.

4.2 Problem

Location: A581 Southport Road westbound entry to mini-roundabout

Summary: A581 westbound traffic collides with emerging side road vehicles.

Visibility to the right at the A581 Southport Road westbound entry appears insufficient. This is due to the existing adjacent field boundary hedge, and the setting back of the side road to allow the mini-roundabout to operate. Drivers attempting to entering the mini-roundabout with insufficient visibility to the right are likely to be involved in collisions with previously unseen vehicles emerging from Ulnes Walton Lane. These collisions may result in injury to vehicle occupants or riders.

Recommendation

It is recommended that the visibility is improved by acquisition of a portion of the adjacent land, to allow the highway boundary to be set back. Should this not be possible, a redesigned layout may be required, or failing that, an alternative method of junction control may need to be explored.

4.3 Problem

Location: A581 approaches to mini-roundabout

Summary: A range of potential issues, dependent on the detailed design of traffic calming.

Both approaches to the proposed mini-roundabout are to be ‘traffic calmed’ through the use of speed cushions. The results obtained may be difficult to predict accurately on this reasonably busy road, which will retain a partially rural appearance, unlike the urban residential environment in which these features are typically used. Success may depend on the detailed design, especially the type, size, and layout of cushion features.

If the individual cushions themselves are not severe enough (for example too narrow, or too low, or with excessively rounded corners), the required speed reduction will not be obtained. This will lead to an increase in the number and severity of injury accidents at the mini-roundabout. (As noted above however, the speeds are not likely to fall much below 25mph at best, which may still be incompatible with the currently available visibility). Insufficiently slowed drivers or riders may unexpectedly encounter the up-ramps at the speed table, which may cause them to lose control – this would be especially problematic for motorcyclists, who are least likely to be slowed by the cushions, and most likely to be seriously injured if they lose control on the ramp.

If the cushions are more severe, the majority of drivers will slow - however many will also seek to reduce the slowing effect by adjusting their position on the road. This can result in traffic travelling along the road centre line to take a path in between the cushions, in order to experience a reduced vertical deflection. This can lead to head-on conflict with opposing traffic taking the corresponding line in the other direction. Again motorcyclists would be at particular risk of injury. The layout shown in the design appears to show the cushions in the centre of the existing running lanes, which can lead to this type of problem.

To overcome this, the cushions need to be sited close enough together to avoid a ‘least resistance’ path between them. However when the road is busy, opposing vehicles may frequently cross the features in opposite directions at the same time. If the cushions are too close together, this can lead to side-to-side, or grazing, impacts, or sudden braking and shunt accidents. Obviously, larger vehicles would be most likely to be involved, and may also be least likely to be slowed sufficiently by the cushions, due to their broader wheelbase.

Depending on the road width, avoiding an excessive gap in the centre can result in an inviting gap between the cushion and the kerb, so that drivers veer to the nearside to avoid having to straddle the feature with both wheels. This may lead to a vehicle clipping the kerb or mounting the footway/verge, resulting in a possible conflict with pedestrians, a shunt as a following driver is brought to a sudden halt, or even a loss of control of the vehicle. Sudden veering to the nearside may also risk a collision with a following cyclist or motorcyclist. Any of these incidents may lead to road users being injured.

To reduce the gap at the nearside, some form of narrow build out is sometimes employed. On this type of road, a build-out would have to be very gradually developed to avoid being struck by traffic. Also, cyclists may have difficulty weaving out into the path of following vehicles. Alternatively, an additional cushion in the centre may be considered. However, a cushion of the same width and severity should be used, otherwise drivers will again travel along the centre of the road in opposing directions to avoid the more severe types. This may be difficult to achieve with the fixed road width available.

Recommendation

It is recommended that extreme care is taken in the detailed design of the cushion features. They should also be made as visible as possible, and the street lighting assessed to ensure they remain prominent at night. Forward visibility to the first encountered feature in each direction is particularly important, and should be assessed in relation to the measured road speeds.
Alternative forms of ‘traffic calming’ such as plateaux may be explored, although these will result in increased noise nuisance for nearby residents, and may be unpopular with drivers of HGVs buses and other large vehicles. They are also unpopular and sometimes hazardous for riders of two wheeled vehicles. We would not recommend horizontal deflection features, such as chicanes, as these can lead to chronic queues, and unpredictable speed reduction effects. They are also prone to conflict, as some drivers attempt to force opposing drivers to give way by driving aggressively through the feature.

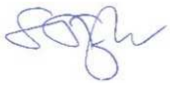
5. Audit Team Statement

We certify that this Road Safety Audit has been carried out in accordance with DMRB GG 119.

Road Safety Audit Team Leader

Gareth Coles
Crash Site Investigator & Safety Auditor
Via East Midlands Ltd
Bilsthorpe Business Park
Eakring Road
Bilsthorpe
Nottinghamshire
NG22 8ST

Road Safety Audit Team Member



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Senior Casualty Reduction Manager
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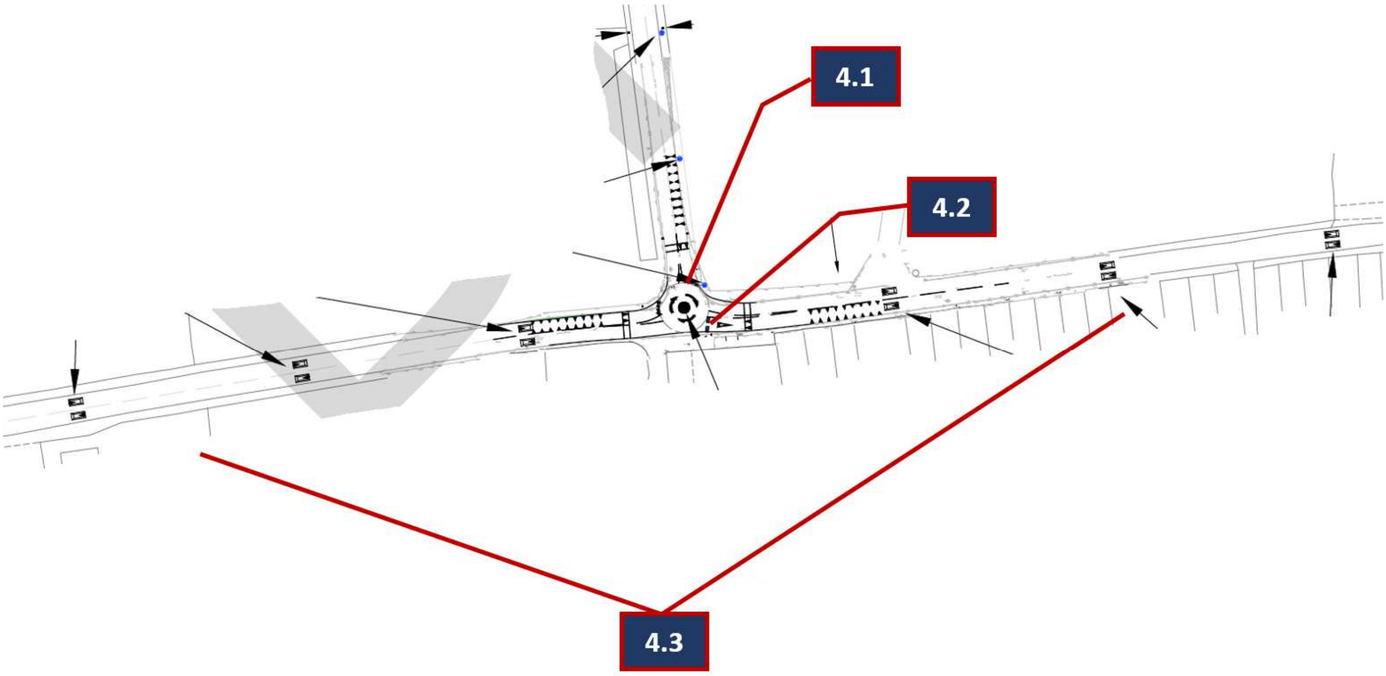
Appendix - Reference Locations



Ulnes Walton Lane & Moss Lane

Garth Prison, Ulnes Walton, Lancashire

Proposed access, traffic calming, surfacing, and signing

Road Safety Audit
Stage 1 - Completion of Preliminary Design

SA2617A

1. Project Details

Report title:	Ulnes Walton Lane & Moss Lane
Audit Stage:	Stage 1 Road Safety Audit
Report date:	February 2023
Document reference:	SA2617A
Prepared by:	Via East Midlands Ltd (Safer Highways)
Prepared for:	Mark Blackburn of HSP Ltd

Via East Midlands Ltd
Bilsthorpe Business Park, Eakring Road, Bilsthorpe, Nottinghamshire, NG22 8ST

Registered Office: Bilsthorpe Highways Depot, Bilsthorpe Business Park, Eakring Road, Bilsthorpe, Newark NG22 8ST

2. Introduction

2.1 This report results from a Stage 1 Road Safety Audit carried out on a proposed new access on Moss Lane, traffic calming measures on Moss Lane, and additional signing and road markings on Ulnes Walton Lane.

2.2 The Road Safety Audit has been carried out following a request received from Mark Blackburn of HSP Ltd on 14th February 2023.

2.3 The Road Safety Audit Team membership approved by Kendrick Hourd, Head of Safer Highways at Via East Midlands, consisted of:

Gareth Coles - Audit Team Leader, Via East Midlands
Simon Taylor - Audit Team Member, Via East Midlands

2.4 The Audit Team Leader and Audit Team Member personally hold a Certificate of Competency in Road Safety Audit in accordance with the requirements of the European Directive on Road Infrastructure Safety Management 2008/96/EC.

2.5 The Road Safety Audit comprised an examination of the following documents provided:

GARTH – ATK – HGN – MOSS – DR – D – 0002 rev P3
“PROPOSED NEW TRAFFIC CALMING”

GARTH – ATK – HGN – MOSS – DR – D – 0003 rev P1
“PROPOSED NEW TRAFFIC CALMING”

2.6 The Road Safety Audit took place at private locations away from Trent Bridge House, the Via East Midlands Ltd. offices in West Bridgford, Nottingham between 20th and 21st February 2023. The Audit Team visited the site of the proposed access and associated improvement works on 20th February 2023 at around 14:30hrs. During the site visit the weather was dry and overcast and the road surface was predominantly dry. Traffic on both Moss Lane and Ulnes Walton Lane was relatively light.

2.7 Site visits were undertaken in accordance with Via Highways Risk Assessment VRA-047 “Site Visits for Crash Site Investigations and Road Safety Audits”.

2.8 The audit has been carried out in accordance with DMRB GG 119. The audit has been carried out with the sole purpose of identifying features of the scheme which could, in our view, lead to road safety problems. 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.

2.9 Road Safety Audit is only concerned with road safety matters. It does not consider structural safety nor health and safety issues connected with construction, maintenance and operation.

2.10 All comments and recommendations are referenced to the design drawings and the locations are indicated on a plan within this report.

2.11 The recommendations made in this report should not be regarded as direct instructions to amend the scheme. However, the Designer should consider the recommendations and obtain agreement with the Client as necessary, with a view to amending the scheme to address the road safety problems identified.

3. Items raised in previous road safety audit(s)

3.1 The Audit Team is not aware of any other Road Safety Audits having been carried out on this proposal.

4. Items raised at this Stage 1 Audit

4.1 Problem

Location: Ulnes Walton Lane northbound approach to Moss Lane junction

Summary: Junction warning sign obscured, leading to accidents at Moss Lane junction.

On the northbound approach to Moss Lane there is a proposed junction warning sign (Dia. 512) on the nearside of Ulnes Walton Lane. The indicative position of the sign appears to be close to, and partly behind, existing overhanging trees in the verge/adjacent garden. As a result the sign may become obscured by foliage, resulting in drivers receiving reduced warning of the junction ahead. This may lead to an increase in the number and severity of accidents at the junction. This would include collisions with emerging side road vehicles, or shunting of vehicles which slow to turn off Ulnes Walton Lane.

Recommendation

When finalising the on-site location of the sign, ensure that approaching drivers have an unrestricted view of it, which will not be compromised by future foliage growth. It may be appropriate to relocate the sign slightly further south.

4.2 Problem

Location: Bend on Ulnes Walton Lane at Moss Lane junction.

Summary: Chevron signs' orientation leads to accidents at bend.

There are proposed chevrons signs (Dia. 515) to warn drivers on Ulnes Walton Lane of the bend at the Moss Lane junction. As shown they will not be sufficiently visible to approaching drivers, as their orientation is virtually parallel to the carriageway. Ideally they should be nearer to perpendicular to the approaching carriageway, so that they are more fully visible. Reduced warning may lead to loss of control injury accidents as drivers enter the bend too quickly.

Recommendation

Adjust the orientation of both proposed chevrons to face approaching drivers. If this is not achievable without blocking footways, visibility splays, etc. it may be appropriate to employ a short line of yellow backed 'single stick' chevrons instead.

4.3 Problem

Location: Bend on Ulnes Walton Lane at Moss Lane junction.

Summary: Potential for bend accidents due to insufficient surface skidding resistance.

There is proposal for ‘coloured surface treatment’ on the bend on Ulnes Walton Lane at Moss Lane junction. Whilst this will serve to highlight the hazard to approaching drivers, it is important that a material with suitable skidding resistance is specified. Insufficient grip and poor resistance to polishing may in time result in loss of control accidents on the bend, especially when the surface is wet. Vehicle occupants or riders may be injured as result.

Recommendation

Ensure the surface has a suitably high skidding resistance and polished stone value. A ‘high friction surfacing’ / ‘anti-skid’ material may be an appropriate choice.

5. Audit Team Statement

We certify that this Road Safety Audit has been carried out in accordance with DMRB GG 119.

Road Safety Audit Team Leader

Gareth Coles
Crash Site Investigator & Safety Auditor
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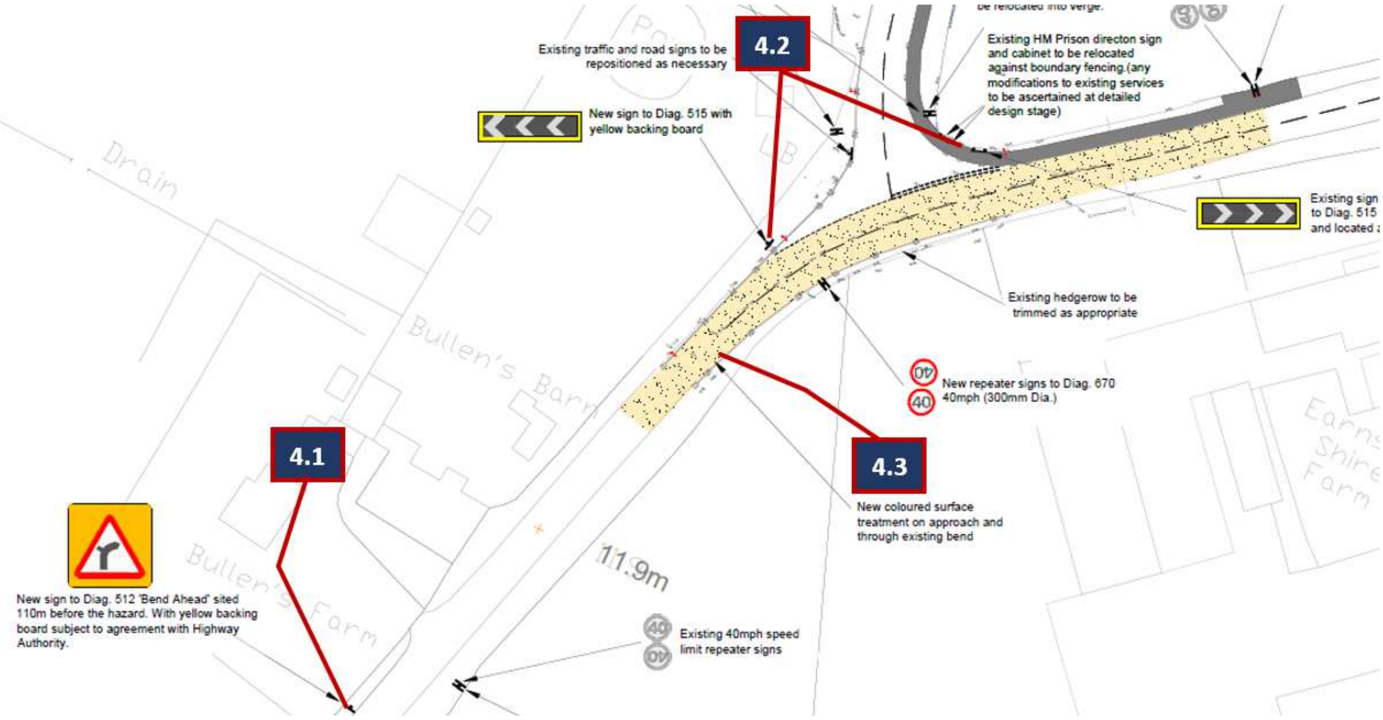
Appendix - Reference Locations



Appendix E - RSA Designers Response - Hydrock

HMP Garth Wymott 2

RSA Designers Response - Hydrock

Mace (On behalf of the Ministry of Justice)

February 2023

Notice

This document and its contents have been prepared and are intended solely as information for Mace (On behalf of the Ministry of Justice) and use in relation to the appeal brought forward by the Ministry of Justice (APP/D2320/W/22/3295556).

Atkins Limited assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 14 pages including the cover.

Document history

Document title: RSA Designers Response - Hydrock

Document reference: 2.0

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
2.0	Designer’s Response	TR	TR	DC	DC	24/02/2023

Client signoff

Client	Mace (On behalf of the Ministry of Justice)
Project	HMP Garth Wymott 2
Job number	5200124
Client signature/date	

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1. Introduction

1.1. Background

Atkins has been commissioned by Mace (on behalf of the MoJ) in response to the ‘minded to grant’ decision made by Lee Rowley MP, the Parliamentary Under Secretary of State for Local Government and Building Safety, on behalf of the Secretary of State. The ‘minded to grant’ decision was outlined within a letter addressed to Cushman & Wakefield on the 19 January 2023 (APP/D2320/W/22/3295556).

As outlined in Paragraph 4 of the decision letter, the Secretary of State has given the appellant (the Ministry of Justice) and other parties the opportunity to provide further evidence on highways issues, and allow parties to respond to any such evidence, before reaching a final decision on the appeal. Subject to being satisfied that these matters can be satisfactorily addressed, the Secretary of State is minded to allow the appeal and grant planning permission, subject to conditions.

1.2. Stage 1 Road Safety Audit

As part of the additional evidence requested by the Secretary of State, Atkins has produced the preliminary highways designs outlined in Table 1-1.

Table 1-1 - Preliminary Highway Designs

Location	DWG Title	Appendix Location
Moss Lane/Ulnes Walton Lane	GARTH_ATK_HGN_MOSS_DR_D_0003	Appendix A
Moss Lane	GARTH_ATK_HGN_MOSS_DR_D_0002_P3	Appendix B
A581/Ulnes Walton Lane	GARTH_ATK_HGN_A581_DR_D_0005_P3	Appendix C

A Stage 1 Road Safety Audit (RSA) was produced by Hydrock on 21 February 2023 in relation to the preliminary highway designs outlines in Table 1-1 (Document Reference: MCA.HYD.055). A copy of the Stage 1 RSA is provided in Appendix D.

This RSA Response report provides the responses from the design organisation (Atkins) to the items raised in the Stage 1 RSA.

2. RSA Designers Response

2.1. RSA Summary

Table 2-1 provides a summary of the problems raised in the Stage 1 RSA produced by Hydrock.

Table 2-1 - Stage 1 RSA Problem Summary

ID	Location	RSA Problem	RSA Recommendation
2.1	Moss Lane	Poor road surface condition could reduce longevity of proposed road markings and reducing their effectiveness	It is recommended that the road surface is improved before any road markings or high friction surfacing are applied
2.2	A581/Ulnes Walton Lane	Lack of available road space could increase the risk of collisions at the new mini roundabout	It is recommended that an alternative junction solution such as a sheltered right lane is provided at this location
2.3	A581/Ulnes Walton Lane	Long vehicles could become unbalanced when turning left from Ulnes Walton Road	It is recommended that an appropriate ramp profile is chosen, and the ramp set back far enough from the roundabout to fully accommodate a large vehicle.
2.4	A581/Ulnes Walton Lane	Lack of kerb definition could lead to overrunning of private driveway/ footway	It is recommended that an appropriate kerb upstand is provided, and other measures introduced to ensure the kerb is conspicuous to road users entering the roundabout.

2.2. RSA Designers Response

2.2.1. RSA Problem 2.1

The RSA recommendation is agreed. The Appellant (the Ministry of Justice) has agreed to re-surface Moss Lane (from the Moss Lane/Willow Road junction to the Moss Lane/Ulnes Walton Lane junction) before delivering the measures outlined on DWG: GARTH_ATK_HGN_MOSS_DR_D_0002_P3.

2.2.2. RSA Problem 2.2

The Stage 1 RSA has recommended that an alternative junction solution is provided at the A581/Ulnes Walton Lane junction. The RSA recommendation is not agreed. The following sections provide a response to this recommendation.

2.2.2.1. Mitigation Purpose

The introduction of a mini roundabout at the A581/Ulnes Walton Lane junction was in response to the standalone junction capacity assessment contained within Section 7.3.6 of the Transport Assessment (TA) for HMP Garth Wymott 2 (Appeal Core Document A35). The A581/Ulnes Walton Lane junction is forecast to operate over acceptable thresholds of capacity in the AM Peak during the '2025 Opening Year without Development' scenario with a maximum RFC[1] of 0.90. The additional traffic generated by the development proposals increase the RFC in the AM Peak to 1.10 in the '2025 Opening Year with Development' scenario.

In all scenarios, the capacity issues are caused by vehicles waiting to turn right into Ulnes Walton Lane from the A581 (east) approach arm. The standalone junction capacity modelling indicates that the vehicle queues along the A581 (east) are forecast to increase from 9.5 PCUs to 46.4 PCUs based on the existing layout. Therefore, to mitigate the impact of the development proposals at this location, the traffic queues need to be redistributed. This introduction of a mini roundabout successfully reduces the RFC and the forecast vehicle queues.

Atkins Summary Response: The proposed form of junction has been selected to address the specific capacity concerns raised by the standalone junction capacity analysis.

2.2.2.2. Swept Path Analysis

Atkins has reviewed the Swept Path Analysis (SPA) for the proposed highway layout (GARTH_ATK_HGN_A581_DR_D_0005_P3) and compared it to the SPA for the existing highway layout, and the SPA for other alternative forms of junction (as recommended in the RSA).

It is evident that the proposed junction layout reduces the overrun associated with an Articulated Vehicle (16.5m) and provides a significant improvement compared to the existing highway layout (see DWG: GARTH_ATK_HGN_A581_DR_D_0008-P1 in Appendix E).

The SPA also demonstrates that the provision of a dedicated right turn bay would result in vehicular conflict if a car was waiting to turn right into Ulnes Walton Lane whilst an Articulated Vehicle (16.5m) was making the movement from Ulnes Walton Lane to the A581 (east). Therefore, it is evident that the proposed highway layout at the A581/Ulnes Walton Lane junction provides the best design solution when comparing the SPA.

In addition, as per Table 3-7 in the TA (Appeal Core Document A35), there was only one accident recorded at this location between 2016 and 2020. Therefore, it is not considered that there are any pre-existing safety concerns relating to HGV manoeuvres which would be worsened by the proposed highway layout at this location.

Atkins Summary Response: The proposed highway layout provides an improvement on the existing highway layout for Articulated HGVs turning left out of Ulnes Walton Lane.

2.2.2.3. Mini Roundabout Good Practice Guidance

The Mini Roundabout Good Practice Guidance produced by the Department for Transport (DfT) states that a mini roundabout can improve the operation of an existing junction by:

- Reducing the dominance of one traffic flow
  - As the mini-roundabout works on the principle of 'priority to circulating traffic from the right', a minor traffic flow can be given priority over a major traffic flow that would otherwise dominate the junction.
- Giving priority to right turners
  - The 'priority' principle of operation benefits right-turning traffic, giving it priority over ahead movements from the opposing direction.
- Improving capacity at overloaded junctions
  - For a given road space, the mini roundabout has a higher capacity than most alternatives and is very flexible in coping with variations in both volumes and proportions of traffic flow during the day.

[1] An RFC (Ratio of Flow to Capacity) of below 0.85 (for roundabout and priority junctions) indicates that a junction operates within acceptable capacity thresholds for the assessed flows. An RFC of over 1.0 indicates that a junction is operating over capacity.

- As an Accident Remedial Measure
    - Mini roundabouts are most commonly introduced as an accident remedial measure to reduce the number of accidents at a junction. For 3 arm sites, the mean accident rate for mini roundabouts is similar to that of priority junctions and about 30% less than for signalled junctions.
- To reduce the severity of accidents at a junction
    - The severity of accidents (percentage of fatal, serious and slight accidents to all injury accidents) at 3 arm mini roundabout sites is lower than at 3 arm signalled junctions and considerably lower than at 30 mph priority junctions.

Atkins Summary Response: Good Practice Guidance from the DfT states that mini roundabouts can provide safety benefits over other forms of junction, and they have a lower severity rate.

2.2.3. RSA Problem 2.3

The Appellant (the Ministry of Justice) has confirmed that the appropriate ramp profile will be accommodated and confirmed during the detailed design stage as part of the proposed s278 agreement.

2.2.4. RSA Problem 2.4

The Appellant (the Ministry of Justice) has confirmed that the exact height of the kerb upstand will be accommodated and confirmed during the detailed design stage as part of the proposed s278 agreement.

Appendices

Appendix A. GARTH_ATK_HGN_MOSS_DR_D_0003

REMOVED DUE TO DUPLICATION

Appendix B. GARTH_ATK_HGN_MOSS_DR_D_0002_P3

REMOVED DUE TO DUPLICATION

Appendix C. GARTH_ATK_HGN_A581_DR_D_0005_P3

REMOVED DUE TO DUPLICATION

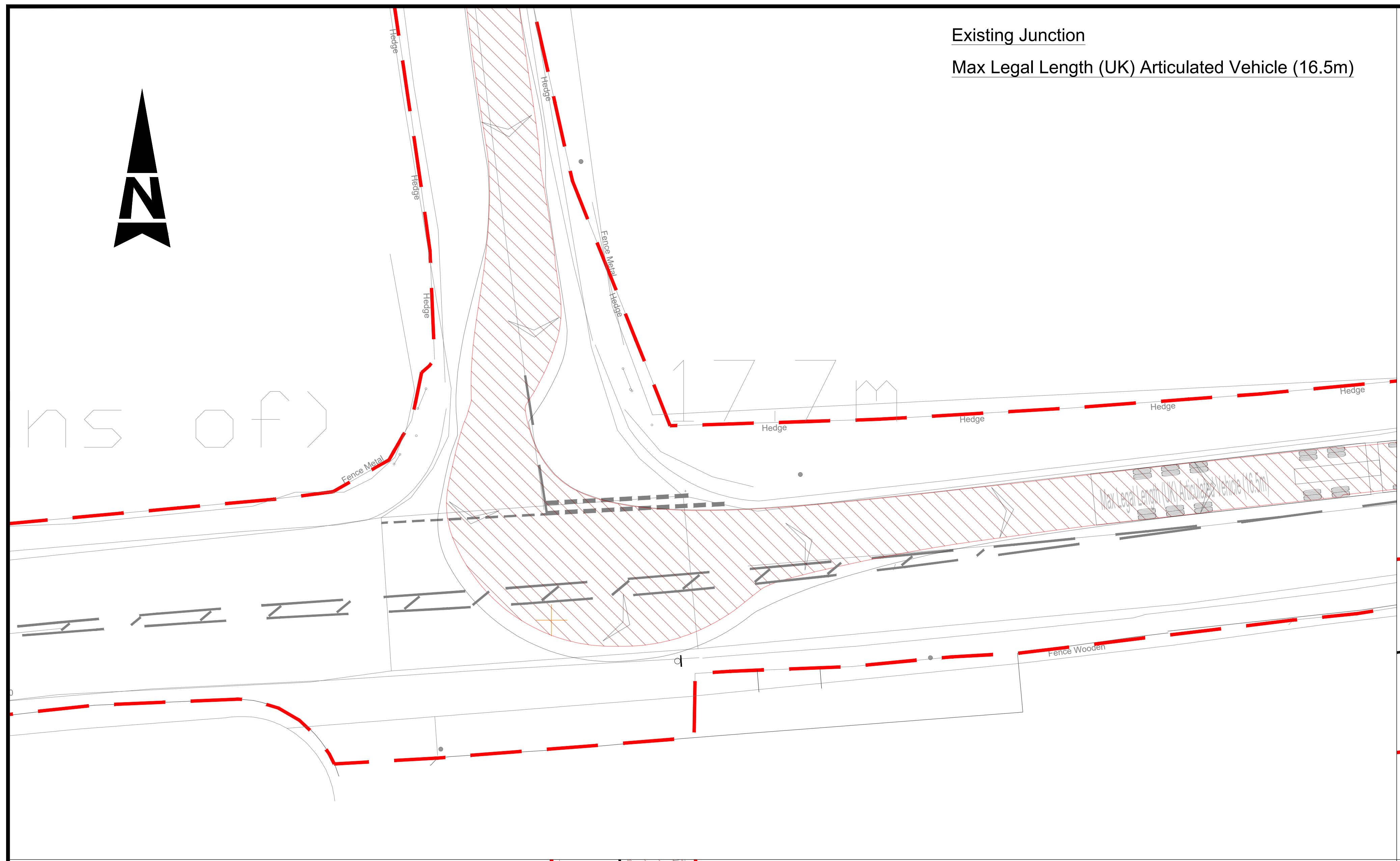
Appendix D. Stage 1 RSA

REMOVED DUE TO DUPLICATION

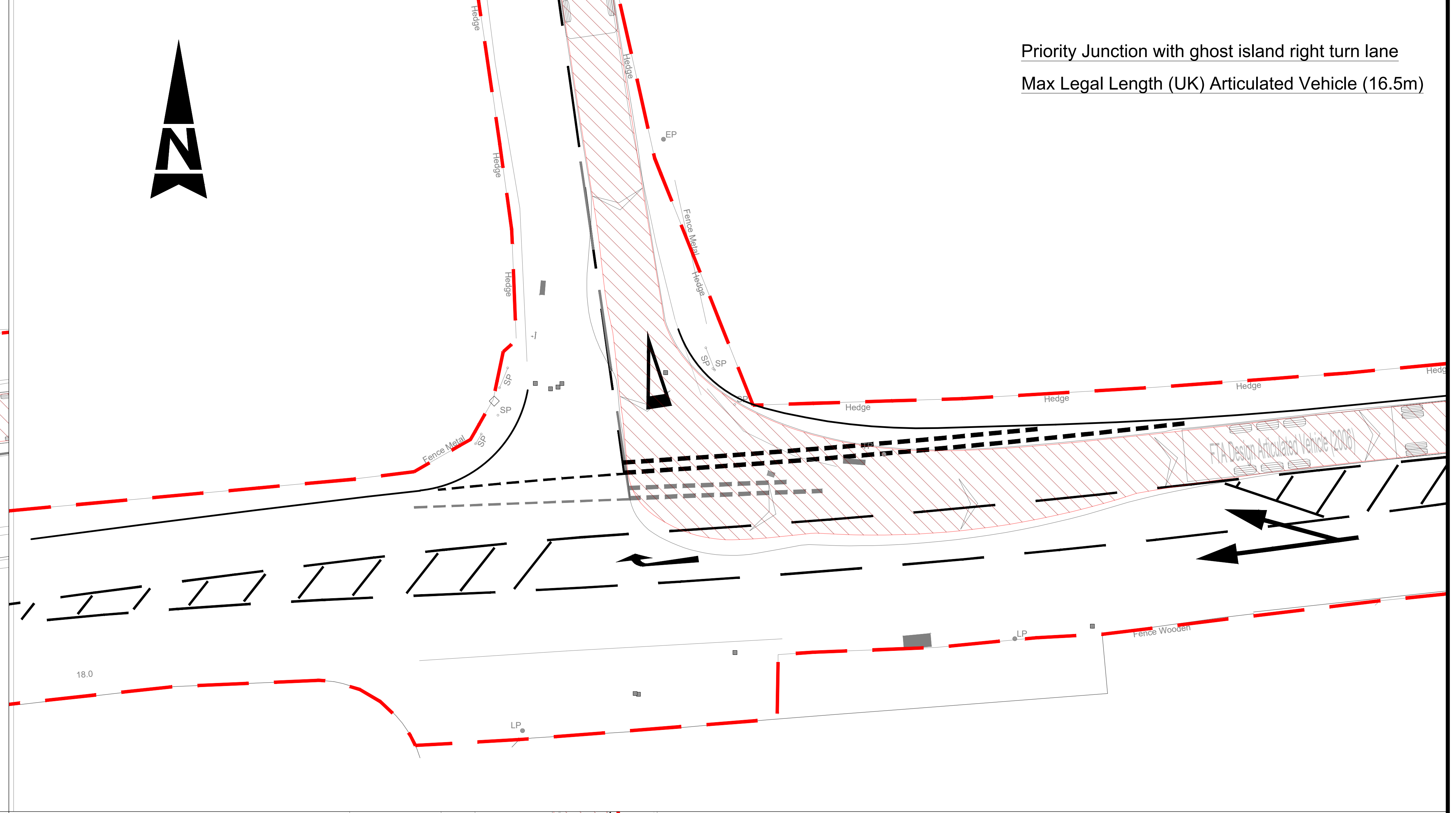
Appendix E. GARTH_ATK_HGN_A581_DR_D_0008-P1

DO NOT SCALE

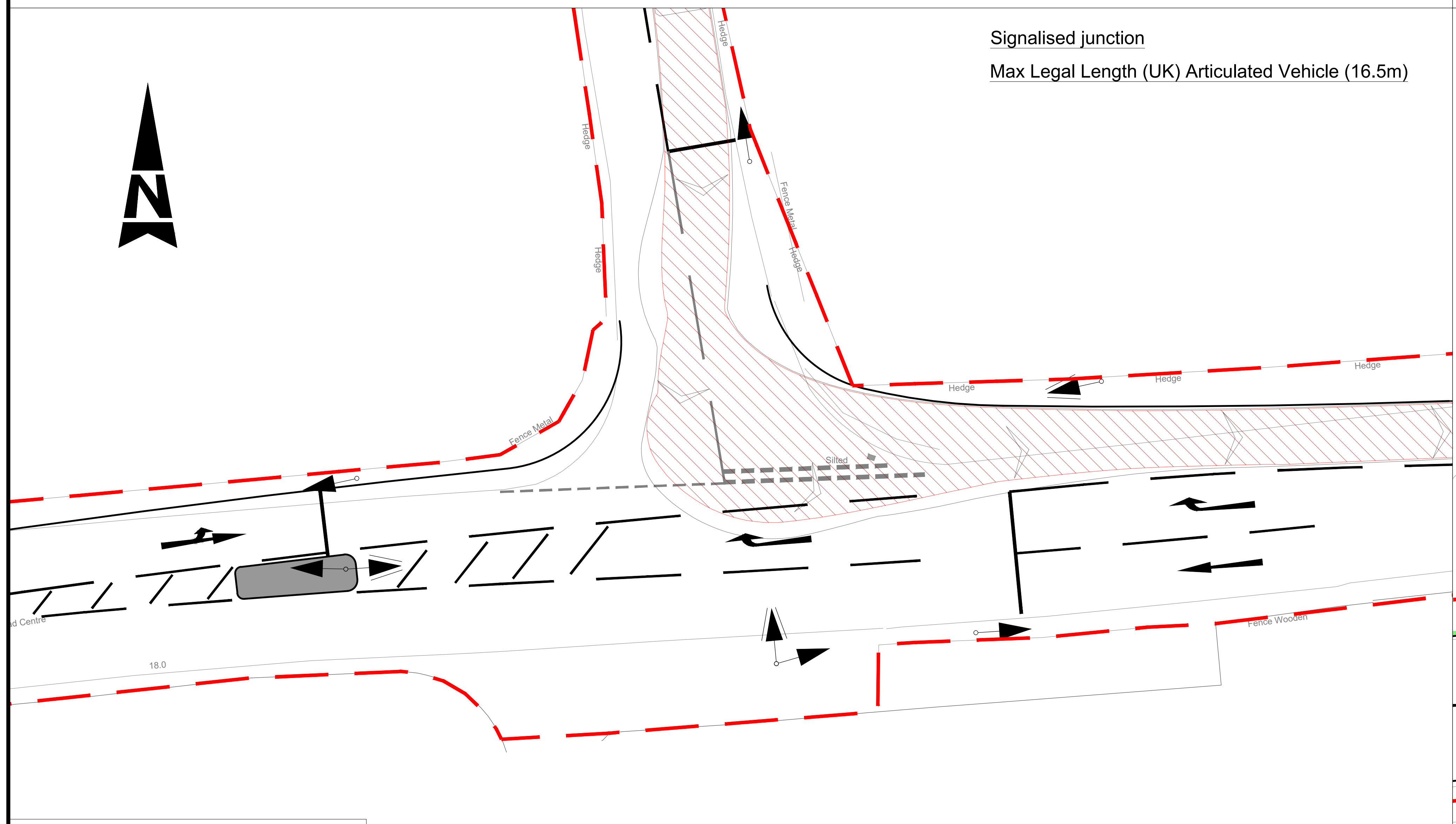
Millimetres



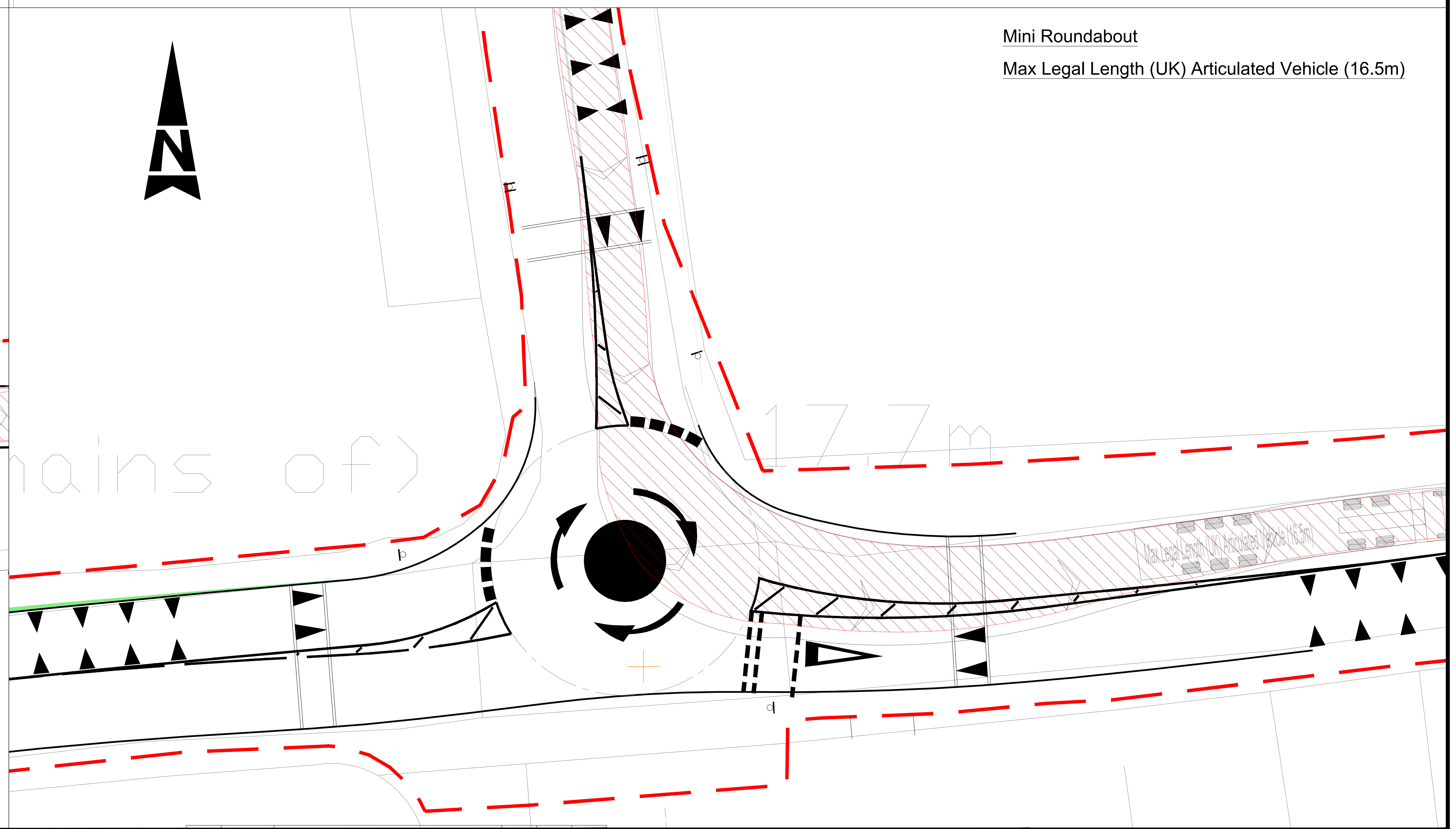
Existing Junction
Max Legal Length (UK) Articulated Vehicle (16.5m)



Priority Junction with ghost island right turn lane
Max Legal Length (UK) Articulated Vehicle (16.5m)

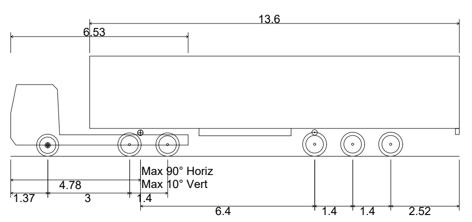


Signalised junction
Max Legal Length (UK) Articulated Vehicle (16.5m)



Mini Roundabout
Max Legal Length (UK) Articulated Vehicle (16.5m)

Key:



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION
NONE

MAINTENANCE/CLEANING
NONE

DECOMMISSIONING/DEMOLITION
NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Rev.	Date	Description	By	Chk'd	App'd

Drawing Status: WORK IN PROGRESS
Suitability: S0

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Client: MINISTRY OF JUSTICE

Project Title: HMP GARTH

Drawing Title: PROPOSED MITIGATION WORKS
ULNES WALTON LANE / A581 JUNCTION
SWEPT PATH ANALYSIS

Scale	Designed	Drawn	Checked	Authorised
1:250				
Original Size	Date	Date	Date	Date
A2				

Drawing Number
HA PIN: GARTH - ATK - SPA - A581 - DR - D - 0008
(Location / Originator / Volume / Type / Role / Number)

Project Ref. No.: 5200124
Revision: P1

P:\GBCFA\TP\KU\Projects\Public Realm & Design\Birmingham support\HMP Garth\CAD\DR\GARTH_ATK_HGN_A581_DR_D_0008.dwg

Appendix F - RSA Designers Response - VIA East Midlands Ltd

HMP Garth Wymott 2

RSA Designers Response - VIA

Mace (On behalf of the Ministry of Justice)

February 2023

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This document has 18 pages including the cover.

Document history

Document title: RSA Designers Response - VIA

Document reference: 1.0

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	Designer’s Response	DC	TR	DC	SY	28/02/2023

Client signoff

Client	Mace (On behalf of the Ministry of Justice)
Project	HMP Garth Wymott 2
Job number	5200124
Client signature/date	

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1. Introduction

1.1. Background

Atkins has been commissioned by Mace (on behalf of the MoJ) in response to the 'minded to grant' decision made by Lee Rowley MP, the Parliamentary Under Secretary of State for Local Government and Building Safety, on behalf of the Secretary of State. The 'minded to grant' decision was outlined within a letter addressed to Cushman & Wakefield on the 19 January 2023 (APP/D2320/W/22/3295556).

As outlined in Paragraph 4 of the decision letter, the Secretary of State has given the appellant (the Ministry of Justice) and other parties the opportunity to provide further evidence on highways issues, and allow parties to respond to any such evidence, before reaching a final decision on the appeal. Subject to being satisfied that these matters can be satisfactorily addressed, the Secretary of State is minded to allow the appeal and grant planning permission, subject to conditions.

1.2. Stage 1 Road Safety Audit

As part of the additional evidence requested by the Secretary of State, Atkins has produced the preliminary highways designs outlined in Table 1-1.

Table 1-1 - Preliminary Highway Designs

Location	DWG Title	Appendix Location
Moss Lane/Ulnes Walton Lane	GARTH_ATK_HGN_MOSS_DR_D_0003_P1	Appendix A
Moss Lane	GARTH_ATK_HGN_MOSS_DR_D_0002_P3	Appendix B
A581/Ulnes Walton Lane	GARTH_ATK_HGN_A581_DR_D_0005_P3	Appendix C

A Stage 1 Road Safety Audit (RSA) was undertaken by Via East Midlands Limited (VIA) on 20 February 2023 in relation to the preliminary highway designs outlined in Table 1-1.

The A581 / Ulnes Walton Lane scheme audit was covered by Document Reference SA2616A. A copy is provided in Appendix D.

The Moss Lane / Ulnes Walton Lane scheme audit was covered by Document Reference SA2617A. A copy is provided in Appendix E.

This RSA Response report provides the responses from the design organisation (Atkins) to the items raised in the Stage 1 RSA.

2. RSA Designers Response

2.1. RSA Summary (SA2616A)

Table 2-1 provides a summary of the problems raised in the Stage 1 RSA produced by VIA on the A581 / Ulnes Walton Lane Scheme.

Table 2-1 - Stage 1 RSA Problem Summary - SA2616A

ID	Location	RSA Problem	RSA Recommendation
4.1	Ulnes Walton Lane entry onto mini-roundabout	Drivers attempting to enter the mini-roundabout from Ulnes Walton Lane with insufficient visibility are likely to be involved in collisions with previously unseen main road traffic. This may result in injury to vehicle occupants or riders.	It is recommended that the visibility is improved by acquisition of a portion of the adjacent land, to allow the highway boundary to be set back, preferably on both sides of the junction. Should this not be possible, a redesigned layout may be required, or failing that, an alternative method of junction control may need to be explored.
4.2	A581/Ulnes Walton Lane	Drivers attempting to entering [sic] the mini-roundabout with insufficient visibility to the right are likely to be involved in collisions with previously unseen vehicles emerging from Ulnes Walton Lane. These collisions may result in injury to vehicle occupants or riders.	It is recommended that the visibility is improved by acquisition of a portion of the adjacent land, to allow the highway boundary to be set back. Should this not be possible, a redesigned layout may be required, or failing that, an alternative method of junction control may need to be explored.
4.3	A581 approaches to mini-roundabout	A range of potential issues, dependent on the detailed design of traffic calming.	It is recommended that extreme care is taken in the detailed design of the cushion features.

2.2. RSA Designers Response to SA2616A

2.2.1. RSA Problems 4.1 and 4.2

The RSA recommendation is not agreed. The following sections provide a response to this recommendation.

2.2.1.1. Design Speeds

The RSA notes that: *the proposed design … will result in a reduction in traffic speeds.* However, it goes on to suggest that: *it will be difficult to reduce 85%ile traffic speeds on the A581 to much below 25mph. Even at this comparatively low speed the available visibility may still be too restricted.*

It is noted that Lancashire County Council (LCC) have installed average speed cameras along the A581 corridor, as part of their wider A581 Rufford to Euxton Safety Improvements scheme. This will help regulate speeds on the A581 in the vicinity of the junction, notwithstanding the speed reduction measures proposed as part of this mini-roundabout scheme.

The Transport Research Laboratory (TRL) has produced a report on Traffic calming in villages on major roads (TRL Report 385) which is included at Appendix F. The report notes that: *Within the villages, physical measures resulted in mean and 85th percentile speed reductions of 7-12mph.* Noting that the posted speed limit is 30mph on the A581 at this location, it is therefore considered that the proposed measures are likely to reduce 85% percentile speeds to below 25mph.

The reductions in speeds achieved by the speed cushions and raised table will in turn reduce the visibility requirements which are based on vehicle speeds.

2.2.1.2. Stopping Sight Distance

The RSA suggests that visibility to the right *appears insufficient,* but does not note that visibility requirements for a mini-roundabout set out in DMRB CD116 (Geometric design of roundabouts) comprise multiple elements, including stopping sight distance (SSD) which is the distance to see forward to be able to brake comfortably in average conditions. The proposed scheme design achieves SSD. This means that drivers will be able to see the junction at an appropriate distance on approach, and to be able to brake comfortably if required.

There will also be Mini-roundabout Regulatory signs on yellow backing boards, and these will be visible from 50m before the give way line in accordance with CD116.

2.2.1.3. Departure From Standard

It is recognised that the proposed design fails to achieve the standards for visibility to the right set out in CD116 for the approach arms mentioned in the RSA, so the Appellant would need to agree a departure from standards with LCC as part of a proposed Section 278 Agreement. The departure would be in relation to Paragraph 5.20 in CD 116 which states that a minimum visibility distance to the right shall be provided in accordance with Table 5.20.

It should be noted that the minimum visibility distance is a requirement of the overseeing organisation as depicted by the use of the verb 'shall'. Requirements with this verb can be varied through a departure.

2.2.1.4. Mitigation Purpose

The introduction of a mini roundabout at the A581/Ulnes Walton Lane junction was in response to the standalone junction capacity assessment contained within Section 7.3.6 of the Transport Assessment (TA) for HMP Garth Wymott 2 (Appeal Core Document A35). The existing A581/Ulnes Walton Lane junction is forecast to operate over acceptable thresholds of capacity in the AM Peak during the '2025 Opening Year without Development' scenario with a maximum RFC[1] of 0.90. The additional traffic generated by the development proposals increase the RFC in the AM Peak to 1.10 in the '2025 Opening Year with Development' scenario.

In all scenarios, the capacity issues are caused by vehicles waiting to turn right into Ulnes Walton Lane from the A581 (east) approach arm. The standalone junction capacity modelling indicates that the vehicle queues along the A581 (east) are forecast to increase from 9.5 PCUs to 46.4 PCUs based on the existing layout. Therefore, to mitigate the impact of the development proposals at this location, the traffic queues need to be redistributed. This introduction of a mini roundabout successfully reduces the RFC and the forecast vehicle queues.

2.2.1.5. Mini Roundabout Good Practice Guidance

The Mini Roundabout Good Practice Guidance produced by the Department for Transport (DfT) (Appendix G) states that a mini roundabout can improve the operation of an existing junction by:

- Reducing the dominance of one traffic flow
    - As the mini-roundabout works on the principle of 'priority to circulating traffic from the right', a minor traffic flow can be given priority over a major traffic flow that would otherwise dominate the junction.
- Giving priority to right turners
    - The 'priority' principle of operation benefits right-turning traffic, giving it priority over ahead movements from the opposing direction.
- Improving capacity at overloaded junctions
    - For a given road space, the mini roundabout has a higher capacity than most alternatives and is very flexible in coping with variations in both volumes and proportions of traffic flow during the day.
- As an Accident Remedial Measure
    - Mini roundabouts are most commonly introduced as an accident remedial measure to reduce the number of accidents at a junction. For 3 arm sites, the mean accident rate for mini roundabouts is similar to that of priority junctions and about 30% less than for signalled junctions.
- To reduce the severity of accidents at a junction

[1] An RFC (Ratio of Flow to Capacity) of below 0.85 (for roundabout and priority junctions) indicates that a junction operates within acceptable capacity thresholds for the assessed flows. An RFC of over 1.0 indicates that a junction is operating over capacity.

- The severity of accidents (percentage of fatal, serious and slight accidents to all injury accidents) at 3 arm mini roundabout sites is lower than at 3 arm signalled junctions and considerably lower than at 30 mph priority junctions.

2.2.1.6. Visibility at the Existing Junction

The approach from Ulnes Walton Lane at the current junction layout is similarly constrained by the boundary of the adjacent fields. Drawing GARTH_ATK_HGN_A581_SK_D_0001_P1 (Appendix H) demonstrates that the current layout fails to achieve the visibility requirements set out in DRMB CD123. The required visibility from the minor arm approach for 30mph speeds is 90m, and the advised set back distance is recommended as 9m from the give way line, which cannot be achieved within the highway boundary. The achievable visibility at a 9m setback is 12.6m to the left and 11.5m to the right.

Section 3.6.2 of the TA for HMP Garth Wymott 2 (Appeal Core Document A35) identified that there no evidence to indicate that there are pre-existing safety concerns within the TA collision study area, which included this junction.

2.2.1.7. Visibility at the mini-roundabout at Leyland Lane on A581

It should also be noted that there is an existing mini roundabout at the A581/B5253 junction. This junction is located along the same corridor approximately 1km to the east. It appears that this junction has restricted visibility to the right on the A581 westbound approach, and the Leyland Lane approach. It is noted that it is located in a 40mph zone. There was only 1 ‘slight’ PIA recorded at this location between 2017 and 2021.

Atkins Summary Response:

- **The RSA Recommendation is not agreed**
- **It is considered that the proposed speed reduction measures are likely to reduce 85% percentile speeds to below 25mph, and that the reductions in speeds will in turn reduce the visibility requirements which are based on vehicle speeds.**
- **The proposed scheme design achieves SSD.**
- **A departure from standards would be agreed with LCC as part of a proposed Section 278 Agreement.**
- **The proposed form of junction has been selected to address the specific capacity concerns raised by the standalone junction capacity analysis.**
- **Good Practice Guidance from the DfT states that mini roundabouts can provide safety benefits over other forms of junction and they have a lower severity rate.**
- **The visibility requirements based on design standards at the existing junction layout cannot be achieved within the highway boundary, and there is no evidence to indicate that there are pre-existing safety concerns at this location.**
- **There is an existing mini roundabout on the A581 corridor which also appears to have restricted visibility to the right, but there is no evidence to indicate that there are existing safety concerns at this location.**

2.2.2. RSA Problem 4.3

The RSA recommendation is agreed. Extreme care will be taken in the detailed design of the cushion features, noting the potential issues raised in the RSA for Problem 4.3.

2.3. RSA Summary (SA2617A)

Table 2-2 provides a summary of the problems raised in the Stage 1 RSA produced by VIA on the Moss Lane / Ulnes Walton Lane Scheme.

Table 2-2 - Stage 1 RSA Problem Summary - SA2617A

ID	Location	RSA Problem	RSA Recommendation
4.1	Ulnes Walton Lane northbound approach to Moss Lane junction	Junction warning sign obscured, leading to accidents at Moss Lane junction	When finalising the on-site location of the sign, ensure that approaching drivers have an unrestricted view of it, which will not be compromised by future foliage growth. It may be appropriate to relocate the sign slightly further south.
4.2	Bend on Ulnes Walton Lane at Moss Lane junction	Chevron signs' orientation leads to accidents at bend.	Adjust the orientation of both proposed chevrons to face approaching drivers.
4.3	Bend on Ulnes Walton Lane at Moss Lane junction.	Potential for bend accidents due to insufficient surface skidding resistance	Ensure the surface has a suitably high skidding resistance and polished stone value. A 'high friction surfacing' / 'anti-skid' material may be an appropriate choice.

2.4. RSA Designers Response to SA2617A

2.4.1. RSA Problems 4.1

The RSA recommendation is agreed. The sign location will be reviewed in the detailed design of the scheme.

2.4.2. RSA Problems 4.2

The RSA recommendation is agreed. The chevron sign locations will be reviewed in the detailed design of the scheme.

2.4.3. RSA Problems 4.3

The RSA recommendation is agreed. High friction surfacing will be specified in the detailed design of the scheme.

Appendices

Appendix A. GARTH_ATK_HGN_MOSS_DR_D_0003

REMOVED DUE TO DUPLICATION

Appendix B. GARTH_ATK_HGN_MOSS_DR_D_0002_P3

REMOVED DUE TO DUPLICATION

Appendix C. GARTH_ATK_HGN_A581_DR_D_0005_P1

REMOVED DUE TO DUPLICATION

Appendix D. Stage 1 RSA (SA 2616A)

REMOVED DUE TO DUPLICATION

Appendix E. Stage 1 RSA (SA 2617A)

REMOVED DUE TO DUPLICATION

Appendix F. TRL REPORT 385

EXTRACT ONLY

TRANSPORT RESEARCH LABORATORY

Traffic calming in villages on major roads: Final report

Prepared for Charging and Local Transport Division, Department of the Environment, Transport and the Regions

A H Wheeler and M C Taylor

TRL REPORT 385

Executive Summary

In 1994 the Village Speed Control (VISP) Working Group reported on its initiative which examined ways of reducing the speed of traffic passing through villages. A range of techniques was considered but the success of many of the schemes in reducing speeds was limited, especially those schemes lacking physical measures or any measures in the village itself.

Changes to legislation and special authorisation procedures now enable local authorities to install a wider range of measures in villages on busy roads. This Report describes research to assess the effectiveness of more comprehensive schemes, especially those with physical measures, which have been applied to roads carrying high levels of traffic, particularly of heavy vehicles. These schemes aim to reduce 85th percentile speeds at least to the village speed limit, and thereby to improve safety and the quality of life for local residents.

All but one of the schemes assessed were developed by the Highways Agency and its agents, then the relevant Local Highway Authorities. The research to monitor scheme effectiveness was undertaken by TRL under contract to the Charging and Local Transport Division of the Department of the Environment, Transport and the Regions.

Schemes on the main roads through nine villages across England were assessed. All but one scheme was on a trunk road and several had two-way daily flows of more than around 10,000 vehicles; the weekday percentage of heavy vehicles ranged from 10-20%. The scheme at Costessey is on minor roads but was included since those roads carry lorries accessing local gravel pits. The villages varied widely in size and population. Four villages already had a 30mph speed limit in force but at two, the national (60mph) speed limit applied. After scheme installation, no speed limit exceeded 40mph. The schemes were installed between 1995 and 1997.

All of the schemes involved village gateways. These mainly comprised prominent signing and marking measures, together with an area of coloured surfacing. Measures involving physical narrowing were introduced at some gateways. The most common features employed within the villages themselves were repeated patches of coloured surfacing and coloured areas along the centre of the road with centre lining/hatching superimposed. Extensive physical measures were introduced in Costessey (speed cushions, one-way working narrowings, flat-top hump); Craven Arms (speed cushions, mini-roundabouts); and Thorney (chicanes, mini-roundabout).

Before and After monitoring was undertaken to establish the effect of the schemes on traffic speeds and flow. At the three schemes with extensive physical measures, surveys of vehicle and traffic noise and of public opinions were also undertaken. Additionally, noise was measured at Hayton, and vehicle journey times and ground-borne vibration were recorded at Craven Arms and Thorney. The results were as follows:

i As was expected, neither traffic flows nor the proportion of heavy vehicles was affected by the introduction of the schemes. In Costessey, however, the use of speed cushions and carriageway narrowings appeared to stem an expected increase in flow levels.

ii Vehicle speeds have been reduced almost everywhere. 85th percentile speeds decreased by between 3mph and 15mph, both inbound at gateways, and in the villages themselves. However, they remained above the new/retained speed limit, albeit generally by only a few mph within the village. Mean speed reductions were generally up to about 2mph less then reductions in 85th percentile speeds.

iii The use of a range of different measures in combination makes it difficult to compare their effect, especially as some schemes were accompanied by a reduction in the speed limit. Large speed reductions at the gateways occurred with physical measures but reductions of the order of 10mph also occurred where there was signing and marking at the gateway with a strong visual impact. Additional approach signing was beneficial, as was speed camera signing.

iv Within the villages, physical measures resulted in mean and 85th percentile speed reductions of 7-12mph. Without such measures, reductions were more modest and large proportions of vehicles still exceeded the speed limit at some locations. The addition of speed cameras had a small effect. At Costessey, the speed cushions reduced speeds and maintained them at a constant level, through optimum spacing.

v Outbound speeds at gateways were also reduced (but to a lesser extent than inbound speeds) and speeds were often reduced most at night and at weekends. This reflects the fact that the speeds of the faster vehicles tended to be affected the most. Only a small erosion in speed reductions was observed after one year, suggesting that the measures studied are likely to have long term impact. Where monitored, journey times increased with the introduction of the measures. This has resulted, at Craven Arms, in concern by the fire and ambulance services over increased response times.

vi The speed reductions resulted directly in decreased noise levels where noise was measured. Maximum vehicle noise levels, for light and for heavy vehicles, reduced by up to about 10dB(A), and traffic noise levels reduced typically by up to about 5dB(A). However, many village residents believed that noise levels had in fact increased. This was thought to be due to: an increase in the number of short-duration, high noise events, resulting for example from heavy vehicles ‘clipping’ speed cushions; changes in driver behaviour or the use of different surface materials causing a change in the characteristics of noise

emitted; and variability of low frequency noise from heavy vehicles. These properties may be perceived as annoying, especially at night.

vii Heavy vehicles at Craven Arms produced 'worst case' vibration levels in a house near the speed cushions no greater than those generated by normal household activities, and below the threshold for human perception. However, the soil conditions in Thorney resulted in peak levels of ground-borne vibration in a house adjacent to the imprinted surface at the gateway which marginally exceeded the threshold for human perception. The level was nowhere near that which would result in structural damage.

viii Reactions from residents in the villages with schemes comprising extensive physical measures were less encouraging than the measured speed reductions would have suggested. Even quite large speed reductions seemed not to be widely recognised. In Costessey, villagers were disappointed that speeds had not been brought down below the new 20mph speed limit; in Thorney, plans for a long-awaited bypass had recently been scrapped and this probably influenced views.

ix Despite residents' limited enthusiasm for the schemes, some of the component measures were regarded favourably, but the preferred measures varied from scheme to scheme. In all three villages with extensive physical measures, about 40% of residents expressed concern about the appearance of the scheme.

x The results indicate a small overall reduction (not statistically significant) in injury accident frequency in the periods immediately following scheme installation (between 1 and 3 years). The reduction for the three schemes with extensive physical measures is greater (about 25%). However, there is a much stronger indication of a reduction in accident severity, with only one serious accident occurring since scheme installation, across all 9 schemes.

Conclusions and recommendations

i The size of the speed reductions following the installation of a traffic calming scheme at a village on a main road is likely to be affected by the pre-existing speed limit, the magnitude of the Before speeds, the new speed limit and the traffic calming measures used.

ii Signing and marking measures can bring about large speed reductions at entries to villages on trunk roads, when used in combination to give high visual impact. Repeated use through the village can also reduce speeds there but is unlikely to achieve 85th percentile speeds below the posted speed limit.

iii Speed cushions, mini-roundabouts and chicanes can be used in trunk road villages to bring about greater speed reductions than signing and marking measures alone. However, care is needed, particularly with the design and siting of vertical deflections, where there are high flows of heavy vehicles or emergency service vehicles, or where the soil type is especially prone to transmit vibration. It is important that measures are appropriately spaced, so as to induce constant speeds.

iv Narrow cushions, 1.5m wide, allow heavy vehicles and emergency vehicles to straddle them. They can be effective in bringing mean speeds down to below 30mph but the results presented here support other work which suggests that they are unsuitable for reducing speeds to 20mph.

v Residents are unlikely to be satisfied with schemes that do not achieve their expectations of reducing speeds below the new/retained speed limit and it is important not to raise their hopes unrealistically. They often do not perceive even quite large reductions in vehicle speeds and noise levels, with changes in the characteristics of the noise generated apparently nullifying reductions in overall noise levels in terms of the annoyance created.

vi It is possible that, if the improvement in accident severity that is apparent to date is sustained, this may help to influence residents' views for the better.

vii As far as the design of new traffic calming schemes in villages is concerned, the study has highlighted the importance of involving residents in the development of schemes and providing them with an understanding of what can be achieved. Inevitably there will usually be a trade-off between scheme effectiveness (in terms of vehicle speed and accident reduction) and potential unwanted effects (such as visual intrusion). The optimum solution will vary widely according to the situation.

Appendix G. DfT Mini Roundabout Good Practice Guidance

EXTRACT ONLY

mini roundabouts

good practice guidance

In-House designed 83708

mini roundabouts

good practice guidance

Department for Transport

County Surveyors' Society

2. DEFINITION AND USE OF MINI-ROUNDABOUTS

2. Definitions and Use of Mini-Roundabouts

A mini-roundabout is effectively a road marking. If the road marking is not in accordance with TSRGD diagram 1003.4 it is not a mini-roundabout.

2.1 Definition of a Mini-Roundabout

A mini-roundabout is a type or form of junction control at which vehicles circulate around a white, reflectorised[1], central circular road marking (central island) of between one and four metres in diameter, as shown in TSRGD diagram 1003.4.

Vehicles entering the junction must give way to vehicles approaching from the right, circulating the central island.[2]

The central road marking is either flush or slightly raised as a dome[3] (no more than 125mm), in order that it can be driven over by larger vehicles that are physically incapable of manoeuvring around it. The dome is also raised to discourage vehicles from driving over the central island[4]. Three white arrows are painted on the carriageway, within the gyratory area, around the central road marking, showing the direction of circulation.

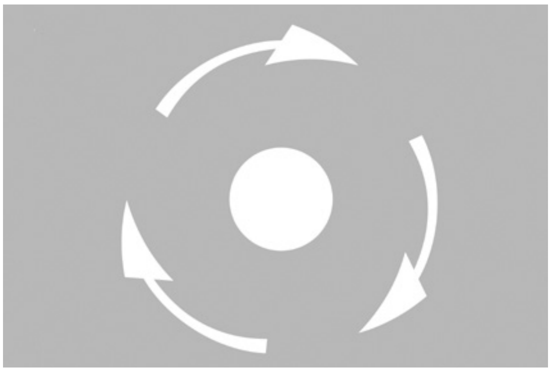


Figure 2.1.1: TSRGD diagram 1003.4

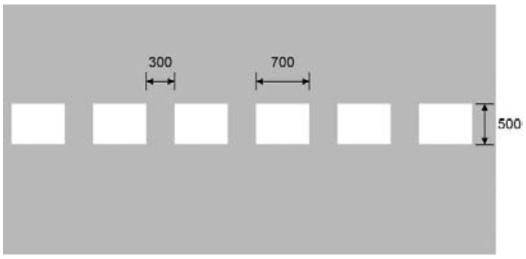


Figure 2.1.2: TSRGD diagram 1003.3

A blue mini-roundabout sign (illuminated if sited within 50 metres of a street lamp within a system of street lighting), as shown in diagram 611.1, precedes the mini-roundabout on each approach. This sign is usually accompanied by the transverse give way marking shown in diagram 1003.3. However, the mandatory give way markings (diagram 1003 and 1023), and give way sign (diagram 602), may be used in addition to diagram 611.1 where appropriate.[5] Where diagrams 1003 and 1023 are used, diagram 602 should be placed above diagram 611.1 as illustrated below:

Photo 2.1.1: TSRGD diagram 611.1

Photo 2.1.2: TSRGD diagram 602 and TSRGD diagram 611.1

Warning of the approach to a mini-roundabout can also be provided using the roundabout ahead sign (diagram 510).

When negotiating a mini-roundabout drivers must pass round the central road marking on the left hand side unless the size of the vehicle or layout makes it impracticable to do so.

Research suggests there are considerable variations in construction of the roundabout central island. The central island of a mini-roundabout **does not conform** to diagram 1003.4 if:

- it has a diameter less than one metre or greater than four metres;
- it cannot be driven over;
- it has a surface colouring other than white;
- it is not reflectorised;
- it is constructed of granite setts, block paving or other textured material (unless coloured white);
- it contains street furniture[6];

---

[1] TSRGD 2002, Regulation 31(1)
[2] TSRGD 2002, Regulation 25(5)
[3] TSRGD 2002, Regulation 32(2)(c) – see also Section 3.13
[4] See TSRGD Regulation 16(1) Table item "…a vehicle proceeding through the junction must keep to the left of the white circle at the centre of the marking shown in diagram 1003.4, unless the size of the vehicle or the layout of the junction makes it impracticable to do so."
[5] See paragraph 8.17 of Chapter 5 of the Traffic Signs Manual, which explains where GIVE WAY signing should be used.
[6] Traffic Signs Manual Chapter 5 Road Markings, para 8.10

Mini-roundabouts are generally used for one of four main reasons:

- *to improve the operation of an existing junction;*
- *as an accident remedial measure;*
- *as part of a traffic calming scheme; and*
- *to provide an access to a new development*

- it has a raised kerb (more than 6mm);
- it has non-prescribed road markings such as concentric rings;
- it incorporates road studs.

Photo 2.1.3: Non-conforming concentric rings

Photo 2.1.4: Street furniture on central island creating a small roundabout, not a mini-roundabout

Photo 2.1.5: Street furniture on a domed central island in tarmac creating a small roundabout, not a mini-roundabout

Photo 2.1.6: Non-conforming central marking in setts with white edge marking

2.2 Use of Mini-Roundabouts

Mini-roundabouts were initially developed as a method of improving safety at existing junctions, but are now increasingly included as part of new development proposals. Mini-roundabouts may be introduced at junctions that experience problems with safety or side road delay. They can be used at junctions to break up long, straight sections of road or to achieve a sharp deviation of the main route without the need for low standard radii.

Mini-roundabouts are often considered as an alternative to another junction type due to constrained highway space or because they are perceived to be less costly. Early examples were used as an alternative to traffic signals at very constrained sites where an alternative method of control was needed.

The four main reasons why practitioners consider mini-roundabouts as a potential option are:

- to improve the operation of an existing junction;
- as an accident remedial measure;
- as part of a traffic calming scheme; or
- to provide an access to a new development.

2.3 Improving the Operation of an Existing Junction

Mini-roundabouts are used to replace priority junctions, traffic signal junctions and conventional roundabouts to improve junction operation.

They are usually installed at T-junctions and crossroad junctions (3 or 4-armed junctions). Mini-roundabouts should not be used at junctions with five or more arms.

Photo 2.3.1: Before view of priority junction

Refer to MOLASSES and local accidents records when considering a mini-roundabout

Photo 2.3.2: After view of junction with mini-roundabout

A mini-roundabout can improve the operation of a junction by:

- **Reducing the dominance of one traffic flow**

As the mini-roundabout works on the principle of 'priority to circulating traffic from the right', a minor traffic flow can be given priority over a major traffic flow that would otherwise dominate the junction.

- **Giving priority to right turners**

Again the 'priority' principle of operation has been exploited for right-turning traffic, giving it priority over ahead movements from the opposing direction.

- **Facilitating access and reducing delay at side roads**

The 'priority to the right' rule effectively halves the traffic to which side road flow has to yield priority, making it easier for side road traffic to turn.

- **Improving capacity at overloaded junctions**

For a given road space, the mini-roundabout has a higher capacity than most alternatives and is very flexible in coping with variations in both volumes and proportions of traffic flow during the day.

Careful consideration should be given to introducing mini-roundabouts as part of a new development

2.4 As an Accident Remedial Measure

Mini-roundabouts are most commonly introduced as an accident remedial measure:

- to reduce the number of accidents at a junction. For 3-arm sites, the mean accident rate for mini-roundabouts is similar to that of priority T-junctions and about 30% less than for signalled junctions.
- to reduce the severity of accidents at a junction. The severity of accidents (percentage of fatal and serious accidents to all injury accidents) at 3-arm mini-roundabout sites is lower than at 3-arm signalled junctions and considerably lower than at 30 mph T-junctions.

The scope for accident reduction will clearly be dependent on specific junction characteristics, such as traffic flow and geometry, as well as accident types. When considering a mini-roundabout as an option, designers should refer to current guidance on accident numbers such as the MOLASSES database, and locally held records on accident levels.

2.5 As a Traffic Calming Measure

Mini-roundabouts are also used for traffic calming:

- **As part of a traffic calming scheme.** Mini-roundabouts are often considered as part of area-wide traffic calming schemes in which they are sometimes installed at the extremities of the scheme or at all or various junctions within it.
- **Reducing traffic speeds and increasing driver awareness.** The use of a mini-roundabout in isolation as a speed reducing measure is more contentious and has met with mixed success. They have also been used to indicate to drivers that they are entering a more residential area. A well designed mini-roundabout can reduce speeds and a poorly designed one may not.

Photo 2.5.1: Mini-roundabout in traffic calmed area

2.6 As an Access to a New Development

Many Local Authorities accept the introduction of mini-roundabouts as part of new development proposals.

Photo 2.6.1: Mini-roundabout as access to new development

Designers may use numerical criteria to determine whether a mini-roundabout is suitable for access to a new development, with some suggesting side road traffic flows should be not less than 500 vehicles per day (AADT). Some Local Authorities use different criteria. For example, Lancashire, Cheshire and Bedfordshire County Councils prefer to use a ratio, suggesting side road flow should be a minimum of 10-15% of the major road flow.

A lower flow limit is prescribed because difficulties can result from their use at lightly trafficked side roads, where emerging vehicles or turning movements are unexpected; if side road flows are too low then the main road will effectively operate under free flow conditions.

Consideration should also be given to the usual site constraints and design criteria.

On trunk roads it is unlikely that a mini-roundabout would be an acceptable design solution for a new junction.

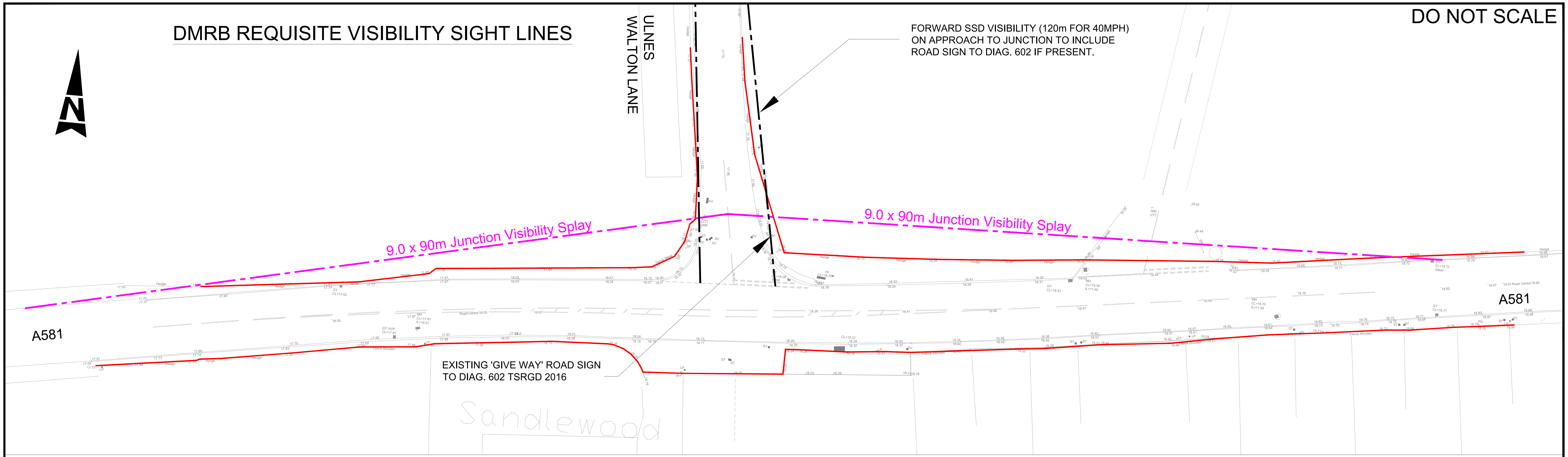
Photo 2.6.2: Mini-roundabout on new estate road

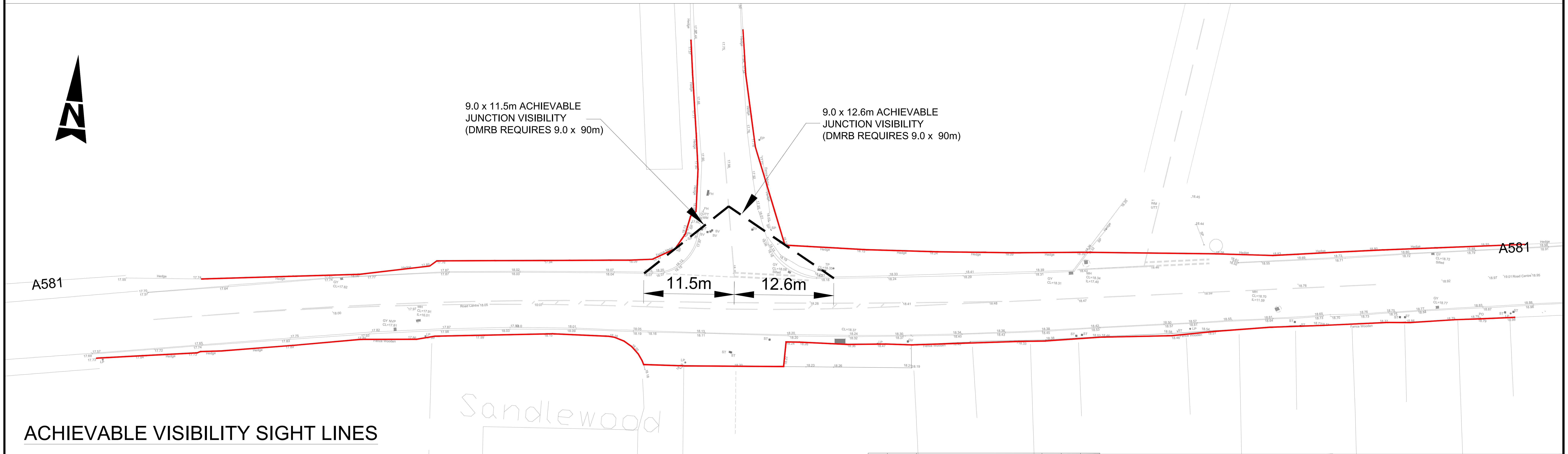
Note: This and other photos illustrate a common error in the placing of TSRGD diagram 611.1; this one is upside down.

Appendix H. GARTH_ATK_HGN_A581_SK_D_0001_P1

DO NOT SCALE

DMRB REQUISITE VISIBILITY SIGHT LINES





ACHIEVABLE VISIBILITY SIGHT LINES

Key:

- 9.0 x 90m JUNCTION VISIBILITY SPLAY (30mph)
- SSD FORWARD VISIBILITY ON APPROACH (CD123 - 3.3.1 & Fig. 3.1)
- ACHIEVABLE VISIBILITIES (AS ANNOTATED)
- Highway Boundary

Notes:

1. Layout is based on part Topographical Survey and part Ordnance Survey base.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

NONE

MAINTENANCE/CLEANING

NONE

DECOMMISSIONING/DEMOLITION

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Rev.	Date	Description	By	Chk'd	App'd
P1	25.01.23	DRAWING CREATED	AE	PDE	

Drawing Status: FIT FOR INFORMATION

Suitability: S2

ATKINS

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Client: MINISTRY OF JUSTICE

Project Title: HMP GARTH

Drawing Title: ULNES WALTON LANE / A581 EXISTIG VISIBILITIES

Scale	Designed	Drawn	Checked	Authorised
NTS	AE	AE	PDE	
Original Size	Date	Date	Date	Date
A2	23.02.23	23.02.23	23.02.23	

Drawing Number: HA PIN GARTH - Originator ATK - Volume HGN - Location A581 - Type SK - Role D - Number 0001

Project Ref. No. 5200124

Revision P1

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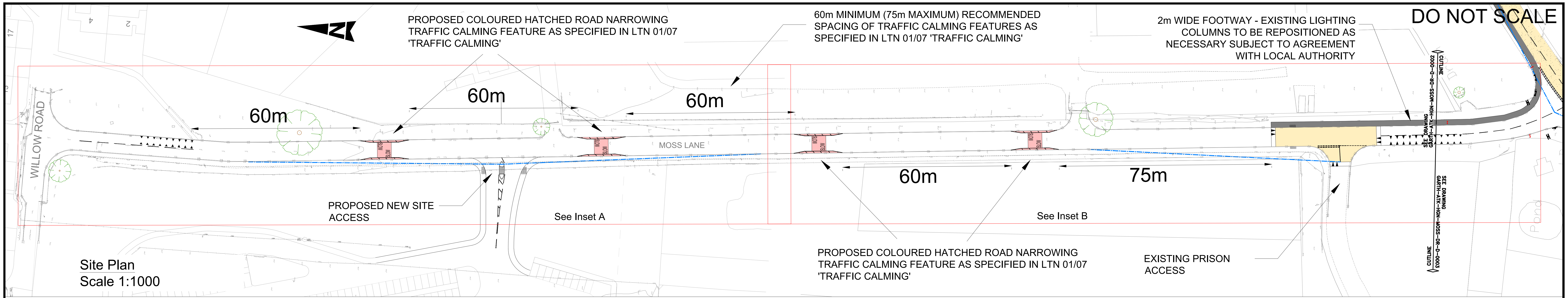
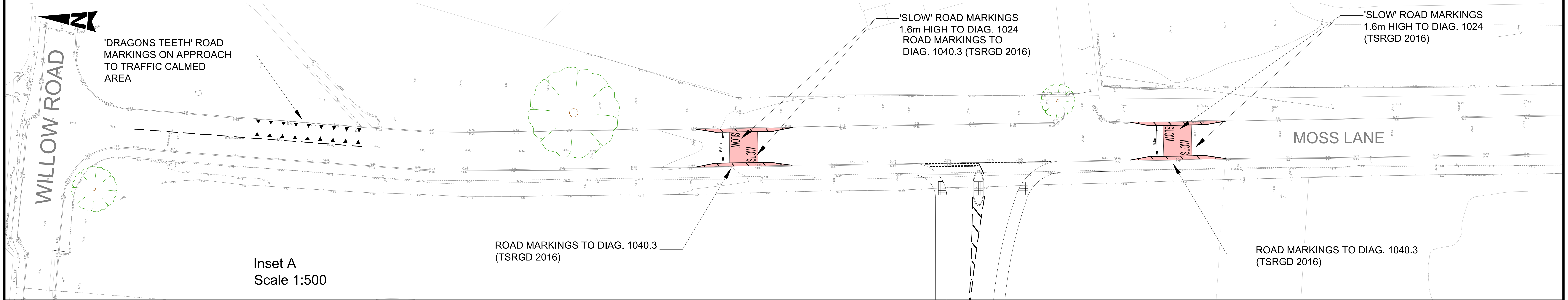
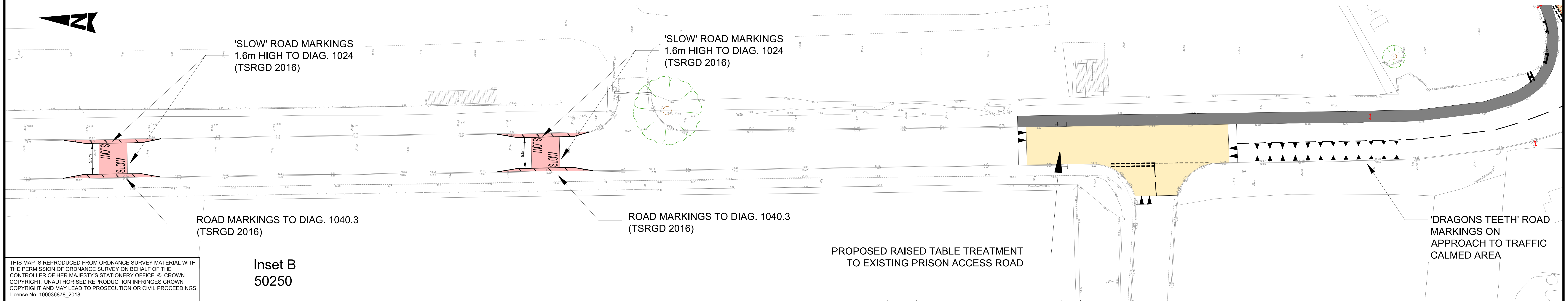
Appendix G - GARTH_ATK_HGN_MOSS_DR_D_0002_P3

DO NOT SCALE







Key:

- Red carriageway surfacing
- Proposed footway
- Raised table
- Proposed / Existing 90m visibility splay

Notes:

1. Layout is preliminary design 'for information' only and subject to approval from Highway Authority.
2. Layout is based on Ordnance Survey. Subject to detailed design on Topographical Survey base.
3. All proposed road markings and signage to be in accordance with the 'Traffic Signs Regulations and General Directions 2016'.
4. On completion of works all affected infrastructure including hedging, fencing, ditches, footways, kerbing, verges and road surfacing shall be reinstated in accordance with the Overseeing Organisation's requirements.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION
NONE

MAINTENANCE/CLEANING
NONE

DECOMMISSIONING/DEMOLITION
NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Rev.	Date	Description	By	Chk'd	App'd
P3	27.01.23	TRAFFIC CALMING FEATURES MODIFIED	JA	PDE	TG
P2	05.07.21	TRAFFIC CALMING FEATURES MODIFIED	AE	PDE	
P1	30.03.21	DRAWING CREATED	AE	PDE	

Drawing Status: FIT FOR INFORMATION
Suitability: S2

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Client: MINISTRY OF JUSTICE

Project Title: HMP GARTH

Drawing Title: PROPOSED NEW TRAFFIC CALMING

Scale	Designed	Drawn	Checked	Authorised
AS SHOWN	AE	AE	PDE	
Original Size: A2	Date: 30.03.21	Date: 30.03.21	Date: 30.03.21	Date

Drawing Number: HA PIN
GARTH MOSS - ATK - HGN - DR - D - 0002
Location / Originator / Volume / Type / Role / Number

Project Ref. No.: 5200124

Revision: P3

P:\GBCFA\TP\KU\Projects\Public Realm & Design\Birmingham support\HMP Garth\CAD\DR\GARTH_ATK_HGN_MOSS_DR_D_0002_P2_.dwg

Appendix H - Acoustic Statement

Northern Assurance Buildings
9-21 Princess Street
Albert Square
Manchester
M2 4DN
United Kingdom

T +44 (0)161 804 5550
E manchestercentral@hydrock.com

Document ref: 17036-HYD-PR-ACO-002-P01

27 February 2023

Moss Lane Traffic Calming Measures - Acoustics Review

I have carried out a review of the proposed traffic calming measures on Moss Lane associated with Garth Wymott 2 (Drawing Garth-ATK-HGN-MOSS-DR-D-0002-P3), with respect to the potential effect on road traffic noise.

The traffic calming measures briefly include three sets of 'SLOW' road marking across the length of Moss Lane, together with a raised table at the junction of Moss Lane and the existing Prison Access Road.

The implementation of the aforementioned traffic calming measures would result in no change to the conclusion of my noise proof of evidence (17036-HYD-PR-ACO-001-P03), prepared in June 2022 and submitted as part of the planning inquiry.

Yours faithfully

E. Goldsmith

Eddy Goldsmith
Associate (Principal Acoustic Engineer)

M: 07435 805 114
E: eddygoldsmith@Hydrock.com

Appendix I - LCC DfT Funding Application

Funding for Local Transport: Safer Roads Fund

Department for Transport

Application Form

The level of information provided should be proportionate to the size and complexity of the scheme proposed. As a guide, we would suggest around 10 to 15 pages including annexes would be appropriate.

A separate application form should be completed for each scheme.

<u>Applicant Information</u>

Local authority name(s)*:

Lancashire County Council

Bid Manager Name and position:

Daniel Herbert, Network Manager

Contact telephone number: 01772 538654

Email address: daniel.herbert@lancashire.gov.uk

Postal address: Highways Office, Cuerden Way, Bamber Bridge, Preston, PR5 6BJ

When authorities submit a bid for funding to the Department for Transport, as part of the Government's commitment to greater openness in the public sector under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004, they must also publish a version excluding any commercially sensitive information on their own website within two working days of submitting the final bid to the Department for Transport. The Department for Transport reserves the right to deem the business case as non-compliant if this is not adhered to.

Please specify the web link where this bid will be published:

http://www.lancashire.gov.uk/council/finance/budget/capital-programme-updates.aspx

SECTION A - Scheme description and funding profile

A1. Scheme name: A581 Rufford to Euxton Safety Improvements

A2. Headline description:

This scheme will provide safety engineering measures on the A581 between the junction with the A59 near Rufford, to its junction with the A49 at Euxton.

The scheme comprises the provision of:

- Average Speed Cameras provided over 11.4km
- Solar powered road studs, enhanced visibility centrelines and edge of carriageway rumble strips provided over 6.5km of unlit carriageway
- Mini roundabouts at four existing priority junctions
- School warning zone
- Centre hatching for west of Croston and improved delineation on 3 bends
- Extension of the Ulnes Walton 30mph zone

A3. Geographical area:

The area covered is the section of the A581 from the junction with the A59 near Rufford to the junction with the A49 at Euxton. The route is primarily rural with the exception of the villages of Croston and Ulnes Walton in the central section of the route.

Length of eligible road section: 11.4km

OS Grid Reference: 345829, 416983 to 355531, 418253

Postcode: L40 1SQ to PR7 6JA

Appendix: A, B and C

A4. Equality Analysis

Has any Equality Analysis been undertaken in line with the Equality Duty?

Yes – See Appendix D

SECTION B – The Business Case

B1. The Scheme – Summary/History

The route was identified by the Road Safety Foundation as one of England's 50 roads with the highest risk of fatal and serious collisions. The DfT Safer Roads Fund is intended to improve safety on these roads. The road safety risks and suggested remedial measures in the bid have been identified in partnership with the Road Safety Foundation using their VIDA software.

This scheme will:

● Improve carriageway delineation through the provision of enhanced visibility lane markings, centre hatching, solar powered road studs and edge of carriageway rumble strips.

● Install average speed cameras along 11.4km of the A581 to regulate speeds; and

● Provide four new mini roundabouts to improve safety and redistribute traffic queues at existing priority junctions.

● Modify the speed limits over short distances to ensure roundabout approach speeds are appropriate.

● Provide school warning beacon for the two schools on the route

● Remove tree stumps close to the edge of the carriageway

The safety engineering measures proposed are intended to reduce the risk of fatal and serious collisions occurring along the route by reducing exposure to hazards and creating a safer environment for all road users. This should increase the International Road Assessment Programme (iRAP) Star Rating of the route.

B2. The Strategic Case

Over the past five full years (2012 – 2016) there have been 43 personal injury collisions with 1 fatality and 12 serious collisions on this section of the A581.

The dominant collision causations in the rural sections of the route for the 3.5kms west of Croston to the end of the route at the junction with the A59 and for the 3km east of Shaw Green to the junction with the A47 is characterised by loss of control and excessive speed collisions.

For the central 5kms in the vicinity of Ulnes Walton the most common type of accidents are turnings collisions at four priority junctions where mini roundabouts are proposed.

The measures put forward by LCC aim to regulating driver behavior and improve delineation of the route through rural areas. The measures proposed can be contained within the current extents of the highway with very little impact on the surrounding environment. The safety options chosen will address the main safety issues along the rural length, excessive speeds and loss of control.

What road safety options have been considered and why do the proposed ones provide the best solution, particularly in terms of meeting the objective of reducing fatal and serious injury collisions?

All measures suggested and recommended by the Road Safety Foundation's ViDA software were considered, however, the rural location of the A581 meant that many of the identified measures were inappropriate given that they would have resulted in a loss of natural habitat for wildlife and altered the character of the road. In addition future maintenance costs of such measures were prohibitive.

What is the impact and the expected road safety benefits / outcomes of the scheme? If possible, provide information on the likely KSI reductions as a result of the scheme.

The mini roundabouts are expected to result in a collision reduction of 40%[3]. Research suggest that average speed cameras can reduce killed or seriously injured collisions by 36.4% and to a lesser extent all personal injury collisions by 16%[1]. Reduction of 30mph speed limits by 25%
The improvements to carriageway lining along unlit sections of the A581 is expected to realise a reduction in personal injury collisions by between 10-25%[2].
The extension to the Ulnes Walton 30mph zone is expected to reduce the number of collisions by 25%[3].

([1] – RAC Foundation, The effectiveness of Average Speed Camera, Owen, Ursachi and Allsop, 2016)
([2] – iRAP Road SafetyToolkit, 2017)
([3] - RoSPA and TMS Consultancy (2017) 'Road Safety Engineering Manual')

B3. The Financial Case – Project Costs

<u>Estimated costs for separate elements of this bid are as follows:</u>

Location	Description	Estimated Costs (£000s)
Throughout (11.4km)	Design and installation of Average Speed Camera system	716
Unlit lengths (6.5km)	Solar powered road studs	100
Unlit lengths (6.5km)	Edge of carriageway rumble strips	33
Unlit lengths (6.5km)	Enhanced visibility lane markings	12
Lydiate Lane junction	New mini roundabout	75
New Lane junction	New mini roundabout	75
Ulnes Walton Lane junction	New mini roundabout	75
Highfield Junction	New mini roundabout	75
Various (6 sites)	Extended 30mph limit with gate-ways	70
Dawbers Lane	Remove 4 tree stumps	2
Schools in Croston	School Wig-wags	2
Various	Centre hatching (3km)	24
Bends west of Croston	Marker posts	4

Total cost of these works is therefore £1,262,750.

Table A: Funding Profile (Nominal terms)

Please complete the following tables. ***Figures should be entered in £000s*** *(i.e. £10,000 = 10).*

Table A: Funding profile (Nominal terms)

£000s	***2017-18***	***2018-19***	***2019-20***	***2020-21***	***Total***
DfT Funding Sought	*N/A*	*816*	*447*	*0*	*1,263*
LA Contribution	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Other Third Party Funding	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*

Notes:
(1) Department for Transport funding will not be provided beyond 2020/21 financial year.

B4. The Financial Case – Local Contribution / Third Party Funding

a) The bid is below the threshold cost of £0.2m per km of eligible road section and therefore a local contribution is not required.

B5. The Financial Case – Affordability and Financial Risk

Lancashire County Council (LCC) has conducted a thorough investigation of the scheme costs which will be delivered over 3 financial years (2018-19, 2019-20 and 2020-2021). Within the costs estimate provided LCC has made our normal allowance for contingencies (5%), overheads (14%), design costs (24%) and project management (10%) which should address any short fall in funding for elements not identified during the initial assessment process.

LCC has significant project management experience for large scale projects such as this. The majority of the scheme will be delivered using LCC resources and existing framework agreements, any additional elements will be delivered through the tendering process.

In the event of cost overruns as the majority of the bid measures cover all or significant lengths of the route (average speed cameras, enhanced markings and road studs) the proposed treatments would be reduced in scope and prioritised to cover those sections of the route where maximum casualty reduction benefit would be achieved within the available budget.

The main risk to project timescales will be those elements of the scheme delivered through the tender process, such as average speed cameras. Low uptake by external providers may result in additional time required to retender. Overall scheme costs may also be affected during the tender process, estimated costs submitted within the bid are based on delivery costs for previous schemes of this nature. However, should the tender process result in significantly higher bid costs this may affect the ability of LCC to complete the scheme within the budget allocated.

B6. The Economic Case – Value for Money

At the time of submission Lancashire County Council had only just received the processed ViDA outputs from the Road Safety Foundation which will enable us to calculate the BCR for the A581. Lancashire County Council will submit the Economic case within the two week extension provided by the DfT for this element of the application.

B7. The Commercial Case

The procurement exercise will be undertaken in accordance with the county council's approved Social Value Policy & Framework which complies with the Public Services (Social Value) Act 2012. Ten per cent of the tender evaluation score will be based on Social Value Objectives as set out in the framework, focussing mainly on promoting training and employment opportunities for people in Lancashire and promoting environmental sustainability.
Lancashire County Council are experienced in this type of work therefore the main procurement route will be using existing frameworks and contractors. Although a framework will be used to purchase the average speed cameras, there will need to be a mini tendering exercise, it is anticipated that this will take approximately three months.

B8. Management Case – Delivery

Project plan attached (Appendix E).

In addition to the attached project plan Lancashire County Council (LCC) will undertake monitoring of the scheme until 5 full years of post-implementation collision data is available. LCC will undertake a Stage 4a (when 12 months collision data is available) and Stage 4b (when 36 months collision data is available) safety audit before compiling a final collision analysis report based on the 5 year collision data obtained.

Letter of support from CCllr Iddon, Cabinet Member for Highways and Transport (Appendix F)
Letter of support from Phil Barrett, Director of Community Services (Appendix G)
Email of support from Assistant Chief Constable Tim Jacques, Lancashire Constabulary (Appendix H)

B9. Management Case – Governance

The Senior Responsible Owner is Phil Barrett, Director of Community Services.

Delivery of the project will be overseen by a Project Board chaired by Daniel Herbert, Group Manager Highways, who is the Project Manager. The Project Board will be responsible for managing the development and delivery of the project.

An Organogram is attached (Appendix I).

B10. Management Case – Risk Management

Risk Management Log attached (Appendix J).

SECTION C – Monitoring, Evaluation and Benefits Realisation

C1. Benefits Realisation
The Benefits Realisation Plan is driven by the vision and the primary objectives of the scheme in order to ensure that the expected benefits of the scheme drive the monitoring and evaluation process. This should therefore provide best value for money in terms of monitoring and evaluation, and provide an appropriate overview as to whether or not the outcomes of the schemes have been met and help maintain the focus of the monitoring exercise. A Logic Map is attached (Appendix K).

C2. Monitoring and Evaluation
The Benefits Realisation Plan is driven by the vision and the primary objectives of the scheme in order to ensure that the expected benefits of the scheme drive the monitoring and evaluation process. This should therefore provide best value for money in terms of monitoring and evaluation, and provide an appropriate overview as to whether or not the outcomes of the schemes have been met and help maintain the focus of the monitoring exercise.

SECTION D: Declarations

D1. Senior Responsible Owner Declaration	
As Senior Responsible Owner for A581 Rufford to Euxton Safety Improvements I hereby submit this request for approval to DfT on behalf of Lancashire County Council and confirm that I have the necessary authority to do so. I confirm that Lancashire County Council will have all the necessary powers in place to ensure the planned timescales in the application can be realised.	
Name: **Phil Barrett**	Signed: Phil T Barrett
Position: **Director of Community Services**	

D2. Section 151 Officer Declaration

As Section 151 Officer for Lancashire County Council I declare that the scheme cost estimates quoted in this bid are accurate to the best of my knowledge and that Lancashire County Council

- has allocated sufficient budget to deliver this scheme on the basis of its proposed funding contribution
- will allocate sufficient staff and other necessary resources to deliver this scheme on time and on budget
- accepts responsibility for meeting any costs over and above the DfT contribution requested, including potential cost overruns and the underwriting of any funding contributions expected from third parties
- accepts responsibility for meeting any ongoing revenue requirements in relation to the scheme
- accepts that no further increase in DfT funding will be considered beyond the maximum contribution requested
- has the necessary governance / assurance arrangements in place
- has identified a procurement strategy that is legally compliant and is likely to achieve the best value for money outcome
- will ensure that a robust and effective stakeholder and communications plan is put in place.

Name: **Neil Kissock**	Signed:

Submission of bids:

An electronic copy only of the bid including any supporting material should be submitted to:

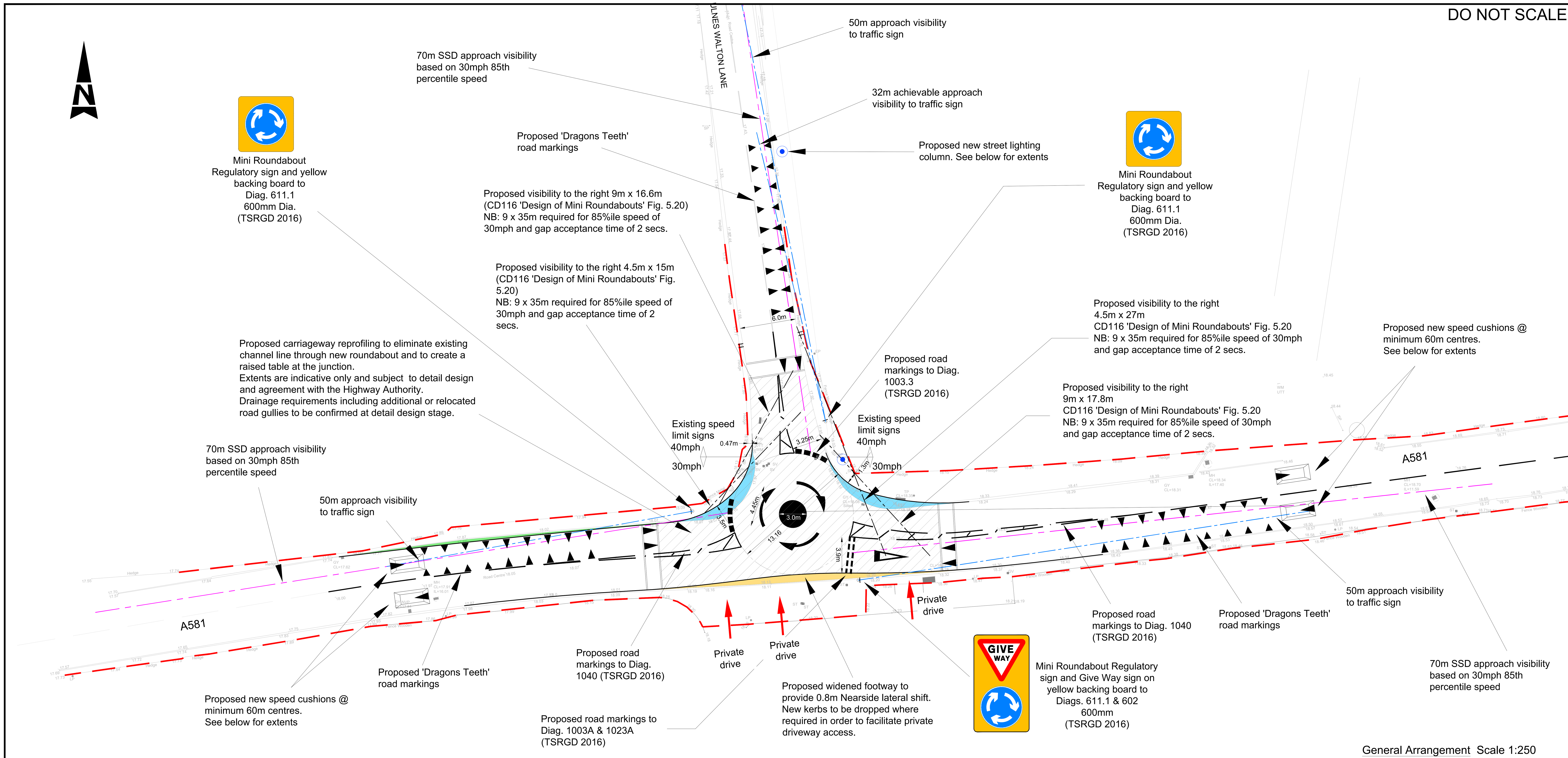
saferroadsfund@dft.gsi.gov.uk

APPENDICES

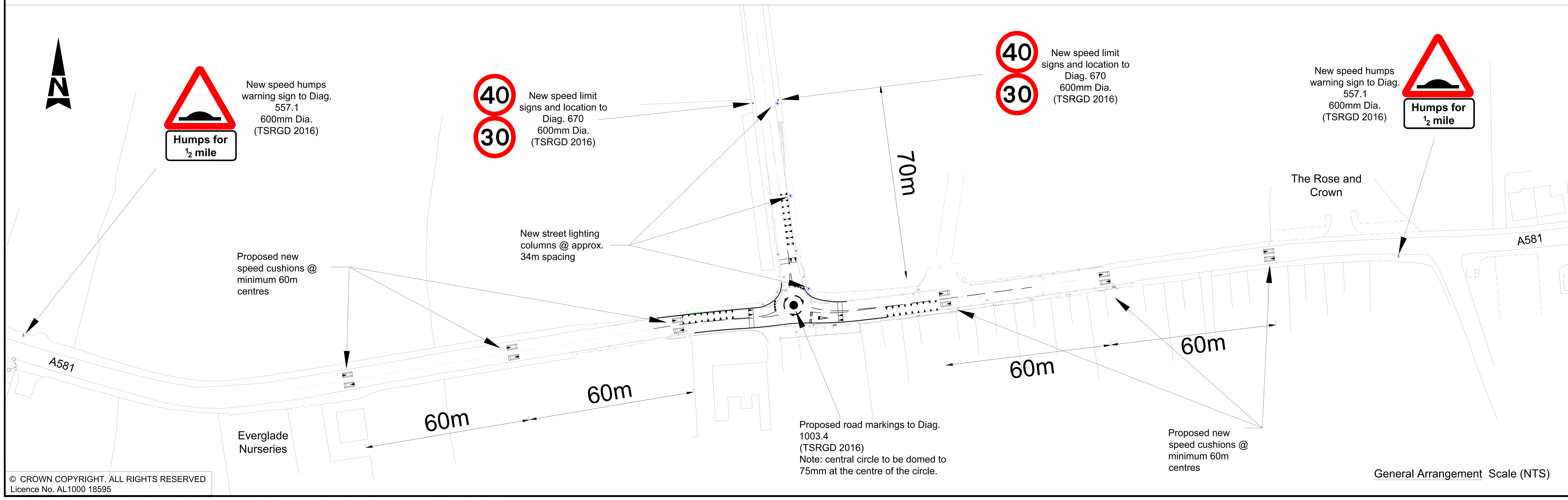
- Appendix A, B and C – Location Maps
- Appendix D – EIA
- Appendix E – Project Plan
- Appendix F – letter of Support from CCllr Iddon – Cabinet Member for Highways and Transport
- Appendix G – Letter of support from Phil Barrett, Director of Community Services
- Appendix H - Email of support from Assistant Chief Constable Tim Jacques, Lancashire Constabulary
- Appendix I – Organogram
- Appendix J – Risk Management Log
- Appendix K – Logic Map

Appendix J - GARTH_ATK_HGN_A581_DR_D_0005_P3

DO NOT SCALE



General Arrangement Scale 1:250



General Arrangement Scale (NTS)

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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION
Working adjacent to live traffic. Utility considerations

MAINTENANCE/CLEANING
NONE

DECOMMISSIONING/DEMOLITION
NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Notes:
1. Layout is preliminary design 'for information' only and subject to approval from Highway Authority.
2. Layout is based on Topographical Survey base.
3. All proposed road markings and temporary signage to be in accordance with the 'Traffic Signs Regulations and General Directions 2016'.
4. Design based on the provisions of CD 116 'The Geometric Design of Roundabouts' (DMRB)

Key:
- Proposed carriageway widening
- Proposed footway widening
- Proposed verge widening
- Proposed raised table junction
- Proposed speed cushion
- Proposed new street lighting column
- Highway Boundary
- Forward Visibility
- Visibility to road signs
- Visibility to right on approach

Rev.	Date	Description	By	Chk'd	App'd
P3	09.02.23	REDESIGN AND TRAFFIC CALMING ADDED	AE	PDE	
P2	31.01.23	RAISED TABLE AND DRAGONS TEETH ADDED	AE	PDE	
P1	09.02.23	DRAWING CREATED	AE	PDE	

Drawing Status: FOR INFORMATION
Suitability: S2

ATKINS
The AXIS
10, Holliday Street
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B1 1TF
Tel: +44 (0121) 483 5000
Fax: +44 (0121) 483 5252
www.atkinsglobal.com

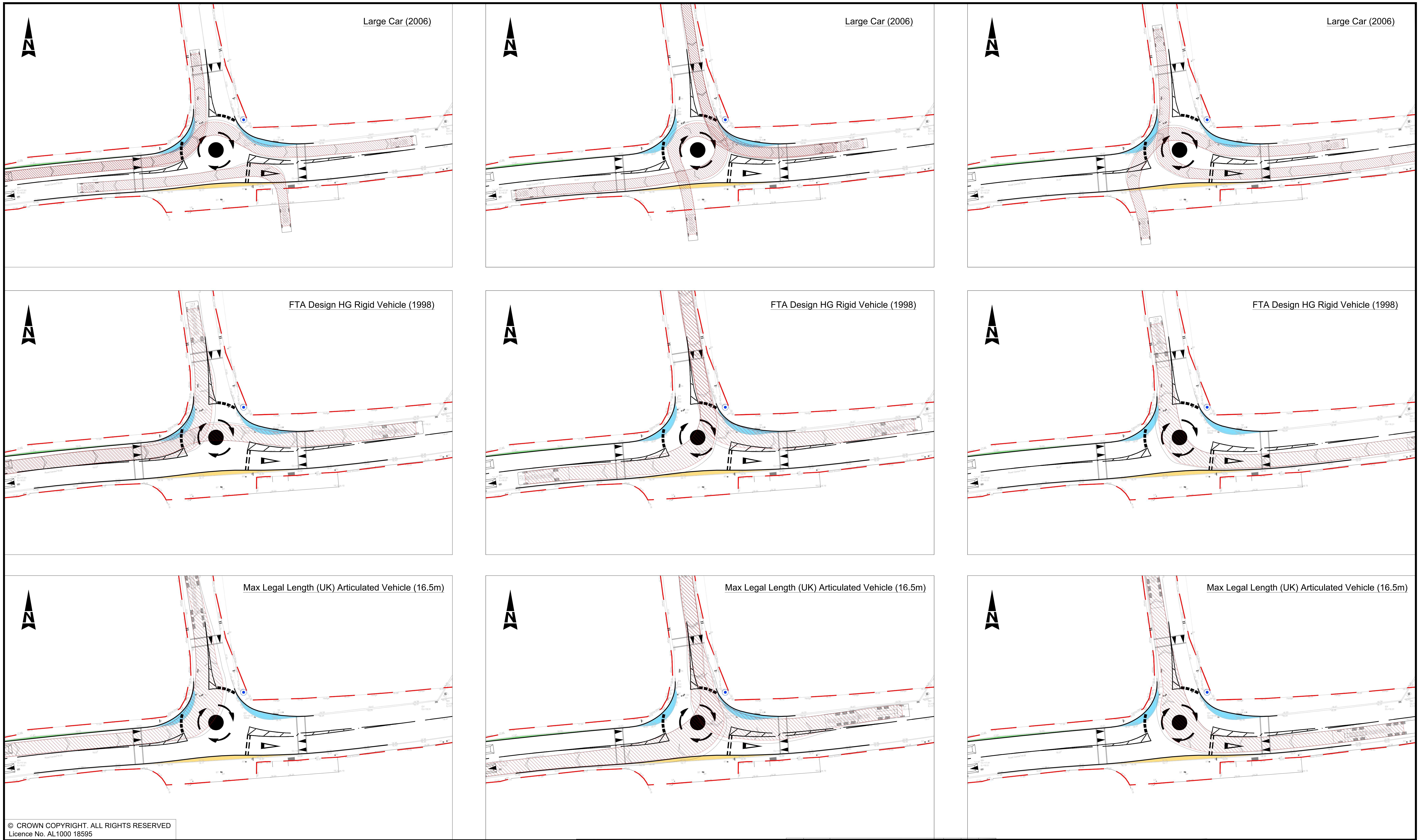
Client: MINISTRY OF JUSTICE

Project Title: HMP GARTH

Drawing Title: PROPOSED MITIGATION WORKS ULNES WALTON LANE / A581 PROPOSED MINI ROUNDABOUT

Scale	Designed	Drawn	Checked	Authorised
NTS	AE	AE	PDE	
Original Size: A1	Date: 25/01/23	Date: 25/01/23	Date: 25/01/23	Date

Drawing Number: GARTH - ATK - HGN - A581 - DR - D - 0005
Project Ref. No. 5200124
Revision: P3



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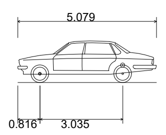
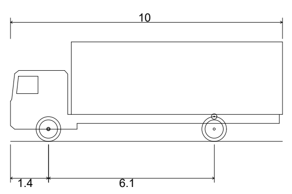


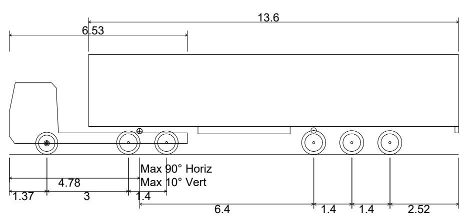
Large Car (2006)

Overall Length	5.079m
Overall Width	1.872m
Overall Body Height	1.525m
Min Body Ground Clearance	0.310m
Max Track Width	1.831m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	5.900m



FTA Design HG Rigid Vehicle (1998)

Overall Length	10.000m
Overall Width	2.500m
Overall Body Height	3.645m
Min Body Ground Clearance	0.440m
Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	11.000m



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

NONE

MAINTENANCE/CLEANING

NONE

DECOMMISSIONING/DEMOLITION

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Rev.	Date	Description	By	Chk'd	App'd
P1	25.01.23	DRAWING CREATED	AE	PDE	

Drawing Status: FIT FOR INFORMATION
Suitability: S2

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Client: MINISTRY OF JUSTICE

Project Title: HMP GARTH

Drawing Title: PROPOSED MITIGATION WORKS ULNES WALTON LANE / A581 PROPOSED MINI ROUNDABOUT SWEPT ATH ANALYSIS

Scale	Designed	Drawn	Checked	Authorised
1:500	AE	AE	PDE	
Original Size	Date	Date	Date	Date
A2	25.01.23	25.01.23	25.01.23	

Drawing Number
HA PIN / Location: GARTH A581 – Originator: ATK – Volume: SPA – Type: DR – Role: D – Number: 0005

GARTH - ATK - SPA -
A581 -DR - D - 0005

Project Ref. No. 5200124

Revision P2

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Appendix K - Junctions 10 Outputs – A581/Ulnes Walton Lane (Operational)

Junctions 10

ARCADY 10 - Roundabout Module

Filename: A581_Ulnes Walton Lane_Mini-Rbt_v1.j10
Path: P:\GBBMA\HandT\CS\Projects\5200124-MACE_Prisons_ROGE6351\06_Reports\15_Garth Wymott SoS\12_Models\scn7_Constr_peak
Report generation date: 14/02/2023 18:09:49

»2025 Opening Year with Development, AM
»2025 Opening Year with Development, PM
»2026 with Development, AM
»2026 with Development, PM
»2027 Base + Construction, AM Construction
»2027 Base + Construction, AM
»2027 Base + Construction, PM

Summary of junction performance

	AM					PM					AM Construction				
	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)
	2025 Opening Year with Development														
1 - A581 Southport Road (W)		6.1	39.56	0.87			1.1	8.80	0.51						
2 - Ulnes Walton Lane	D5	0.3	8.08	0.21	25.62	D6	2.2	18.59	0.69	14.01					
3 - A581 Southport Road (E)		3.8	17.87	0.79			2.7	14.52	0.73						
	2026 with Development														
1 - A581 Southport Road (W)		6.6	42.38	0.88			1.1	8.88	0.52						
2 - Ulnes Walton Lane	D7	0.3	8.14	0.21	27.00	D8	2.3	18.99	0.70	14.30					
3 - A581 Southport Road (E)		3.9	18.34	0.80			2.7	14.88	0.73						
	2027 Base + Construction														
1 - A581 Southport Road (W)		4.8	31.34	0.83			1.1	9.08	0.53			0.8	8.76	0.44	
2 - Ulnes Walton Lane	D13	0.3	8.38	0.20	21.51	D14	3.5	26.77	0.79	17.40	D12	0.1	5.56	0.07	7.18
3 - A581 Southport Road (E)		3.3	16.11	0.77			3.0	16.22	0.75			0.6	5.99	0.38	

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

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages.

File summary

File Description

Title	Albatross / Razorbill
Location	A581 Southport Road / Ulnes Walton Lane
Site number	
Date	14/02/2023
Version	
Status	Proposed
Identifier	DC
Client	
Jobnumber	5200124
Enumerator	WSATKINS\CART5172
Description	

Units

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

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75						0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15	✓
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15	✓
D7	2026 with Development	AM	ONE HOUR	06:45	08:15	15	✓
D8	2026 with Development	PM	ONE HOUR	16:45	18:15	15	✓
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15	✓
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15	✓
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

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

2025 Opening Year with Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 91% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	25.62	D

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		25.62	D

Arms

Arms

Arm	Name	Description
1	A581 Southport Road (W)	
2	Ulnes Walton Lane	
3	A581 Southport Road (E)	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1 - A581 Southport Road (W)	3.25	3.25	3.50	2.3	9.81	7.20	0.0	
2 - Ulnes Walton Lane	2.55	2.55	3.25	7.9	9.81	7.36	0.0	
3 - A581 Southport Road (E)	3.50	3.50	3.90	2.8	11.74	11.80	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A581 Southport Road (W)	0.607	945
2 - Ulnes Walton Lane	0.594	878
3 - A581 Southport Road (E)	0.624	1002

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	538	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	112	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	714	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	102	436
	2 - Ulnes Walton Lane	16	0	96
	3 - A581 Southport Road (E)	316	398	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	0	5
	2 - Ulnes Walton Lane	4	0	6
	3 - A581 Southport Road (E)	7	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.87	39.56	6.1	E	494	741
2 - Ulnes Walton Lane	0.21	8.08	0.3	A	103	154
3 - A581 Southport Road (E)	0.79	17.87	3.8	C	655	983

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	405	101	297	765	0.530	400	248	0.0	1.1	10.161	B
2 - Ulnes Walton Lane	84	21	325	686	0.123	84	373	0.0	0.1	6.318	A
3 - A581 Southport Road (E)	538	134	12	995	0.540	533	396	0.0	1.2	7.942	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	484	121	356	729	0.664	480	297	1.1	2.0	14.890	B
2 - Ulnes Walton Lane	101	25	389	647	0.156	101	447	0.1	0.2	6.960	A
3 - A581 Southport Road (E)	642	160	14	994	0.646	639	475	1.2	1.8	10.389	B

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	592	148	434	681	0.869	578	362	2.0	5.4	32.716	D
2 - Ulnes Walton Lane	123	31	469	600	0.206	123	544	0.2	0.3	7.975	A
3 - A581 Southport Road (E)	786	197	18	992	0.793	779	574	1.8	3.6	16.872	C

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	592	148	438	679	0.872	590	365	5.4	6.1	39.563	E
2 - Ulnes Walton Lane	123	31	478	594	0.207	123	550	0.3	0.3	8.076	A
3 - A581 Southport Road (E)	786	197	18	991	0.793	786	584	3.6	3.8	17.869	C

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	484	121	362	725	0.667	499	302	6.1	2.2	17.592	C
2 - Ulnes Walton Lane	101	25	405	638	0.158	101	457	0.3	0.2	7.088	A
3 - A581 Southport Road (E)	642	160	14	993	0.646	649	491	3.8	1.9	10.987	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	405	101	301	762	0.532	409	251	2.2	1.2	10.721	B
2 - Ulnes Walton Lane	84	21	331	682	0.124	85	379	0.2	0.2	6.375	A
3 - A581 Southport Road (E)	538	134	12	995	0.540	540	404	1.9	1.2	8.206	A

2025 Opening Year with Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	14.01	B

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		14.01	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	410	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	399	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	614	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	34	376
	2 - Ulnes Walton Lane	105	0	294
	3 - A581 Southport Road (E)	514	100	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	8	4
	2 - Ulnes Walton Lane	1	0	0
	3 - A581 Southport Road (E)	3	3	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)
1 - A581 Southport Road (W)	0.51	8.80	1.1	A	376	564
2 - Ulnes Walton Lane	0.69	18.59	2.2	C	366	549
3 - A581 Southport Road (E)	0.73	14.52	2.7	B	563	845

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	309	77	75	900	0.343	307	462	0.0	0.5	6.310	A
2 - Ulnes Walton Lane	300	75	281	711	0.422	298	100	0.0	0.7	8.662	A
3 - A581 Southport Road (E)	462	116	78	954	0.485	458	500	0.0	1.0	7.433	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	369	92	90	890	0.414	368	555	0.5	0.7	7.175	A
2 - Ulnes Walton Lane	359	90	337	678	0.529	357	120	0.7	1.1	11.196	B
3 - A581 Southport Road (E)	552	138	94	944	0.585	550	601	1.0	1.4	9.372	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	451	113	109	878	0.514	450	677	0.7	1.1	8.734	A
2 - Ulnes Walton Lane	439	110	413	633	0.694	435	147	1.1	2.1	17.847	C
3 - A581 Southport Road (E)	676	169	115	931	0.726	671	733	1.4	2.6	14.026	B

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	451	113	110	878	0.514	451	681	1.1	1.1	8.797	A
2 - Ulnes Walton Lane	439	110	414	633	0.695	439	147	2.1	2.2	18.587	C
3 - A581 Southport Road (E)	676	169	116	930	0.727	676	737	2.6	2.7	14.519	B

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	369	92	91	890	0.414	370	561	1.1	0.7	7.245	A
2 - Ulnes Walton Lane	359	90	339	677	0.530	363	121	2.2	1.2	11.642	B
3 - A581 Southport Road (E)	552	138	95	943	0.585	557	607	2.7	1.5	9.713	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	309	77	76	899	0.343	309	468	0.7	0.6	6.380	A
2 - Ulnes Walton Lane	300	75	284	710	0.423	302	101	1.2	0.7	8.886	A
3 - A581 Southport Road (E)	462	116	79	953	0.485	464	506	1.5	1.0	7.622	A

2026 with Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 91% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	27.00	D

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		27.00	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2026 with Development	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	543	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	113	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	719	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	103	440
	2 - Ulnes Walton Lane	16	0	97
	3 - A581 Southport Road (E)	318	401	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	0	5
	2 - Ulnes Walton Lane	4	0	6
	3 - A581 Southport Road (E)	7	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.88	42.38	6.6	E	498	747
2 - Ulnes Walton Lane	0.21	8.14	0.3	A	104	156
3 - A581 Southport Road (E)	0.80	18.34	3.9	C	660	990

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	409	102	299	763	0.536	404	249	0.0	1.2	10.300	B
2 - Ulnes Walton Lane	85	21	327	684	0.124	84	376	0.0	0.1	6.342	A
3 - A581 Southport Road (E)	541	135	12	995	0.544	536	400	0.0	1.2	8.004	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	488	122	359	727	0.672	485	299	1.2	2.0	15.241	C
2 - Ulnes Walton Lane	102	25	393	645	0.157	101	451	0.1	0.2	6.998	A
3 - A581 Southport Road (E)	646	162	14	994	0.651	644	480	1.2	1.9	10.517	B

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	598	149	437	679	0.880	583	364	2.0	5.8	34.380	D
2 - Ulnes Walton Lane	124	31	472	598	0.208	124	548	0.2	0.3	8.028	A
3 - A581 Southport Road (E)	792	198	18	992	0.798	784	579	1.9	3.7	17.259	C

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	598	149	441	677	0.883	595	367	5.8	6.6	42.383	E
2 - Ulnes Walton Lane	124	31	482	592	0.210	124	554	0.3	0.3	8.136	A
3 - A581 Southport Road (E)	792	198	18	991	0.798	791	589	3.7	3.9	18.343	C

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	488	122	365	723	0.675	505	304	6.6	2.3	18.361	C
2 - Ulnes Walton Lane	102	25	409	635	0.160	102	461	0.3	0.2	7.142	A
3 - A581 Southport Road (E)	646	162	14	993	0.651	654	497	3.9	2.0	11.155	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	409	102	304	761	0.537	413	253	2.3	1.2	10.895	B
2 - Ulnes Walton Lane	85	21	335	680	0.125	85	382	0.2	0.2	6.404	A
3 - A581 Southport Road (E)	541	135	12	995	0.544	544	408	2.0	1.3	8.277	A

2026 with Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	14.30	B

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		14.30	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2026 with Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	413	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	401	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	619	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	34	379
	2 - Ulnes Walton Lane	106	0	295
	3 - A581 Southport Road (E)	518	101	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	8	4
	2 - Ulnes Walton Lane	1	0	0
	3 - A581 Southport Road (E)	3	3	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)
1 - A581 Southport Road (W)	0.52	8.88	1.1	A	379	568
2 - Ulnes Walton Lane	0.70	18.99	2.3	C	368	552
3 - A581 Southport Road (E)	0.73	14.88	2.7	B	568	852

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	311	78	75	899	0.346	309	466	0.0	0.5	6.339	A
2 - Ulnes Walton Lane	302	75	283	710	0.425	299	101	0.0	0.7	8.720	A
3 - A581 Southport Road (E)	466	117	79	953	0.489	462	503	0.0	1.0	7.495	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	371	93	90	890	0.417	371	559	0.5	0.7	7.220	A
2 - Ulnes Walton Lane	360	90	340	676	0.533	359	121	0.7	1.1	11.312	B
3 - A581 Southport Road (E)	556	139	95	943	0.590	555	604	1.0	1.4	9.491	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	455	114	110	878	0.518	453	682	0.7	1.1	8.814	A
2 - Ulnes Walton Lane	442	110	416	631	0.699	437	148	1.1	2.2	18.194	C
3 - A581 Southport Road (E)	682	170	116	930	0.733	677	738	1.4	2.7	14.338	B

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	455	114	111	877	0.518	455	687	1.1	1.1	8.881	A
2 - Ulnes Walton Lane	442	110	417	631	0.700	441	149	2.2	2.3	18.987	C
3 - A581 Southport Road (E)	682	170	117	930	0.733	681	742	2.7	2.7	14.876	B

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	371	93	92	889	0.418	373	566	1.1	0.8	7.291	A
2 - Ulnes Walton Lane	360	90	342	675	0.534	365	122	2.3	1.2	11.785	B
3 - A581 Southport Road (E)	556	139	96	942	0.591	561	610	2.7	1.5	9.855	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	311	78	76	898	0.346	312	472	0.8	0.6	6.410	A
2 - Ulnes Walton Lane	302	75	286	708	0.426	304	102	1.2	0.8	8.950	A
3 - A581 Southport Road (E)	466	117	80	952	0.489	468	509	1.5	1.0	7.689	A

2027 Base + Construction, AM Construction

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 93% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	7.18	A

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		7.18	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	310	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	46	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	347	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	117	193
	2 - Ulnes Walton Lane	10	0	36
	3 - A581 Southport Road (E)	86	261	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	2	6
	2 - Ulnes Walton Lane	6	0	9
	3 - A581 Southport Road (E)	9	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.44	8.76	0.8	A	284	427
2 - Ulnes Walton Lane	0.07	5.56	0.1	A	42	63
3 - A581 Southport Road (E)	0.38	5.99	0.6	A	318	478

Main Results for each time segment

05:45 - 06:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	233	58	195	826	0.282	232	72	0.0	0.4	6.309	A
2 - Ulnes Walton Lane	35	9	144	793	0.044	34	283	0.0	0.0	5.141	A
3 - A581 Southport Road (E)	261	65	7	998	0.262	260	171	0.0	0.4	4.971	A

06:00 - 06:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	279	70	234	803	0.347	278	86	0.4	0.5	7.162	A
2 - Ulnes Walton Lane	41	10	173	776	0.053	41	339	0.0	0.1	5.311	A
3 - A581 Southport Road (E)	312	78	9	997	0.313	312	205	0.4	0.5	5.358	A

06:15 - 06:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	341	85	287	771	0.443	340	106	0.5	0.8	8.713	A
2 - Ulnes Walton Lane	51	13	212	753	0.067	51	415	0.1	0.1	5.555	A
3 - A581 Southport Road (E)	382	96	11	996	0.384	381	251	0.5	0.6	5.977	A

06:30 - 06:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	341	85	287	770	0.443	341	106	0.8	0.8	8.761	A
2 - Ulnes Walton Lane	51	13	212	752	0.067	51	416	0.1	0.1	5.558	A
3 - A581 Southport Road (E)	382	96	11	996	0.384	382	252	0.6	0.6	5.989	A

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	279	70	235	802	0.347	280	86	0.8	0.6	7.211	A
2 - Ulnes Walton Lane	41	10	174	775	0.053	41	341	0.1	0.1	5.318	A
3 - A581 Southport Road (E)	312	78	9	997	0.313	313	207	0.6	0.5	5.375	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	233	58	197	825	0.283	234	72	0.6	0.4	6.366	A
2 - Ulnes Walton Lane	35	9	146	792	0.044	35	285	0.1	0.0	5.150	A
3 - A581 Southport Road (E)	261	65	8	998	0.262	262	173	0.5	0.4	4.997	A

2027 Base + Construction, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 91% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	21.51	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		21.51	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	527	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	109	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	694	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	85	442
	2 - Ulnes Walton Lane	12	0	97
	3 - A581 Southport Road (E)	320	374	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	0	5
	2 - Ulnes Walton Lane	5	0	10
	3 - A581 Southport Road (E)	7	1	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)
1 - A581 Southport Road (W)	0.83	31.34	4.8	D	484	725
2 - Ulnes Walton Lane	0.20	8.38	0.3	A	100	150
3 - A581 Southport Road (E)	0.77	16.11	3.3	C	637	955

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	397	99	279	775	0.512	392	248	0.0	1.1	9.689	A
2 - Ulnes Walton Lane	82	21	329	683	0.120	81	342	0.0	0.1	6.543	A
3 - A581 Southport Road (E)	522	131	9	997	0.524	518	402	0.0	1.1	7.724	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	474	118	335	742	0.639	471	297	1.1	1.8	13.711	B
2 - Ulnes Walton Lane	98	24	395	644	0.152	98	411	0.1	0.2	7.214	A
3 - A581 Southport Road (E)	624	156	11	996	0.627	622	482	1.1	1.7	9.913	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	580	145	408	697	0.833	570	363	1.8	4.4	27.442	D
2 - Ulnes Walton Lane	120	30	478	595	0.202	120	500	0.2	0.3	8.291	A
3 - A581 Southport Road (E)	764	191	13	994	0.769	758	584	1.7	3.2	15.401	C

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	580	145	412	695	0.835	579	365	4.4	4.8	31.336	D
2 - Ulnes Walton Lane	120	30	485	590	0.203	120	505	0.3	0.3	8.380	A
3 - A581 Southport Road (E)	764	191	13	994	0.769	764	592	3.2	3.3	16.109	C

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	474	118	340	739	0.641	485	301	4.8	1.9	15.383	C
2 - Ulnes Walton Lane	98	24	407	637	0.154	98	418	0.3	0.2	7.319	A
3 - A581 Southport Road (E)	624	156	11	996	0.627	630	494	3.3	1.8	10.371	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	397	99	283	773	0.513	400	251	1.9	1.1	10.138	B
2 - Ulnes Walton Lane	82	21	336	679	0.121	82	347	0.2	0.2	6.601	A
3 - A581 Southport Road (E)	522	131	9	997	0.524	525	409	1.8	1.2	7.953	A

2027 Base + Construction, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	17.40	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		17.40	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	417	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	450	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	629	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	35	382
	2 - Ulnes Walton Lane	119	0	331
	3 - A581 Southport Road (E)	521	108	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	8	4
	2 - Ulnes Walton Lane	1	0	1
	3 - A581 Southport Road (E)	3	6	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)
1 - A581 Southport Road (W)	0.53	9.08	1.1	A	383	574
2 - Ulnes Walton Lane	0.79	26.77	3.5	D	413	619
3 - A581 Southport Road (E)	0.75	16.22	3.0	C	577	866

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	314	78	81	896	0.350	312	477	0.0	0.6	6.404	A
2 - Ulnes Walton Lane	339	85	286	709	0.478	335	107	0.0	0.9	9.642	A
3 - A581 Southport Road (E)	474	118	89	947	0.500	469	532	0.0	1.0	7.736	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	375	94	97	886	0.423	374	573	0.6	0.8	7.321	A
2 - Ulnes Walton Lane	405	101	343	675	0.599	402	128	0.9	1.5	13.230	B
3 - A581 Southport Road (E)	565	141	106	936	0.604	563	639	1.0	1.5	9.940	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	459	115	118	873	0.526	458	698	0.8	1.1	9.002	A
2 - Ulnes Walton Lane	495	124	419	629	0.787	488	156	1.5	3.3	24.498	C
3 - A581 Southport Road (E)	693	173	129	922	0.751	687	778	1.5	2.9	15.493	C

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	459	115	119	873	0.526	459	704	1.1	1.1	9.076	A
2 - Ulnes Walton Lane	495	124	421	629	0.788	495	157	3.3	3.5	26.769	D
3 - A581 Southport Road (E)	693	173	131	921	0.752	692	784	2.9	3.0	16.220	C

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	375	94	98	885	0.423	376	582	1.1	0.8	7.402	A
2 - Ulnes Walton Lane	405	101	345	674	0.601	412	130	3.5	1.6	14.303	B
3 - A581 Southport Road (E)	565	141	109	934	0.605	571	648	3.0	1.6	10.406	B

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	314	78	82	895	0.351	315	484	0.8	0.6	6.480	A
2 - Ulnes Walton Lane	339	85	288	707	0.479	341	108	1.6	0.9	10.007	B
3 - A581 Southport Road (E)	474	118	90	946	0.501	476	539	1.6	1.1	7.961	A

Appendix L - CD 116 Geometric Design of Roundabouts

EXTRACT ONLY

Design Manual for Roads and Bridges

Road Layout
Design

CD 116
Geometric design of roundabouts

(formerly TD 16/07, TD 50/04, TD 51/17, TD 54/07, TA 23/81, TA 78/97, TA 86/03, TD 70/08)

Revision 2

Summary
This document provides requirements for the geometric design of roundabouts.

Application by Overseeing Organisations
Any specific requirements for Overseeing Organisations alternative or supplementary to those given in this document are given in National Application Annexes to this document.

Feedback and Enquiries
Users of this document are encouraged to raise any enquiries and/or provide feedback on the content and usage of this document to the dedicated Highways England team. The email address for all enquiries and feedback is: Standards_Enquiries@highwaysengland.co.uk

This is a controlled document.

5. Design of mini-roundabouts

Geometric design of a mini-roundabout

5.1 The maximum ICD of a mini-roundabout shall be 28 metres.

NOTE Main requirements and advice for the geometric design of all roundabouts are provided in Section 3.

5.1.1 For mini-roundabouts with two entry lanes the width of the circulatory carriageway should enable cars to travel two abreast around the white circle.

Mini-roundabout central islands

5.2 The white circle of a mini-roundabout shall have a maximum of 4 metres diameter and positioned using the inside of the swept path of cars.

NOTE A mini-roundabout does not have a kerbed central island. In its place is a flush or domed circular solid white road marking capable of being driven over where unavoidable by large vehicles or where the layout of the junction makes it impractical to do so. The circular marking can be edged with kerbs provided the maximum height above the road surface at the perimeter does not exceed 6mm.

5.2.1 Where a white circle with a full diameter of 4 metres is not achievable on a mini-roundabout, a white circle with a diameter as large as possible between 1 metre and 4 metres should be provided.

NOTE A larger diameter up to the maximum 4 metres can improve conspicuity of the central marking.

5.3 Additional circular rings shall not be added around the white circle of a mini-roundabout.

5.4 The centre of the design vehicle path shall be at least 1 metre from kerbs, the perimeter of the white circle, and from any road marking separating opposing traffic.

NOTE Figures 5.4Na and 5.4Nb provide examples of how the design vehicle path and white circle location of a mini-roundabout are determined using swept paths.

Figure 5.4Na Determination of vehicle path and white circle location using swept paths (on a 3-arm mini-roundabout and a 4-arm mini-roundabout

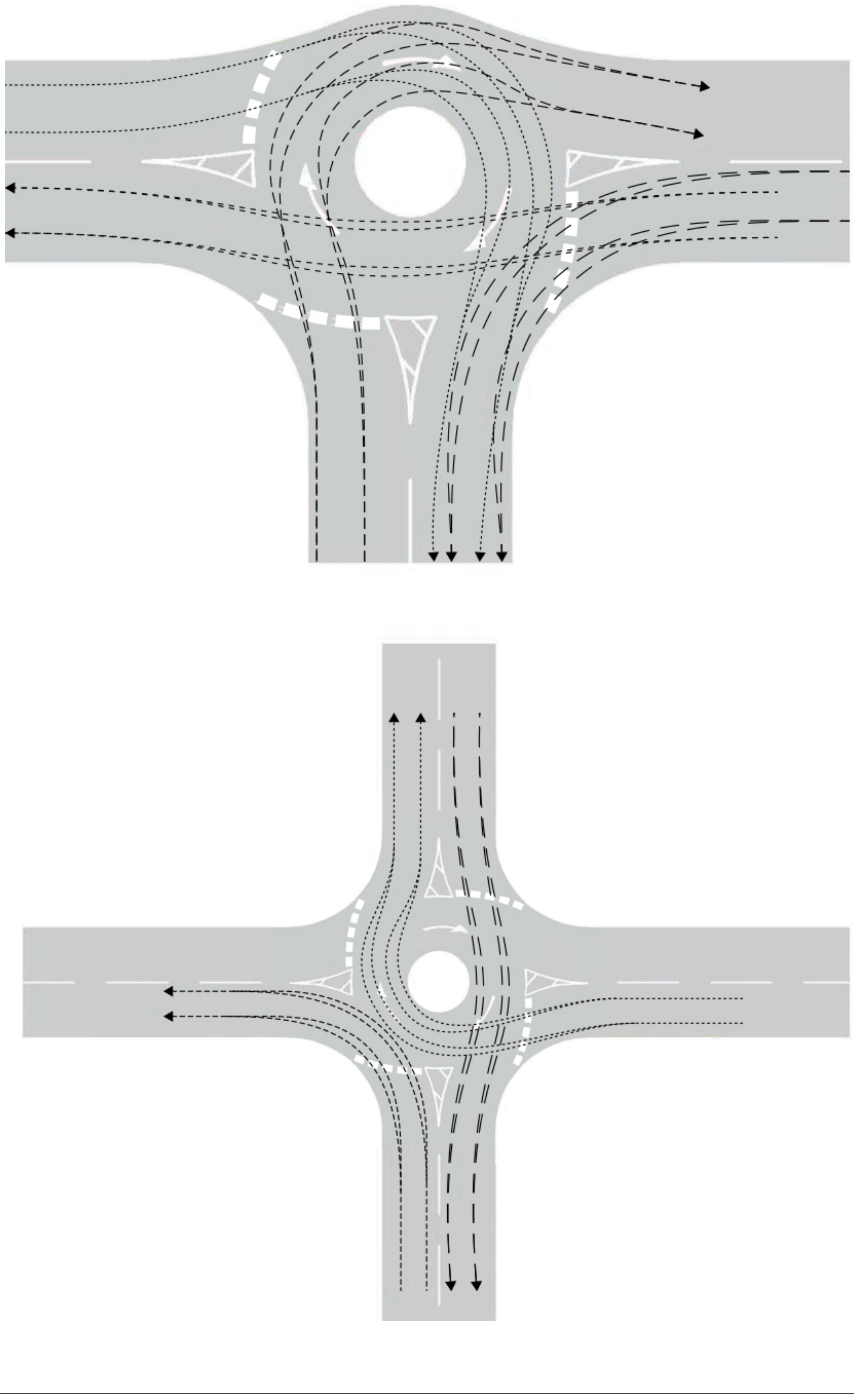
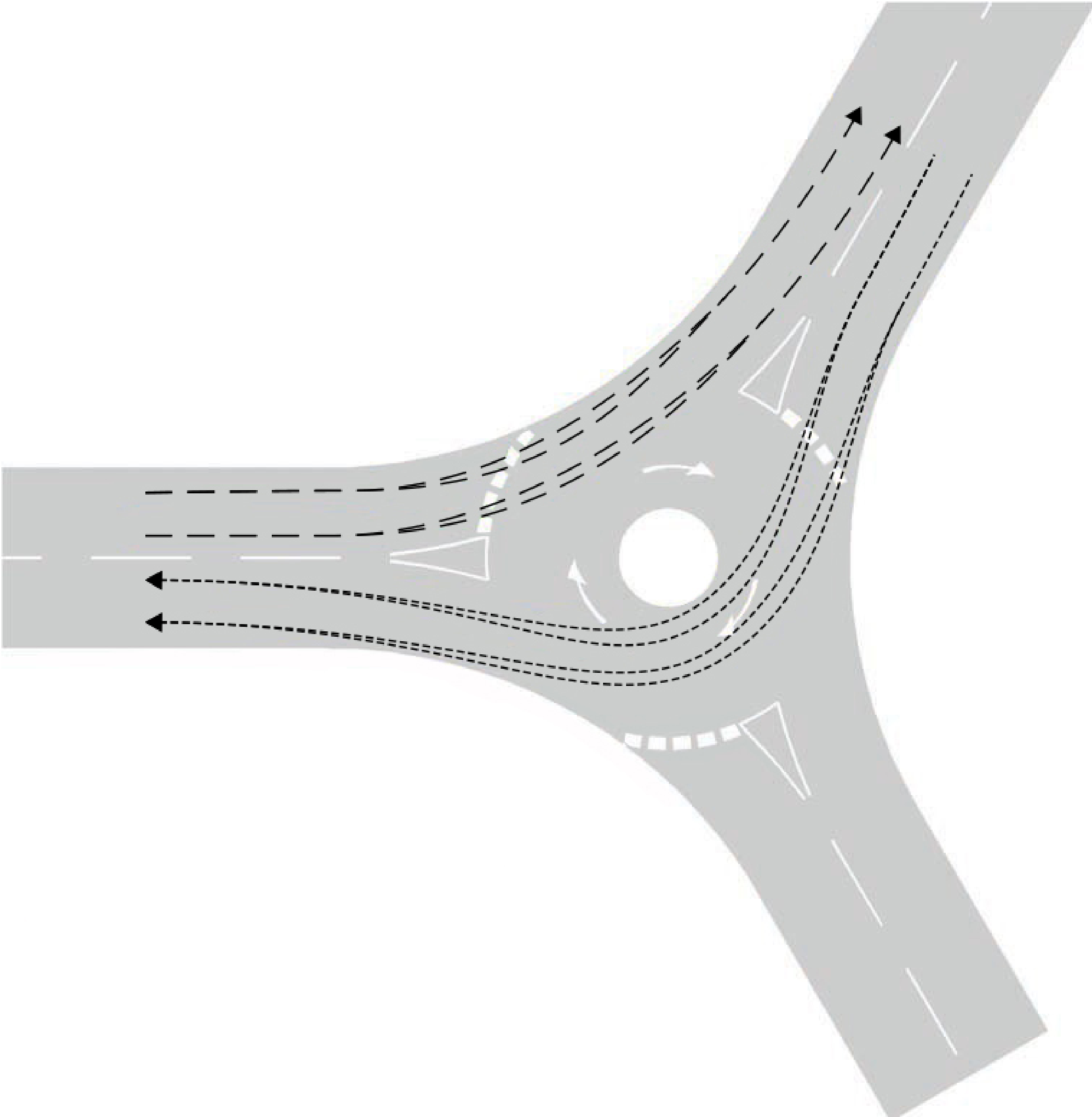


Figure 5.4Nb Determination of vehicle path and white circle location using swept paths (3-arm Y-junction)



5.4.1 The white circle of a mini-roundabout should be sized and located so that drivers of cars are not encouraged to drive on it or pass on the wrong side of it when negotiating the junction.

5.5 For a right-turn design vehicle path on a mini-roundabout, a minimum design vehicle path radius of 6 metres, at the centre of the path, shall be used.

5.5.1 For the right turn minimum design vehicle path radius of 6 metres, the vehicle path should be widened to 3 metres at the apex of the turn.

5.6 The height of the dome of the white circle above the adjacent carriageway must be no greater than 125mm at its highest point (including construction tolerance) (as permitted by Traffic Calming Regulations H(TC) Regs 1999 [Ref 6.N]).

NOTE A domed white circle marking can be used to deter light vehicles from overrunning and improve conspicuity. The dome can normally be formed from bituminous material, concrete or block paving.

5.6.1 The white circle for a 4 metre diameter marking should be domed to a recommended height at the centre of 100mm.

5.6.2 For smaller diameter markings the height of the dome should be reduced pro-rata (i.e. by 25mm per metre width of the white circle diameter).

5.6.3 A domed white circle should be avoided for mini-roundabouts regularly overrun by heavy goods vehicles or buses in residential areas.

NOTE The use of a domed white circle can lead to the perception of vibration by residents and discomfort to bus drivers and passengers.

5.6.4 Fire and ambulance services should be consulted about any proposal to introduce a mini-roundabout with a domed white circle.

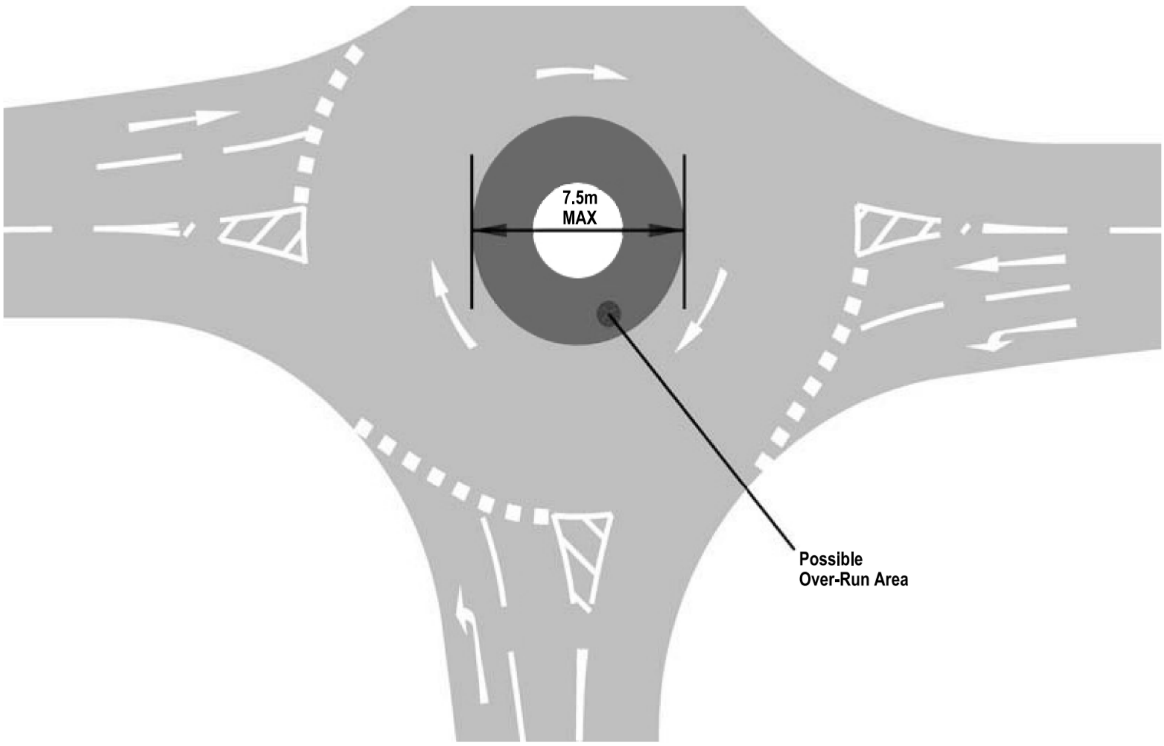
5.7 The height of the white dome at its perimeter shall not exceed 6mm.

Overrun areas

5.8 The diameter of a mini-roundabout overrun area shall not exceed 7.5 metres, including the white circle.

NOTE An example of a mini-roundabout overrun area is shown in Figure 5.8N.

Figure 5.8N Flared approach with central overrun areas



5.8.1 A concentric overrun area may be used on a mini-roundabout to increase the deflection and conspicuity.

NOTE Light vehicles are not legally obliged to avoid overrun areas in the same way as the white circle of a mini-roundabout and therefore concentric overrun areas cannot be relied upon for the purposes of achieving deflection.

5.9 Additional road markings shall not be placed on or around the edges of a concentric overrun area.

5.9.1 The circulatory arrow markings of a mini-roundabout should be placed on the surrounding circulating area and not on the overrun area.

Mini-roundabout traffic islands

5.10 Where vehicles can pass on the wrong side of the white circle on a mini-roundabout, a kerbed traffic island shall be provided on the arms of a junction.

5.10.1 Traffic islands may be provided to separate opposing streams of traffic and, where appropriate, to serve one or more of the following purposes:

1) assist provision of deflection of the path of vehicles approaching the mini-roundabout;
2) increased conspicuity for drivers approaching the mini-roundabout;
3) pedestrian use; or
4) calming feature.

5.10.2 Islands for separating opposing streams of traffic or deflecting approaching vehicles may be kerbed physical islands or created using road markings prescribed in TSRGD [Ref 8.N].

5.10.3 A kerbed island may be used at an entry to accommodate bollards and supplementary signs.

NOTE Requirements and guidance on the appropriate signage for a mini-roundabout are provided in TSRGD [Ref 8.N] and TSM Chapter 3 [Ref 11.N].

5.10.4 Any sign on a kerbed island should not restrict visibility to the right.

5.10.5 Kerbed islands designed to narrow the carriageway within 40 metres of the give way line of a mini-roundabout may be used as a calming feature to control the speed of approaching traffic.

NOTE Guidance on the use of islands to narrow the carriageway is contained in TAL 7/95 [Ref 14.I].

5.11 A kerbed island shall be positioned at least 0.5 metres clear of any vehicle swept path.

5.12 Solid or raised areas of markings shall not be used at mini-roundabouts, other than for the white circle.

Mini-roundabout entry width

5.13 For a single lane approach on a mini-roundabout, the lane width at the give way line shall be no less than 3.0 metres and no greater than 4.0 metres.

5.13.1 For a two lane approach on a mini-roundabout, the minimum lane width at the give way line may be reduced to 2.5 metres, provided heavy goods vehicles and buses do not frequently use the entry.

5.14 At an entry with multiple lanes on a mini-roundabout, no more than one lane shall be marked as being for a given exit arm.

NOTE Markings are provided such that traffic going ahead or turning proceeds in single file for each movement.

5.14.1 Three lane entries should not be used for mini-roundabouts.

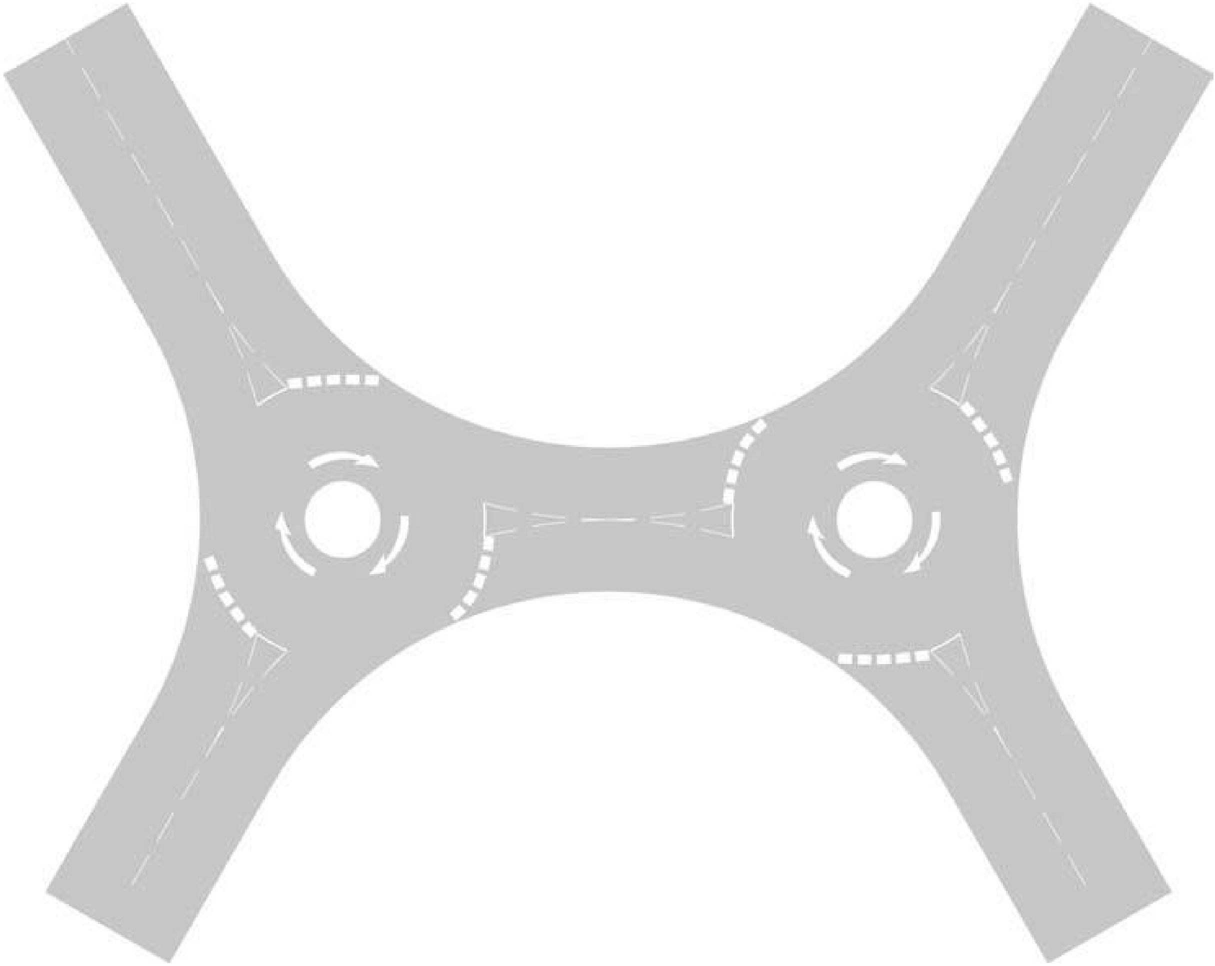
NOTE 1 The presence of two or more approach lanes encourages two abreast flow through the mini-roundabout, increasing the number of potential conflicts. Additional signing and marking can be used where entries are divided into multiple lanes to ensure safe and efficient operation.

NOTE 2 Where a three-arm mini-roundabout with single lane approaches replaces a major/minor priority junction, the junction becomes easier to negotiate, as drivers only have to concentrate on one stream of traffic circulating at low speed from their right. However, as the number of arms and/or traffic lanes to the mini-roundabout increases, so does the potential for conflict.

5.15 No more than two lanes shall be provided at an intermediate give way line between double mini-roundabouts.

5.15.1 On a double mini-roundabout, the short link between the two roundabouts should provide space for vehicles waiting at the intermediate give way lines, as illustrated in Figure 5.15.1.

Figure 5.15.1 Double mini-roundabout



NOTE 1 *Where the link between the two roundabouts is not adequately sized, large opposing right-turning movements can lead to gridlock at double mini-roundabouts, particularly if the network is congested.*

NOTE 2 *The capacity at an intermediate give way line between double mini-roundabouts can be reduced by the effect of the first junction, and a queue at the intermediate give way line can interact with the first junction. Double junctions with short links of only one or two car lengths can be more susceptible to queuing than those with greater separation.*

Mini-roundabout exit width

5.16 On mini-roundabouts, the exit width shall be measured as the distance between the nearside kerb and exit median (or the edge of any traffic island) where it intersects with the outer edge of the circulatory carriageway.

Deflection

5.17 Deflection or other means of slowing vehicles on approach to the give way stop line shall be provided on a mini-roundabout.

NOTE 1 *Other means of slowing vehicles include additional signage or narrowing of approach.*

NOTE 2 *Both the speed and path of a vehicle through a mini-roundabout are important factors in accident causation. Adequate deflection allows the approaching drivers to be aware of the circulatory nature of the junction ahead. Drivers need to be ready to stop if necessary on the approach so it is essential for entry (and circulatory) speeds to be managed by careful design.*

NOTE 3 *Where vehicle speeds are already low on mini-roundabouts, full entry deflection as required for normal or compact roundabouts is not essential.*

NOTE 4 *The introduction of some entry deflection on entry to the mini-roundabout helps to induce gyratory movement and increase efficiency.*

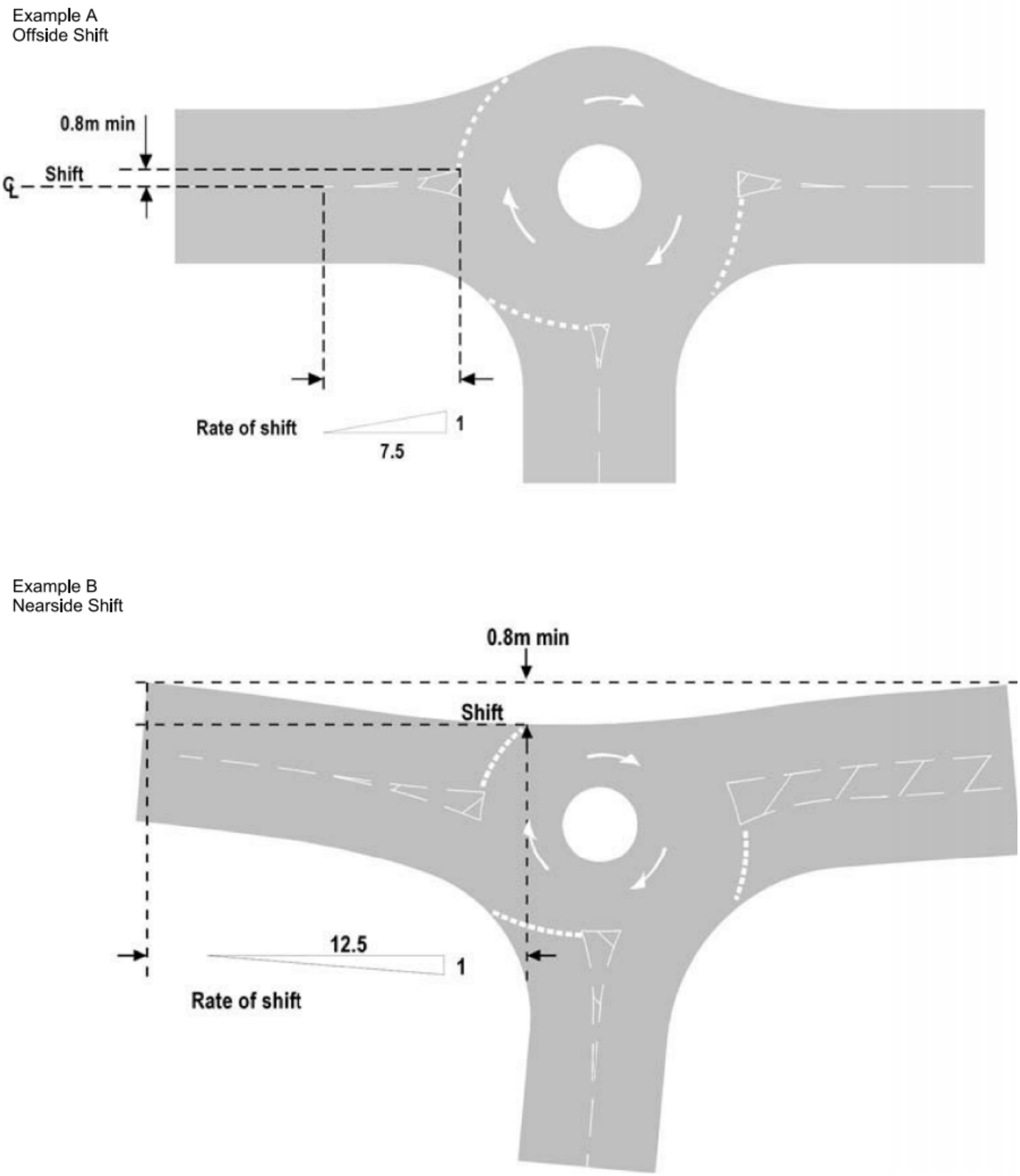
5.17.1 A lateral shift (see Figure 5.17.3) of 0.8 metres minimum should be provided at entry.

NOTE *The value of 0.8 metres for lateral shift corresponds to the minimum width required to accommodate hatched road marking to TSRGD [Ref 8.N] diagram 1040 (Schedule 11 Part 4 Item 23). These markings are used to separate opposing traffic flows and further details can be found in TSRGD [Ref 8.N] (Schedule 11 Part 3) and TSM Chapter 5 [Ref 13.N].*

5.17.2 Deflection (or lateral shift) should be introduced on the offside of the approach arm.

5.17.3 For offside shift, the lateral shift should be measured from the centre of the approach road, developed at a rate 1 in 7.5 as shown in Figure 5.17.3 Example A.

Figure 5.17.3 Illustration of lateral shift



5.17.4 Where there are constraints (for example, land restrictions, structural obstructions, environmental features) at a mini-roundabout, an alternative method, known as 'nearside shift' and illustrated in Figure 5.17.3 example B, may be used to develop shift along the nearside carriageway edge.

NOTE Nearside shift can be an effective way of introducing deflection in order to encourage low entry speeds. However, nearside shift can have the effect of deflecting traffic to the right, towards the central island, and is therefore often less effective in inducing a gyratory movement than offside shift. For this reason, nearside shift is deemed to be less desirable than offside shift.

5.17.5 For nearside shift, the lateral shift should be measured from the nearside edge of the approach road, developed at a rate 1 in 12.5, as illustrated in Figure 5.17.3 Example B.

5.17.6 Where the lateral shift cannot be achieved or visibility to the right is limited, mandatory give way signs and markings to TSRGD [Ref 8.N] diagram 602 (Schedule 9 Part 2 Item 2), diagram 1003 (Schedule 9 Part 6 Items 3 and 9) and diagram 1023A (Schedule 9 Part 6 Item 4) may be used on the approach.

5.17.7 Mandatory give way signs and markings to TSRGD [Ref 8.N] diagram 602 (Schedule 9 Part 2 Item 2), diagram 1003 (Schedule 9 Part 6 Items 3 and 9) and diagram 1023A (Schedule 9 Part 6 Item 4) should only be used on the approach to a three-arm mini-roundabout where there is another entry to the right but none to the left as shown in Figure 5.20 and in accordance with TSM Chapter 3 [Ref 11.N] and TSM Chapter 5 [Ref 13.N].

NOTE The use of give way signs and markings in other situations can confuse drivers as to who has priority and undermines the priority rule established for mini-roundabouts.

5.17.8 Where the give way sign is co-located with the mini-roundabout regulatory sign, the give way sign should be uppermost.

NOTE Further guidance on the classification of signs is provided in TSM Chapter 1 [Ref 10.N].

5.17.9 On a mini-roundabout where sufficient entry deflection of vehicle paths is not achieved by road markings, islands and existing kerbs, a reduction in vehicle speeds may be achieved by narrowing the approach.

5.17.10 On a mini-roundabout, overrun areas may be utilised instead of narrowing the approach, if narrowing the approach arm would affect the swept path of long vehicles on the nearside of an entry.

5.18 Any vertical deflection for traffic calming at a mini-roundabout shall take the form of a speed table with the following requirements:

1) the top of the speed table covers the whole junction area; and
2) extends outwards a minimum of 6 metres upstream of each give way line.

Crossfall on a mini-roundabout

5.19 The design of crossfalls and gradients at mini-roundabouts shall not result in ponding of surface water within the roundabout carriageway including on and around the central white circle.

5.19.1 Gullies should not be installed adjacent to the white circle to drain ponding or accumulated run-off.

5.19.2 Where a mini-roundabout is constructed at the location of a former priority junction, channels, which can give the impression of a former priority junction layout, should be eliminated.

NOTE Mini-roundabouts have often been superimposed on the existing carriageway profile with little or no change in level.

5.19.3 Where the carriageway levels are re-profiled, crossfall should be outward sloping to avoid ponding and improve junction conspicuity.

Mini-roundabout visibility

5.20 A minimum visibility distance 'D', as shown in Figure 5.20 and in accordance with Table 5.20, shall be the minimum sight distance required at a distance 'F' from the give way line in relation to the approach speed of the arm.

Figure 5.20 Mini-roundabout visibility distance 'D' and stopping sight distance 'F'

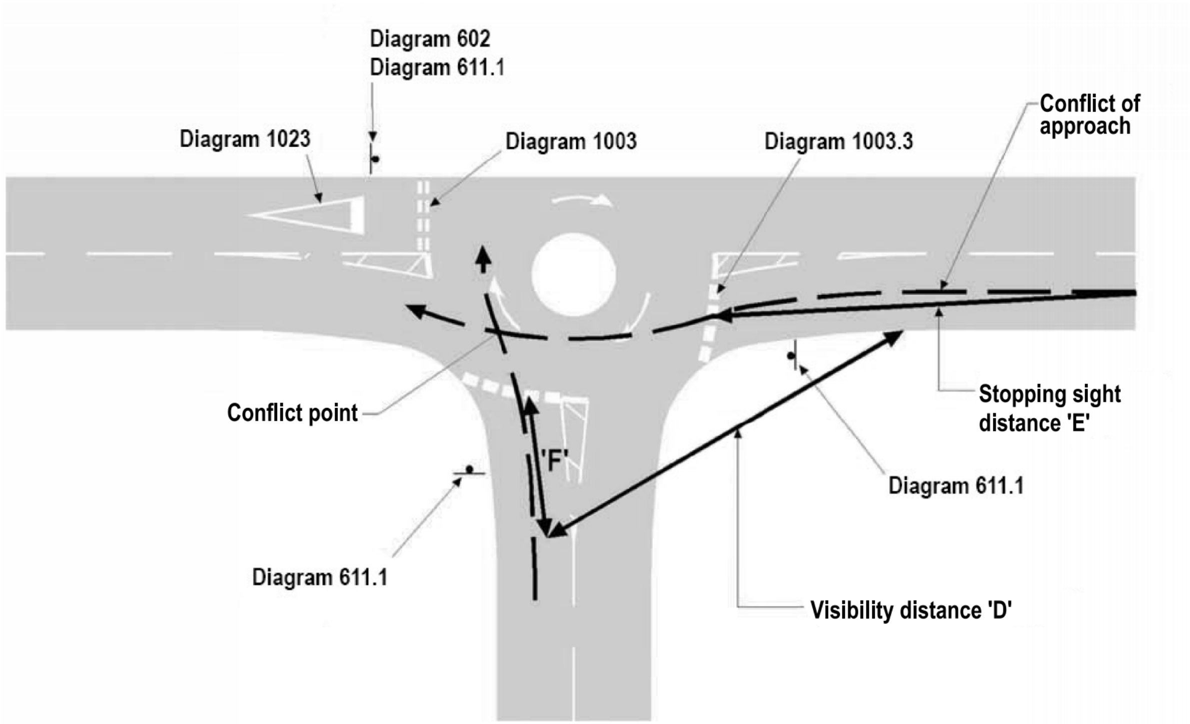


Table 5.20 Minimum visibility distance to the right

85th percentile speed of arm to the right (mph)	'D' distance (m)	
	For a gap acceptance time of two seconds	For a gap acceptance time of three seconds
35	40	55
30	35	50
25	25	40

NOTE 1 'D' is measured from the centre of the offside approach lane to the nearside carriageway edge of the arm to the right.

NOTE 2 Distance 'D' varies with the 85th percentile 'dry weather' approach speed 70 metres before the give way line on the arm to the right and the 'gap acceptance time'.

NOTE 3 The 'gap acceptance time' is dependent on the size of the roundabout, it is two seconds when the distance from the give way line to the centre of the white circle is 7.0 metres or less, otherwise it is three seconds.

5.21 The visibility distance 'D' shall be unobstructed between driver's eye heights of 1.05 metres and 2.0 metres at the centre of the offside approach lane to object heights between 0.26 metres and 2.0 metres at the nearside edge of the arm to the right.

5.22 The SSD on the approach to a mini-roundabout (illustrated as 'E' in Figure 5.20) shall be provided in accordance with Table 5.22.

Table 5.22 Minimum SSD on approach to a mini-roundabout

85th percentile speed (mph)	Minimum 'E' distance (m)
35	80
30	70
25	50

5.23 The SSD on the approach to a mini-roundabout shall be provided within the whole of an envelope between eye heights of 1.05 metres and 2.0 metres at the centre of the path of an approaching vehicle to object heights of 0.26 metres to 2.0 metres at the give way line.

5.24 The minimum 'F' distance in Figure 5.20 shall be 9.0 metres, except in the following circumstances:

1) where the 9.0 metres cannot be achieved, the 'F' distance on an arm can be reduced to 4.5 metres, providing that the maximum peak hour entry flow on the arm is less than 300 veh/hr; or
2) where neither the 9.0 metres or the relaxed minimum 'F' distance of 4.5 metres can be achieved, the 'F' distance for an arm can be reduced to 2.4 metres, providing that the maximum peak hour entry flow on the arm is less than 300 veh/hr and where there is no entry arm to the left.

NOTE 1 A minimum 'F' distance of 9.0 metres is provided so that the first two vehicles in the approach queue have visibility of traffic coming from the arm on the right.

NOTE 2 'F' distances significantly greater than 9.0 metres can result in high approach speeds. Consider limiting the visibility to the right of adjacent entries to a maximum 'F' distance of 15 metres back on the approach and to no more than the 'D' distance.

NOTE 3 Excessive visibility between adjacent entries can result in approach and entry speeds greater than desirable for the junction geometry, with a tendency for approaching drivers to take a decision too early about whether to give way, particularly in locations with low turning movements. Road users approaching a mini-roundabout need to be able to stop if vehicles are circulating or if there is an obstruction on the junction. There is little or no advantage in increasing the 'D' distance as this could lead to excessive approach speeds.

NOTE 4 An 'F' dimension of 2.4 metres enables a road user who has reached the give way line to see approaching vehicles without encroaching past the give way line.

NOTE 5 An 'F' dimension of 2.4 metres can, however, allow only one vehicle at a time to enter safely and requires following drivers to be prepared to stop and look.

5.25 Where 'F' dimension of 2.4 metres is used, the mandatory give way markings and upright sign to TSRGD [Ref 8.N] diagram 1003 (Schedule 9 Part 6 Items 3 and 9), diagram 1023A (Schedule 9, Part 6 Item 4) and diagram 602 (Schedule 9 Part 2 Item 2) must be used to require road users to give way to circulating traffic at the give way line.

Additional signs and markings requirements and advice for mini-roundabouts

5.26 Where the give way sign TSRGD [Ref 8.N] diagram 602 (Schedule 9 Part 2 Item 2) is used, it must be accompanied by the approach to a road junction triangle symbol TSRGD [Ref 8.N] diagram 1023A (Schedule 9 Part 6, Item 4) and by the give way marking to TSRGD [Ref 8.N] diagram 1003 (Schedule 9 Part 6 Items 3 and 9).

5.27 Where the swept path of the largest design vehicle using the junction crosses the inscribed circle, the give way markings for the affected arms shall be moved back such that they are not crossed by the outside edge of the swept path.

NOTE The largest design vehicle circulating past the entry is used for swept path analysis.

5.27.1 Where mandatory give way markings (to TSRGD [Ref 8.N] diagram 1003 (Schedule 9 Part 6 Items 3 and 9)) are used at a mini-roundabout, they should be placed in a straight line at right angles to the vehicle path with no part of the marking inside the outer edge of the swept path.

NOTE *Typically, the give way line to TSRGD [Ref 8.N] diagram 1003.3 (Schedule 9 Part 6 Items 3 and 9) is placed on the circumference of the largest circle that can be inscribed within the junction kerbs.*

5.27.2 Where the regulatory sign to TSRGD [Ref 8.N] diagram 611.1 (Schedule 9 Part 2 Item 6) is not visible from 50 metres before the give way line or is not conspicuous, an additional sign to TSRGD [Ref 8.N] diagram 611.1 (Schedule 9 Part 2 Items 6) should be provided on a kerbed traffic island, together with the mandatory give way sign in accordance with TSRGD [Ref 8.N].

5.27.3 A roundabout warning sign to TSRGD [Ref 8.N] diagram 510 (Schedule 2 Part 2 Item 7) should be provided if the visibility distance to the mini-roundabout regulatory sign (diagram 611.1 (Schedule 9 Part 2 Item 6)) is less than 50 metres and an advance direction sign does not precede the junction.

NOTE *Guidance on the design of the ADS is given in TSM Chapter 7 [Ref 14.N].*

5.28 The prescribed mini-roundabout markings must be provided as per TSRGD [Ref 8.N] diagram 1003.4 (Schedule 9 Part 6 Item 5).

5.28.1 The domed white circle should be formed and maintained in white reflectorised materials that provide a clear and durable contrast with the adjacent surface in all conditions.

5.29 Where the white circle is to be edged, only kerbing or edging block of uniform shape shall be used.

5.29.1 Kerbing or edging block of uniform shape with an even surface may be used to contain the white circle provided that it is reflectorised, the maximum height above the road surface at the perimeter does not exceed 6mm and the appearance of the marking is in accordance with TSRGD [Ref 8.N] diagram 1003.4 (Schedule 9 Part 6 Item 5).

NOTE *Types of white circle edging, other than kerbing and edge blocks, can be a hazard, particularly to cyclists.*

5.30 Warning lines must be provided on the approaches to kerbed physical islands in accordance with TSRGD [Ref 8.N] diagram 1004 (Schedule 11 Part 4 Item 2) and TSM Chapter 5 [Ref 13.N].

5.30.1 Conspicuity of a mini-roundabout should not rely solely on road markings, which can become worn or less conspicuous in the wet or in adverse lighting conditions.

NOTE *Where a build-out is provided, its conspicuity and that of the junction as a whole can be enhanced if vertical features such as bollards, directional or regulatory signs can safely be located on the build-out while not obstructing the highway / road.*

5.30.2 The use of grey backing boards may be appropriate for enhancing conspicuity of the mini-roundabout regulatory sign or where a give way sign to TSRGD [Ref 8.N] diagram 602 (Schedule 9 Part 2 Item 2) is to be co-located with it.

5.30.3 The use of yellow backing boards for a mini-roundabout scheme should be reserved for identified problems of road users not seeing the sign in sufficient time, or not seeing it at all.

NOTE *Further guidance on the use of backing boards is provided in TSM Chapter 7.*

5.30.4 Rather than applying backing boards, a larger size of sign may be used to improve conspicuity of the sign.

5.30.5 When using coloured surfacing as a remedial measure to improve conspicuity of a mini-roundabout, the level of contrast between the road markings and adjacent coloured surfacing should be assessed.

5.30.6 Coloured surfacing should not be laid in any shape or pattern intended to convey a meaning as a road marking on a mini-roundabout.

Appendix M - GG 101 Introduction to the Design Manual for Roads and Bridges

EXTRACT ONLY

General Principles & Scheme Governance
General Information

GG 101
Introduction to the Design Manual for Roads and Bridges

(formerly GG 101 revision 0)

Version 0.1.0

Summary
This document provides information on the use of the Design Manual for Roads and Bridges.

Application by Overseeing Organisations
Any specific requirements for Overseeing Organisations alternative or supplementary to those given in this document are given in National Application Annexes to this document.

Feedback and Enquiries
Users of this document are encouraged to raise any enquiries and/or provide feedback on the content and usage of this document to the dedicated National Highways team. The email address for all enquiries and feedback is: Standards_Enquiries@highwaysengland.co.uk

This is a controlled document.

Introduction

Background

The Design Manual for Roads and Bridges (DMRB) is a suite of documents which contains requirements and advice relating to works on motorway and all-purpose trunk roads for which one of the Overseeing Organisations is highway or road authority.

The DMRB embodies the collective experience of the Overseeing Organisations, their agents, supply chain members and industry bodies. It provides requirements and advice resulting from research, practical experience of constructing and operating motorway and all-purpose trunk roads, and from delivering compliance to legislative requirements.

Assumptions made in the preparation of the DMRB

Competence

The DMRB has been prepared for use by competent practitioners, typically qualified professionals able to work independently in relevant fields, who are expected to apply their own skill and judgement when making decisions involving the information that the DMRB contains.

Link with regulation and legislation

DMRB documents are not statutory or regulatory documents or training manuals; neither do they cover every point in exhaustive detail.

In general, the DMRB does not duplicate National, UK and European legislative requirements. Anyone engaged in works on or relating to the Overseeing Organisations' motorway and all-purpose trunk roads is assumed to understand and comply with the relevant legislation.

Link with the MCHW

The requirements and advice given in DMRB documents are provided on the basis that the works are constructed in accordance with the Manual of Contract Documents for Highway Works (MCHW).

Verbal forms

The verb 'must' indicates a statutory or legislative requirement.

Note: Requirements with this verb form cannot be varied.

The verb 'shall' indicates a requirement of the Overseeing Organisation.

Note: Requirements with this verb form can be only be varied though the use of departures or in limited situations as relaxations.

The verb 'should' indicates advice expressed as a recommendation.

Note: Recommendations with this verb form are good practice and can be varied without recourse to the departures process, but require justification and a safety risk assessment where the recommendation is not followed.

The verb 'may' indicates advice expressed as a permissible approach.

Note: Permissible approaches with this verb form can be varied in accordance with internal review processes without recourse to the Overseeing Organisation.

The verb 'can' or verbs expressed in the present tense other than 'must', 'shall', 'should' and 'may' are used to introduce notes, which provide a short clarification of a concept or statement of fact.

Appendix A provides information about the document referencing used within DMRB documents.
Appendix B provides information about the clause numbering system used within DMRB documents.

Appendix N - Construction Route Assessment

LOGISTICS
REPORT

SITE NAME: A4NP – Garth & Wymott Prison, Moss Lane, Preston, PR26 8LW

EXPLORE PROJECT CODE/JOB: EXP095-2

DATE: 26/09/2022

Swept Path Analysis

Site Visit Report

General Overview

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SIGN OFF 11

GENERAL OVERVIEW

CLIENT REQUEST

Hi Stuart,

Please can you raise an order for the attached quote for the dummy run to Garth & Wymott against N4006.

Kind Regards

Sophie Robinson
Commercial
Laing O'Rourke Delivery Ltd
City Gate 2, Cross Street,
Sale, Cheshire
M33 7JR

From: Siddorn, Sam <SSiddorn@laingorourke.com>
Sent: 11 May 2022 09:07
To: Rick Bell <RBell@explorepts.com>
Cc: Shane Tiene <stiene@laingorourke.com>
Subject: RE: Garth & Wymott logistics report - A4NP - EXP095-1 / ROUTE # 12881

CAUTION - This email was sent from outside Explore

Thanks Rick, looks good. We have received the attached assessment from the client which at first look suggests that there are a number of improvement works required on local roads to prevent clashes with kerbs/central res. Could you have a quick review and let us know if you think these are actual risks or just the tracking software being too thorough?

Thanks,

Sam

EXPLORE TRANSPORT WILL PROVIDE:

- Review of third party logistics route assessment
- Carry out actual route survey(s) with HGV+45ft standard flat trailer & escort vehicle to record movement
- Carry out additional route surveys following new proposed Explore preferred routes
- Report findings to client

SITE VISIT REPORT

Site Address: A4NP Garth & Wymott Prison
Moss Lane
Preston
PR26 8LW

Date of Site Visit: Monday 26th September 2022

Proposed Date of Move: n/a

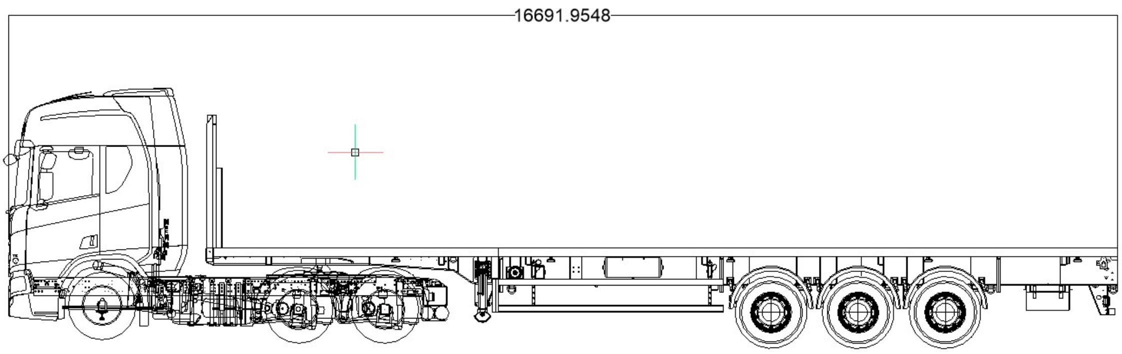
ATTENDEES

Representation	Position	Name
Explore Transport	Routing Manager	R Bell
Explore Transport	HGV Driver	M Grant
Customer		
Customer		
Site		
Site		

PRODUCT SPECIFICATION

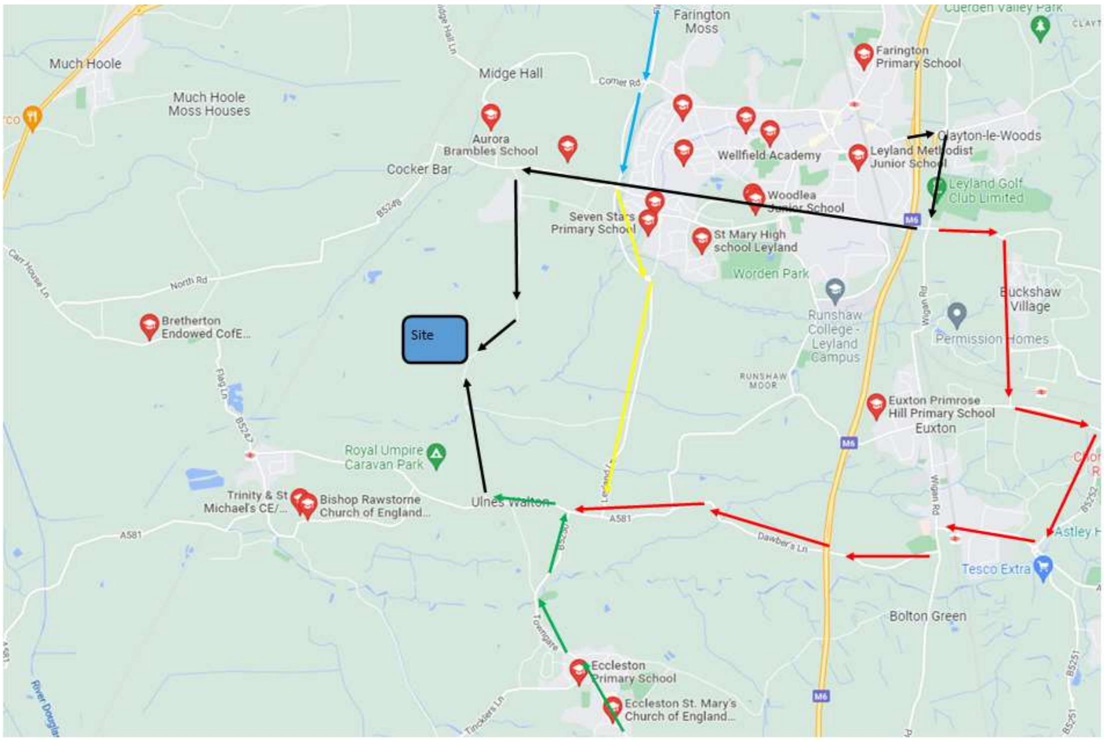
No specific product specification advised. Assessment carried out on standard HGV + flatbed trailer and in gauge loads.

TRANSPORT SPECIFICATION

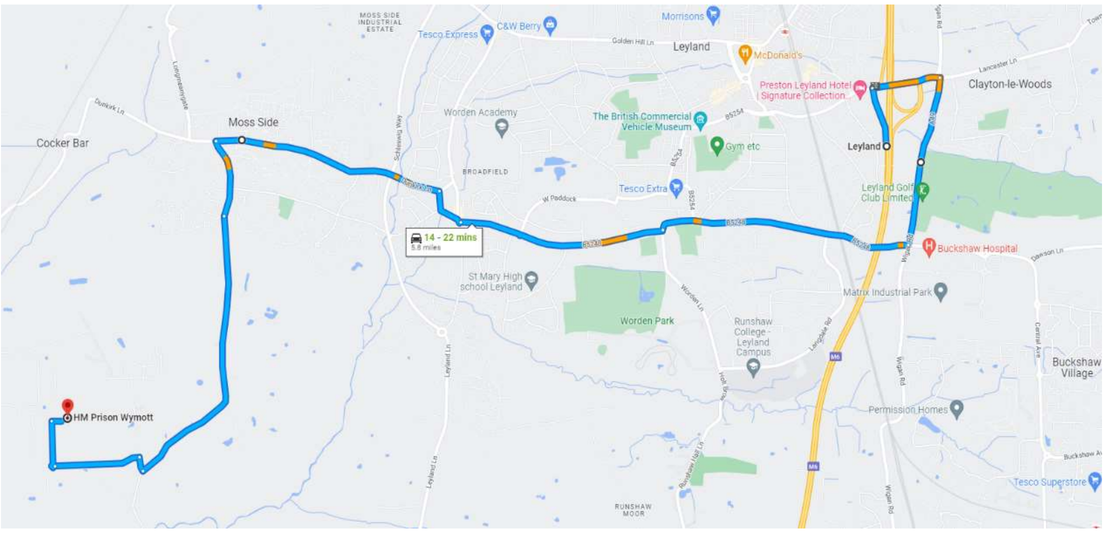


Route assessment carried out using the above vehicle/ trailer for standard in gauge loads

PROPOSED ROUTES



Atkins Route.1



M6 JNC.28, TR B5256, TR A49, TR B5248, TL SCHOOL LANE, CONT ULNES WALTON LN TO SITE

Assessment: HGV was able to carry out the above route keeping to the road and without impacting or over running any kerb line.

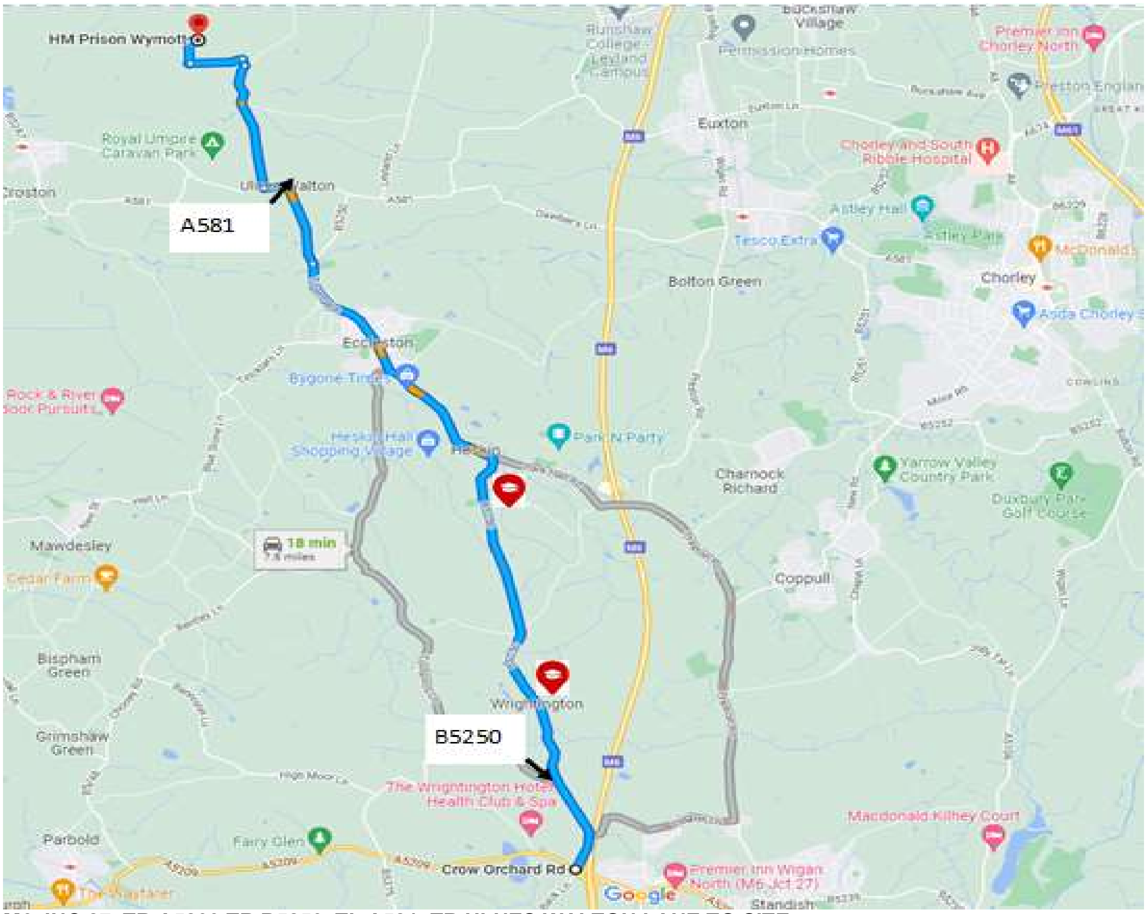
Explore would not advise this route be used due to large parts navigating heavy residential areas. Parts of the route require the HGV to travel across the oncoming lane.

School Lane is accessible but is a heavier residential area before turning into Water Ulnes Ln with residential patches.

The distance from the top of School Lane to Moss Lane is 1.5m with heavier residential areas along the road.

The distance from the A581 Southport Rd to Moss Lane is 0.9m with lesser residential area, two laybys (on coming lane) and a cleaner left turn onto Moss Ln.

Atkins Route.2

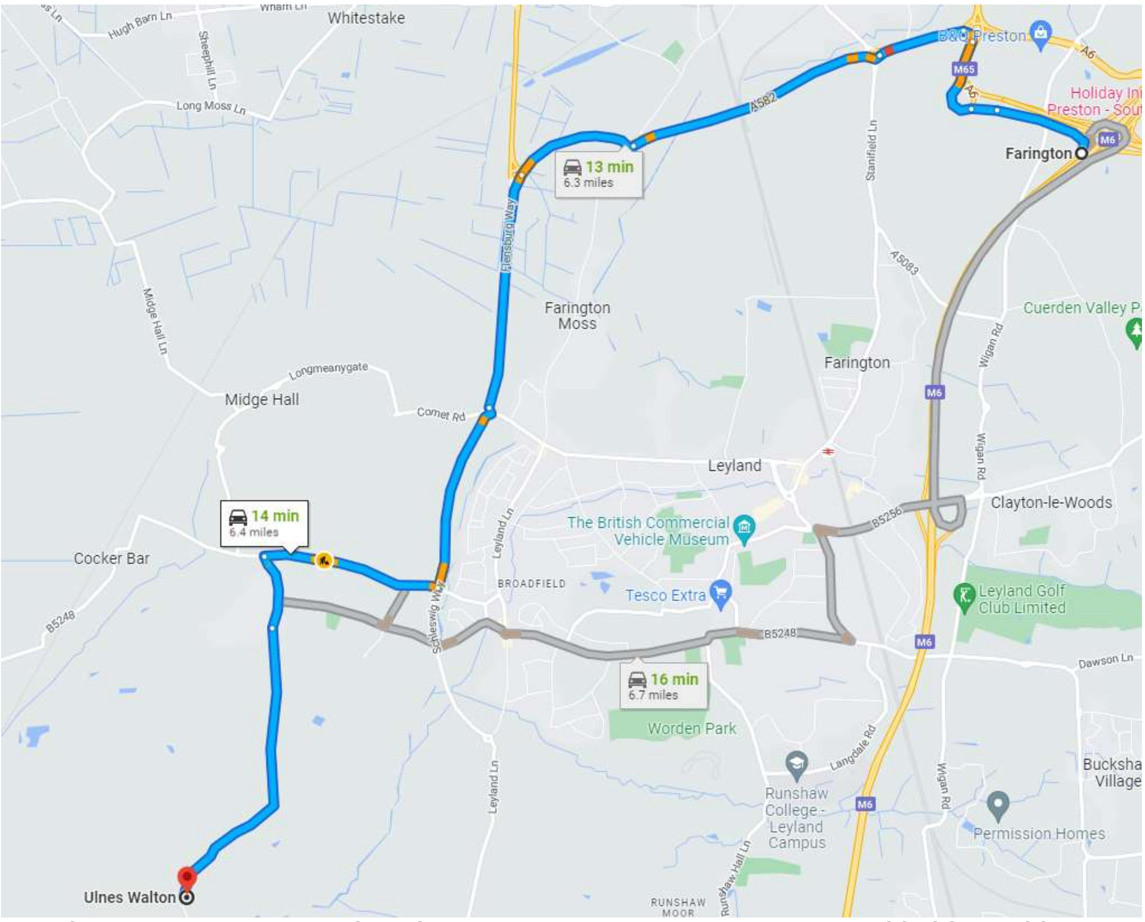


M6 JNC.27, TR A5209,TR B5250, TL A581, TR ULNES WALTON LANE TO SITE

Assessment: HGV was able to carry out the above route keeping to the road and without impacting or over running any kerb line.
There were no areas of great concern using this route and would advise it is a suitable alternate route for HGVs if any motorway closures/ incidents occur enroute to junction.28
Route passes through numerous residential areas with schools but the road is suitable for heavier traffic.
There is a small hump back bridge north of Eccleston that could affect heavier loads/ lower trailers but would advise abnormal loads not use this route as first option.

The distance from the A581 Southport Rd to Moss Lane is 0.9m with lesser residential area, two laybys (on coming lane) and a cleaner left turn onto Moss Ln.

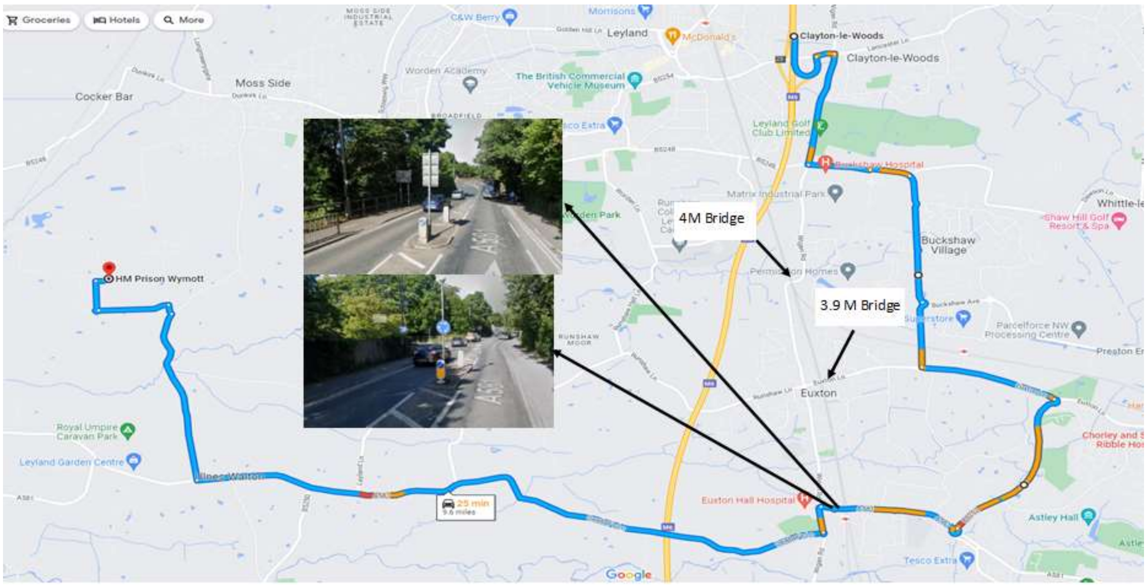
Atkins Route.3



M6 JNC.29, TL M65, TL A582 FLENSBURG WAY, TL B5253, TR B5248 DUNKIRK LN, TL SCHOOL LN, CONT ULNES WALTON LN TO SITE

Assessment: HGV was able to carry out the above route keeping to the road and without impacting or over running any kerb line.
The route is acceptable for HGVs although continues on route #1 which is heavily residential before turning onto School Lane with same issues.
School Lane is accessible but a heavier residential area before turning into Water Ulnes Ln with residential patches.

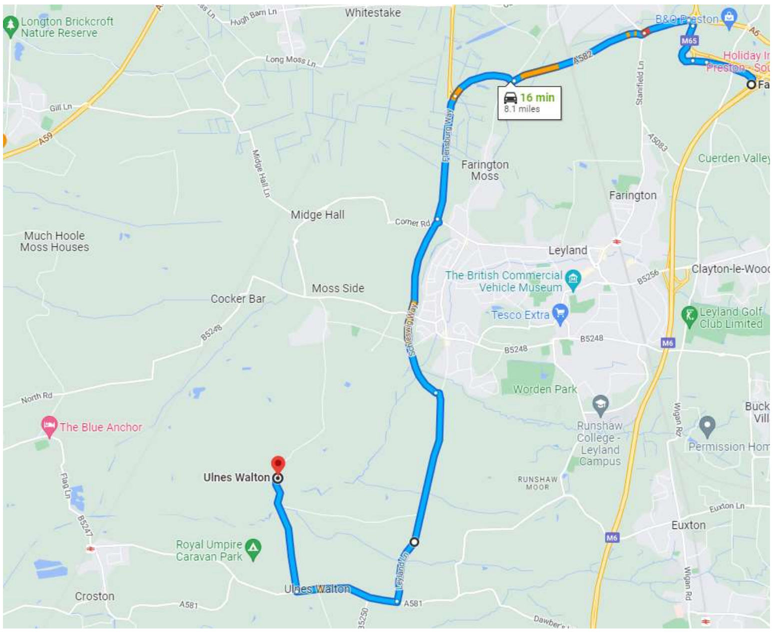
Explore Route.4



M6 JNC.28, TR B5256 , TR A49 WIGAN RD, TL B5248 DAWSON LN, BR CENTRAL AVE, TL EUXTON LN, TR B5252 WEST WAY, TR A581 SOUTHPORT RD, TL WIGAN RD, TR A581 DAWBERS LN, TR ULNES WALTON LN TO SITE

Assessment: HGV was able to carry out the above route keeping to the road and without impacting or over running any kerb line.
The route keeps to main A roads which offer plenty of room to navigate.
This route approaches site from the south using the A581 before turning right onto Ulnes Walton Lane.
This route would be preferred over routes 1&3

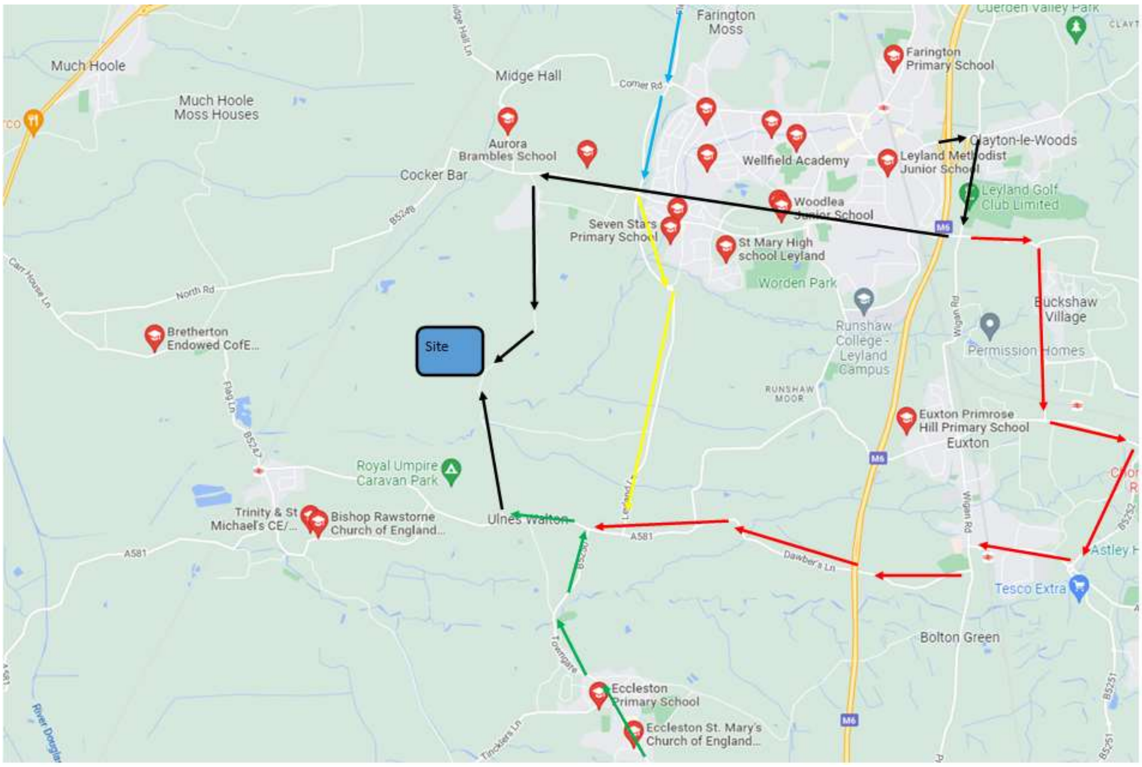
Explore Route.5



M6 JNC.29, TL M65, TL A582 FLENSBURG WAY, TL B5253, TR A581, TR WALTON ULNES LN, TL MOSS LANE TO SITE

Assessment: HGV was able to carry out the above route keeping to the road and without impacting or over running any kerb line.
The route keeps to main roads with minimal residential areas before rejoining the A581 to approach Walton Ulnes Ln from the south.
This would be a preferred route for abnormal loads subject to accepted movement orders.

LOCAL INFRASTRUCTURE INC LOCAL SCHOOL / TIME RESTRICTIONS



Indication of schools in the area which lay on or near the proposed routes.

AFFECTED RESIDENTIAL / COMMERCIAL AREAS

n/a

CONSOLIDATION CENTRES

n/a

MOVEMENT ORDER

n/a for standard in gauge HGV transport

SWEPT PATH ANALYSIS

No additional swept path analysis carried out for in gauge HGV loads

PROPOSED LOAD/UNLOAD METHOD

n/a

ESCORT RECOMMENDATION

n/a

TRAFFIC MANAGEMENT

n/a

PROPOSED LOGISTICS SUMMARY

Following physical route survey(s) carried out by Explore Transport we would advise the following preferred routes in connection with the individual comments.

Route(s) 4 or 5 would be the most sensible roads for standard in gauge HGV loads as they keep primarily to acceptable A & B larger roads with lesser impact on residential areas.

Route 2 although acceptable, runs through smaller villages.

Route 5 would be most suited to 32x10 module cabin loads avoiding pinch points shown on Route 4 (although not restricted to). Subject to renewed movement order(s), would also be the preferred route for large plant movements including piling rigs & cranes.

Route 4 & 5 also have easy access to the M61 should the M6 have any incidents.

Approaching site from the A581 is deemed the more suitable route due to lesser residential areas and a shorter distance to the main road.

HGVs should pass with care during two way traffic on Walton Ulnes Lane although is suitable. An alternate consideration would be to make exiting HGVs travel north along Walton Ulnes Ln to the B5248.

Larger plant vehicles moving rigs/ cranes should consider TM (provided by site) as the size of the loads may take up majority of the road during travel. There are a couple of passing laybys but would need to be managed accordingly.

ACTIONS TO BE COMPETED

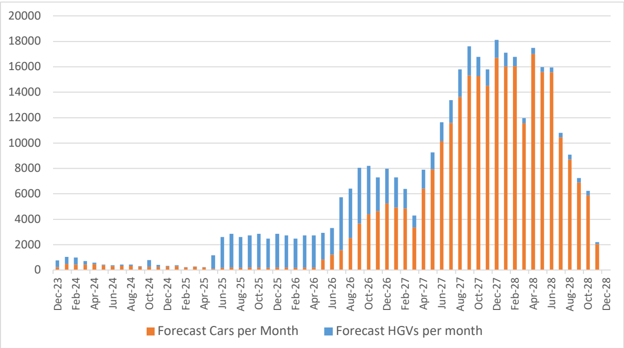
n/a

SIGN OFF

R Bell

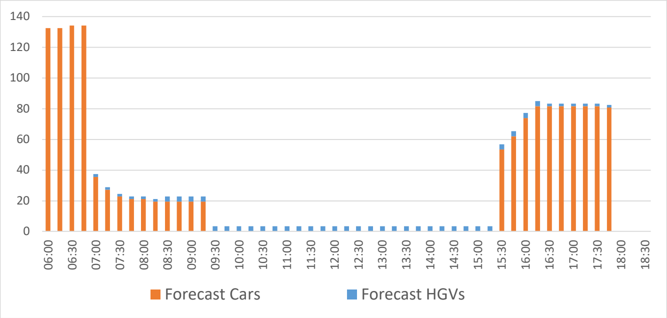
Appendix O - Forecast Construction Vehicles (Monthly)

	Forecast HGVs per month	Forecast Cars per Month	Forecast Total Construction Vehicles per Month
Dec-23	540	228	768
Jan-24	551	479	1,030
Feb-24	557	441	998
Mar-24	282	441	723
Apr-24	133	458	591
May-24	52	391	443
Jun-24	74	312	386
Jul-24	80	345	425
Aug-24	97	330	427
Sep-24	59	255	314
Oct-24	538	253	791
Nov-24	142	259	401
Dec-24	44	286	330
Jan-25	83	299	382
Feb-25	13	204	217
Mar-25	27	269	296
Apr-25	18	198	216
May-25	1,037	118	1,155
Jun-25	2,415	189	2,604
Jul-25	2,645	207	2,852
Aug-25	2,415	189	2,604
Sep-25	2,530	198	2,728
Oct-25	2,645	207	2,852
Nov-25	2,300	180	2,480
Dec-25	2,645	207	2,852
Jan-26	2,530	198	2,728
Feb-26	2,300	180	2,480
Mar-26	2,530	198	2,728
Apr-26	2,530	198	2,728
May-26	2,093	833	2,926
Jun-26	2,108	1,215	3,323
Jul-26	4,162	1,561	5,723
Aug-26	3,892	2,522	6,414
Sep-26	4,376	3,667	8,043
Oct-26	3,825	4,391	8,216
Nov-26	2,652	4,647	7,300
Dec-26	2,728	5,262	7,990
Jan-27	2,366	4,929	7,295
Feb-27	1,524	4,862	6,386
Mar-27	932	3,364	4,296
Apr-27	1,508	6,403	7,912
May-27	1,335	7,918	9,253
Jun-27	1,489	10,155	11,645
Jul-27	1,789	11,593	13,382
Aug-27	2,169	13,639	15,809
Sep-27	2,287	15,318	17,605
Oct-27	1,506	15,281	16,787
Nov-27	1,302	14,508	15,811
Dec-27	1,414	16,717	18,132
Jan-28	1,087	16,013	17,100
Feb-28	740	16,039	16,779
Mar-28	397	11,573	11,970
Apr-28	489	17,006	17,495
May-28	385	15,591	15,976
Jun-28	371	15,582	15,953
Jul-28	353	10,458	10,811
Aug-28	386	8,705	9,092
Sep-28	353	6,887	7,240
Oct-28	370	5,877	6,247
Nov-28	151	2,048	2,199
Dec-28	0	0	0



Appendix P - Forecast Construction Profile (Daily)

Time	Forecast HGVs	Forecast Cars
06:00	0	133
06:15	0	133
06:30	0	134
06:45	0	134
07:00	2	36
07:15	2	27
07:30	2	23
07:45	2	21
08:00	2	21
08:15	2	20
08:30	3	20
08:45	3	20
09:00	3	20
09:15	3	20
09:30	3	0
09:45	3	0
10:00	3	0
10:15	3	0
10:30	3	0
10:45	3	0
11:00	3	0
11:15	3	0
11:30	3	0
11:45	3	0
12:00	3	0
12:15	3	0
12:30	3	0
12:45	3	0
13:00	3	0
13:15	3	0
13:30	3	0
13:45	3	0
14:00	3	0
14:15	3	0
14:30	3	0
14:45	3	0
15:00	3	0
15:15	3	0
15:30	3	54
15:45	3	62
16:00	3	74
16:15	3	82
16:30	2	82
16:45	2	82
17:00	2	82
17:15	2	82
17:30	2	82
17:45	2	81
18:00	0	0
18:15	0	0
18:30	0	0



Appendix Q - Junctions 10 Outputs – Moss Lane/Ulnes Walton Lane (Construction)

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.1.1519

For sales and distribution information, program advice and maintenance, contact TRL Software:
+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

Filename: Moss Ln Ulnes Ln PICADY v1.3.j10
Path: P:\GBBMA\HandT\CS\Projects\5200124-MACE_Prisons_ROGE6351\06_Reports\15_Garth Wymott SoS\12_Models\scn7_Constr_peak
Report generation date: 14/02/2023 17:35:21

»2021 Baseline, AM
»2021 Baseline, PM
»2025 Opening Year without Development, AM
»2025 Opening Year without Development, PM
»2025 Opening Year with Development, AM
»2025 Opening Year with Development, PM
»2026 with Development (Sensitivity Test), AM
»2026 with Development (Sensitivity Test), PM
»2027 Base, AM Construction
»2027 Base, AM
»2027 Base, PM
»2027 Base + Construction, AM Construction
»2027 Base + Construction, AM
»2027 Base + Construction, PM

Generated on 14/02/2023 17:36:44 using Junctions 10 (10.0.1.1519)

Summary of junction performance

	AM					PM					AM Construction				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2021 Baseline														
Stream B-C	D1	0.1	5.99	0.06	A	D2	0.2	7.12	0.17	A					
Stream B-A		0.1	10.65	0.07	B		0.3	9.71	0.22	A					
Stream C-AB		1.4	15.02	0.57	C		0.1	6.06	0.05	A					
	2025 Opening Year without Development														
Stream B-C	D3	0.1	6.00	0.06	A	D4	0.2	7.13	0.17	A					
Stream B-A		0.1	10.69	0.07	B		0.3	9.76	0.22	A					
Stream C-AB		1.4	15.06	0.57	C		0.1	6.04	0.05	A					
	2025 Opening Year with Development														
Stream B-C	D5	0.1	6.34	0.07	A	D6	0.9	14.92	0.48	B					
Stream B-A		0.1	12.68	0.12	B		1.4	19.25	0.58	C					
Stream C-AB		4.4	36.02	0.82	E		0.1	6.04	0.05	A					
	2026 with Development (Sensitivity Test)														
Stream B-C	D7	0.1	6.35	0.07	A	D8	0.9	14.95	0.48	B					
Stream B-A		0.1	12.69	0.12	B		1.4	19.30	0.58	C					
Stream C-AB		4.4	36.11	0.82	E		0.1	6.04	0.05	A					
	2027 Base														
Stream B-C	D10	0.1	6.01	0.06	A	D11	0.2	7.14	0.17	A	D9	0.0	5.36	0.04	A
Stream B-A		0.1	10.71	0.07	B		0.3	9.79	0.22	A		0.0	8.14	0.04	A
Stream C-AB		1.5	15.08	0.57	C		0.1	6.04	0.05	A		0.1	6.68	0.09	A
	2027 Base + Construction														
Stream B-C	D13	0.1	6.27	0.06	A	D14	2.0	29.24	0.68	D	D12	0.0	5.68	0.05	A
Stream B-A		0.1	13.04	0.09	B		2.9	35.98	0.76	E		0.1	10.88	0.06	B
Stream C-AB		2.5	22.18	0.70	C		0.1	6.05	0.05	A		1.7	18.52	0.63	C

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

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

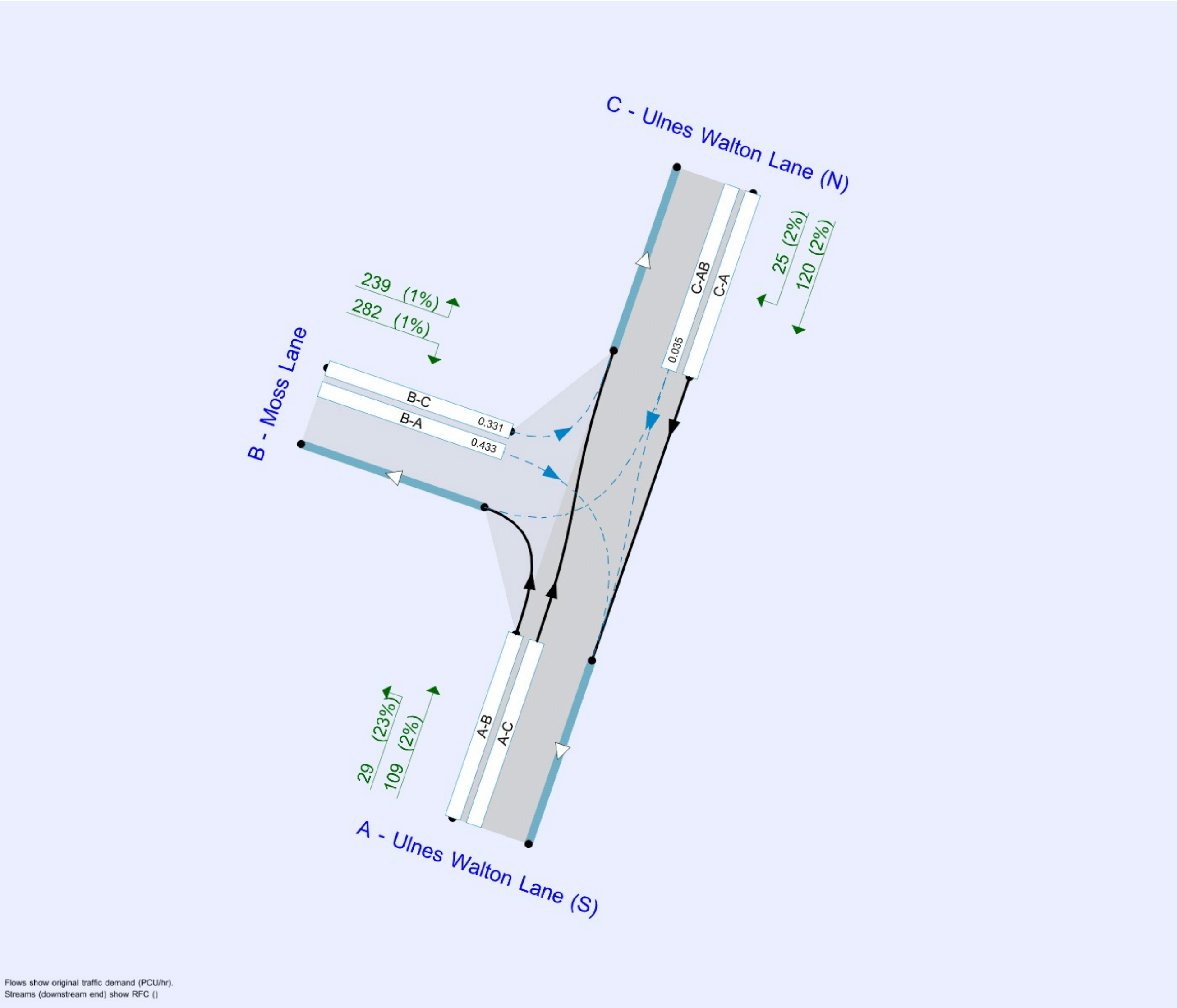
File summary

File Description

Title	Garth Wymott 2
Location	Ulnes Walton Lane / Moss Lane Junction
Site number	
Date	19/05/2021
Version	
Status	(new file)
Identifier	CR
Client	MACE / MoJ
Jobnumber	5200124
Enumerator	WSATKINS\CART5172
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2021 Baseline	AM	ONE HOUR	06:45	08:15	15	✓
D2	2021 Baseline	PM	ONE HOUR	16:45	18:15	15	✓
D3	2025 Opening Year without Development	AM	ONE HOUR	06:45	08:15	15	✓
D4	2025 Opening Year without Development	PM	ONE HOUR	16:45	18:15	15	✓
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15	✓
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15	✓
D7	2026 with Development (Sensitivity Test)	AM	ONE HOUR	06:45	08:15	15	✓
D8	2026 with Development (Sensitivity Test)	PM	ONE HOUR	16:45	18:15	15	✓
D9	2027 Base	AM Construction	ONE HOUR	05:45	07:15	15	✓
D10	2027 Base	AM	ONE HOUR	06:45	08:15	15	✓
D11	2027 Base	PM	ONE HOUR	16:45	18:15	15	✓
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15	✓
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15	✓
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

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

2021 Baseline, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		6.73	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.73	A

Arms

Arms

Arm	Name	Description	Arm type
A	Ulnes Walton Lane (S)		Major
B	Moss Lane		Minor
C	Ulnes Walton Lane (N)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Ulnes Walton Lane (N)	6.70			28.8	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Moss Lane	One lane plus flare	9.40	5.40	4.10	3.30	3.10	✓	1.00	25	40

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	521	0.092	0.233	0.146	0.332
B-C	720	0.107	0.270	-	-
C-B	591	0.222	0.222	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

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

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2021 Baseline	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	327	100.000
B - Moss Lane		ONE HOUR	✓	56	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	321	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	246	81
	B - Moss Lane	23	0	33
	C - Ulnes Walton Lane (N)	68	253	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	0	1
	B - Moss Lane	2	0	3
	C - Ulnes Walton Lane (N)	10	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.06	5.99	0.1	A	30	45
B-A	0.07	10.65	0.1	B	21	32
C-AB	0.57	15.02	1.4	C	262	393
C-A					32	49
A-B					226	339
A-C					74	111

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	677	0.037	25	0.0	0.0	5.686	A
B-A	17	4	419	0.041	17	0.0	0.0	9.134	A
C-AB	209	52	572	0.366	207	0.0	0.6	9.883	A
C-A	32	8			32				
A-B	185	46			185				
A-C	61	15			61				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	30	7	668	0.044	30	0.0	0.0	5.812	A
B-A	21	5	398	0.052	21	0.0	0.1	9.717	A
C-AB	255	64	569	0.448	254	0.6	0.9	11.512	B
C-A	33	8			33				
A-B	221	55			221				
A-C	73	18			73				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	36	9	655	0.055	36	0.0	0.1	5.992	A
B-A	25	6	371	0.068	25	0.1	0.1	10.625	B
C-AB	322	80	565	0.570	319	0.9	1.4	14.746	B
C-A	32	8			32				
A-B	271	68			271				
A-C	89	22			89				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	36	9	655	0.055	36	0.1	0.1	5.993	A
B-A	25	6	370	0.068	25	0.1	0.1	10.648	B
C-AB	322	80	565	0.570	322	1.4	1.4	15.024	C
C-A	32	8			32				
A-B	271	68			271				
A-C	89	22			89				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	30	7	667	0.044	30	0.1	0.0	5.817	A
B-A	21	5	398	0.052	21	0.1	0.1	9.748	A
C-AB	255	64	569	0.449	258	1.4	0.9	11.786	B
C-A	33	8			33				
A-B	221	55			221				
A-C	73	18			73				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	676	0.037	25	0.0	0.0	5.692	A
B-A	17	4	418	0.041	17	0.1	0.0	9.168	A
C-AB	210	52	572	0.366	211	0.9	0.6	10.091	B
C-A	32	8			32				
A-B	185	46			185				
A-C	61	15			61				

2021 Baseline, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		3.92	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.92	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2021 Baseline	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	126	100.000
B - Moss Lane		ONE HOUR	✓	190	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	138	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	23	103
	B - Moss Lane	94	0	96
	C - Ulnes Walton Lane (N)	113	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	10	2
	B - Moss Lane	1	0	2
	C - Ulnes Walton Lane (N)	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.17	7.12	0.2	A	88	132
B-A	0.22	9.71	0.3	A	86	129
C-AB	0.05	6.06	0.1	A	28	41
C-A					99	149
A-B					21	32
A-C					95	142

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	72	18	649	0.111	72	0.0	0.1	6.354	A
B-A	71	18	498	0.142	70	0.0	0.2	8.481	A
C-AB	22	5	628	0.035	22	0.0	0.0	6.056	A
C-A	82	21			82				
A-B	17	4			17				
A-C	78	19			78				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	86	22	638	0.135	86	0.1	0.2	6.652	A
B-A	85	21	490	0.172	84	0.2	0.2	8.961	A
C-AB	27	7	635	0.042	27	0.0	0.1	6.037	A
C-A	97	24			97				
A-B	21	5			21				
A-C	93	23			93				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	106	26	622	0.170	106	0.2	0.2	7.112	A
B-A	103	26	478	0.217	103	0.2	0.3	9.701	A
C-AB	34	9	646	0.053	34	0.1	0.1	6.004	A
C-A	118	29			118				
A-B	25	6			25				
A-C	113	28			113				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	106	26	622	0.170	106	0.2	0.2	7.117	A
B-A	103	26	478	0.217	103	0.3	0.3	9.714	A
C-AB	34	9	646	0.053	34	0.1	0.1	6.006	A
C-A	118	29			118				
A-B	25	6			25				
A-C	113	28			113				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	86	22	638	0.135	86	0.2	0.2	6.667	A
B-A	85	21	490	0.172	85	0.3	0.2	8.978	A
C-AB	27	7	635	0.042	27	0.1	0.1	6.037	A
C-A	97	24			97				
A-B	21	5			21				
A-C	93	23			93				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	72	18	648	0.111	72	0.2	0.1	6.375	A
B-A	71	18	498	0.142	71	0.2	0.2	8.511	A
C-AB	22	5	628	0.035	22	0.1	0.0	6.063	A
C-A	82	21			82				
A-B	17	4			17				
A-C	78	19			78				

2025 Opening Year without Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		6.72	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.72	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2025 Opening Year without Development	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	330	100.000
B - Moss Lane		ONE HOUR	✓	56	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	324	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	246	84
	B - Moss Lane	23	0	33
	C - Ulnes Walton Lane (N)	71	253	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	0	1
	B - Moss Lane	2	0	3
	C - Ulnes Walton Lane (N)	10	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.06	6.00	0.1	A	30	45
B-A	0.07	10.69	0.1	B	21	32
C-AB	0.57	15.06	1.4	C	264	395
C-A					34	51
A-B					226	339
A-C					77	116

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	676	0.037	25	0.0	0.0	5.691	A
B-A	17	4	418	0.041	17	0.0	0.0	9.154	A
C-AB	210	53	573	0.367	208	0.0	0.6	9.880	A
C-A	34	8			34				
A-B	185	46			185				
A-C	63	16			63				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	30	7	667	0.044	30	0.0	0.0	5.818	A
B-A	21	5	397	0.052	21	0.0	0.1	9.744	A
C-AB	256	64	570	0.450	255	0.6	0.9	11.514	B
C-A	35	9			35				
A-B	221	55			221				
A-C	76	19			76				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	36	9	654	0.056	36	0.0	0.1	6.001	A
B-A	25	6	369	0.069	25	0.1	0.1	10.664	B
C-AB	324	81	566	0.572	322	0.9	1.4	14.775	B
C-A	33	8			33				
A-B	271	68			271				
A-C	92	23			92				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	36	9	654	0.056	36	0.1	0.1	6.002	A
B-A	25	6	369	0.069	25	0.1	0.1	10.688	B
C-AB	324	81	567	0.572	324	1.4	1.4	15.058	C
C-A	33	8			33				
A-B	271	68			271				
A-C	92	23			92				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	30	7	667	0.045	30	0.1	0.0	5.821	A
B-A	21	5	397	0.052	21	0.1	0.1	9.775	A
C-AB	257	64	571	0.450	259	1.4	0.9	11.794	B
C-A	35	9			35				
A-B	221	55			221				
A-C	76	19			76				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	676	0.037	25	0.0	0.0	5.697	A
B-A	17	4	417	0.042	17	0.1	0.0	9.186	A
C-AB	210	53	573	0.367	212	0.9	0.6	10.090	B
C-A	34	8			34				
A-B	185	46			185				
A-C	63	16			63				

2025 Opening Year without Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		3.86	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.86	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2025 Opening Year without Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	130	100.000
B - Moss Lane		ONE HOUR	✓	190	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	143	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	23	107
	B - Moss Lane	94	0	96
	C - Ulnes Walton Lane (N)	118	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	10	2
	B - Moss Lane	1	0	2
	C - Ulnes Walton Lane (N)	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.17	7.13	0.2	A	88	132
B-A	0.22	9.76	0.3	A	86	129
C-AB	0.05	6.04	0.1	A	28	42
C-A					103	155
A-B					21	32
A-C					98	147

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	72	18	648	0.111	72	0.0	0.1	6.363	A
B-A	71	18	497	0.142	70	0.0	0.2	8.506	A
C-AB	22	5	630	0.035	22	0.0	0.0	6.038	A
C-A	86	21			86				
A-B	17	4			17				
A-C	81	20			81				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	86	22	637	0.136	86	0.1	0.2	6.665	A
B-A	85	21	488	0.173	84	0.2	0.2	8.995	A
C-AB	27	7	638	0.042	27	0.0	0.1	6.016	A
C-A	102	25			102				
A-B	21	5			21				
A-C	96	24			96				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	106	26	621	0.170	106	0.2	0.2	7.130	A
B-A	103	26	476	0.217	103	0.2	0.3	9.750	A
C-AB	34	9	648	0.053	34	0.1	0.1	5.982	A
C-A	123	31			123				
A-B	25	6			25				
A-C	118	29			118				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	106	26	620	0.170	106	0.2	0.2	7.135	A
B-A	103	26	476	0.217	103	0.3	0.3	9.763	A
C-AB	34	9	649	0.053	34	0.1	0.1	5.983	A
C-A	123	31			123				
A-B	25	6			25				
A-C	118	29			118				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	86	22	637	0.136	86	0.2	0.2	6.676	A
B-A	85	21	488	0.173	85	0.3	0.2	9.014	A
C-AB	27	7	638	0.042	27	0.1	0.1	6.016	A
C-A	102	25			102				
A-B	21	5			21				
A-C	96	24			96				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	72	18	648	0.112	72	0.2	0.1	6.384	A
B-A	71	18	497	0.142	71	0.2	0.2	8.535	A
C-AB	22	5	630	0.035	22	0.1	0.0	6.045	A
C-A	86	21			86				
A-B	17	4			17				
A-C	81	20			81				

2025 Opening Year with Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		15.86	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	15.86	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	443	100.000
B - Moss Lane		ONE HOUR	✓	77	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	413	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	359	84
	B - Moss Lane	35	0	42
	C - Ulnes Walton Lane (N)	71	342	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	0	1
	B - Moss Lane	1	0	2
	C - Ulnes Walton Lane (N)	10	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.07	6.34	0.1	A	39	58
B-A	0.12	12.68	0.1	B	32	48
C-AB	0.82	36.02	4.4	E	359	538
C-A					20	30
A-B					329	494
A-C					77	116

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	32	8	655	0.048	31	0.0	0.1	5.883	A
B-A	26	7	392	0.067	26	0.0	0.1	9.924	A
C-AB	285	71	555	0.514	281	0.0	1.1	13.070	B
C-A	26	6			26				
A-B	270	68			270				
A-C	63	16			63				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	38	9	643	0.059	38	0.1	0.1	6.065	A
B-A	31	8	365	0.086	31	0.1	0.1	10.897	B
C-AB	348	87	549	0.635	346	1.1	1.8	17.722	C
C-A	23	6			23				
A-B	323	81			323				
A-C	76	19			76				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	46	12	625	0.074	46	0.1	0.1	6.339	A
B-A	39	10	328	0.118	38	0.1	0.1	12.549	B
C-AB	441	110	540	0.817	432	1.8	4.1	31.686	D
C-A	13	3			13				
A-B	395	99			395				
A-C	92	23			92				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	46	12	625	0.074	46	0.1	0.1	6.343	A
B-A	39	10	325	0.118	39	0.1	0.1	12.681	B
C-AB	443	111	541	0.818	441	4.1	4.4	36.018	E
C-A	12	3			12				
A-B	395	99			395				
A-C	92	23			92				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	38	9	643	0.059	38	0.1	0.1	6.074	A
B-A	31	8	361	0.087	32	0.1	0.1	11.044	B
C-AB	350	88	550	0.636	360	4.4	2.0	20.158	C
C-A	21	5			21				
A-B	323	81			323				
A-C	76	19			76				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	32	8	655	0.048	32	0.1	0.1	5.891	A
B-A	26	7	390	0.068	26	0.1	0.1	10.001	B
C-AB	286	71	555	0.514	289	2.0	1.2	13.859	B
C-A	25	6			25				
A-B	270	68			270				
A-C	63	16			63				

2025 Opening Year with Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		10.90	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	10.90	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	130	100.000
B - Moss Lane		ONE HOUR	✓	442	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	143	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	23	107
	B - Moss Lane	235	0	207
	C - Ulnes Walton Lane (N)	118	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	10	2
	B - Moss Lane	0	0	1
	C - Ulnes Walton Lane (N)	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.48	14.92	0.9	B	190	285
B-A	0.58	19.25	1.4	C	216	323
C-AB	0.05	6.04	0.1	A	28	42
C-A					103	155
A-B					21	32
A-C					98	147

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	156	39	575	0.271	154	0.0	0.4	8.617	A
B-A	177	44	499	0.355	175	0.0	0.5	11.049	B
C-AB	22	5	630	0.035	22	0.0	0.0	6.038	A
C-A	86	21			86				
A-B	17	4			17				
A-C	81	20			81				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	186	47	538	0.346	185	0.4	0.5	10.295	B
B-A	211	53	480	0.440	210	0.5	0.8	13.298	B
C-AB	27	7	638	0.042	27	0.0	0.1	6.016	A
C-A	102	25			102				
A-B	21	5			21				
A-C	96	24			96				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	228	57	474	0.481	226	0.5	0.9	14.584	B
B-A	259	65	446	0.580	257	0.8	1.3	18.751	C
C-AB	34	9	648	0.053	34	0.1	0.1	5.979	A
C-A	123	31			123				
A-B	25	6			25				
A-C	118	29			118				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	228	57	471	0.484	228	0.9	0.9	14.918	B
B-A	259	65	445	0.581	259	1.3	1.4	19.254	C
C-AB	34	9	649	0.053	34	0.1	0.1	5.981	A
C-A	123	31			123				
A-B	25	6			25				
A-C	118	29			118				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	186	47	535	0.348	188	0.9	0.5	10.515	B
B-A	211	53	479	0.441	213	1.4	0.8	13.652	B
C-AB	27	7	638	0.042	27	0.1	0.1	6.016	A
C-A	102	25			102				
A-B	21	5			21				
A-C	96	24			96				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	156	39	572	0.272	157	0.5	0.4	8.759	A
B-A	177	44	498	0.355	178	0.8	0.6	11.280	B
C-AB	22	5	630	0.035	22	0.1	0.0	6.045	A
C-A	86	21			86				
A-B	17	4			17				
A-C	81	20			81				

2026 with Development (Sensitivity Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		15.88	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	15.88	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2026 with Development (Sensitivity Test)	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	444	100.000
B - Moss Lane		ONE HOUR	✓	77	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	413	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	359	85
	B - Moss Lane	35	0	42
	C - Ulnes Walton Lane (N)	71	342	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	0	1
	B - Moss Lane	1	0	2
	C - Ulnes Walton Lane (N)	10	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.07	6.35	0.1	A	39	58
B-A	0.12	12.69	0.1	B	32	48
C-AB	0.82	36.11	4.4	E	359	538
C-A					20	30
A-B					329	494
A-C					78	117

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	32	8	655	0.048	31	0.0	0.1	5.885	A
B-A	26	7	392	0.067	26	0.0	0.1	9.929	A
C-AB	285	71	555	0.514	281	0.0	1.1	13.078	B
C-A	26	6			26				
A-B	270	68			270				
A-C	64	16			64				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	38	9	643	0.059	38	0.1	0.1	6.067	A
B-A	31	8	365	0.086	31	0.1	0.1	10.903	B
C-AB	349	87	548	0.635	346	1.1	1.8	17.738	C
C-A	23	6			23				
A-B	323	81			323				
A-C	76	19			76				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	46	12	625	0.074	46	0.1	0.1	6.342	A
B-A	39	10	328	0.118	38	0.1	0.1	12.561	B
C-AB	441	110	540	0.818	432	1.8	4.1	31.751	D
C-A	13	3			13				
A-B	395	99			395				
A-C	94	23			94				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	46	12	625	0.074	46	0.1	0.1	6.346	A
B-A	39	10	325	0.119	39	0.1	0.1	12.693	B
C-AB	443	111	541	0.818	441	4.1	4.4	36.107	E
C-A	12	3			12				
A-B	395	99			395				
A-C	94	23			94				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	38	9	642	0.059	38	0.1	0.1	6.076	A
B-A	31	8	361	0.087	32	0.1	0.1	11.051	B
C-AB	350	88	550	0.636	360	4.4	2.0	20.188	C
C-A	21	5			21				
A-B	323	81			323				
A-C	76	19			76				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	32	8	655	0.048	32	0.1	0.1	5.893	A
B-A	26	7	390	0.068	26	0.1	0.1	10.006	B
C-AB	286	71	555	0.515	289	2.0	1.2	13.869	B
C-A	25	6			25				
A-B	270	68			270				
A-C	64	16			64				

2026 with Development (Sensitivity Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		10.90	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	10.90	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2026 with Development (Sensitivity Test)	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	131	100.000
B - Moss Lane		ONE HOUR	✓	442	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	144	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	23	108
	B - Moss Lane	235	0	207
	C - Ulnes Walton Lane (N)	119	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	10	2
	B - Moss Lane	0	0	1
	C - Ulnes Walton Lane (N)	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.48	14.95	0.9	B	190	285
B-A	0.58	19.30	1.4	C	216	323
C-AB	0.05	6.04	0.1	A	28	42
C-A					104	156
A-B					21	32
A-C					99	149

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	156	39	575	0.271	154	0.0	0.4	8.622	A
B-A	177	44	498	0.355	175	0.0	0.5	11.059	B
C-AB	22	5	630	0.035	22	0.0	0.0	6.035	A
C-A	86	22			86				
A-B	17	4			17				
A-C	81	20			81				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	186	47	538	0.346	185	0.4	0.5	10.304	B
B-A	211	53	480	0.440	210	0.5	0.8	13.316	B
C-AB	27	7	638	0.042	27	0.0	0.1	6.010	A
C-A	102	26			102				
A-B	21	5			21				
A-C	97	24			97				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	228	57	474	0.481	226	0.5	0.9	14.613	B
B-A	259	65	446	0.580	257	0.8	1.3	18.795	C
C-AB	35	9	649	0.053	34	0.1	0.1	5.977	A
C-A	124	31			124				
A-B	25	6			25				
A-C	119	30			119				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	228	57	471	0.484	228	0.9	0.9	14.951	B
B-A	259	65	445	0.582	259	1.3	1.4	19.303	C
C-AB	35	9	649	0.053	35	0.1	0.1	5.976	A
C-A	124	31			124				
A-B	25	6			25				
A-C	119	30			119				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	186	47	535	0.348	188	0.9	0.5	10.527	B
B-A	211	53	479	0.441	213	1.4	0.8	13.673	B
C-AB	27	7	638	0.042	27	0.1	0.1	6.012	A
C-A	102	26			102				
A-B	21	5			21				
A-C	97	24			97				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	156	39	572	0.272	157	0.5	0.4	8.763	A
B-A	177	44	498	0.355	178	0.8	0.6	11.294	B
C-AB	22	5	630	0.035	22	0.1	0.0	6.039	A
C-A	86	22			86				
A-B	17	4			17				
A-C	81	20			81				

2027 Base, AM Construction

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		3.40	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.40	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2027 Base	AM Construction	ONE HOUR	05:45	07:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	66	100.000
B - Moss Lane		ONE HOUR	✓	47	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	71	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	47	19
	B - Moss Lane	19	0	28
	C - Ulnes Walton Lane (N)	25	46	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	0	7
	B - Moss Lane	6	0	0
	C - Ulnes Walton Lane (N)	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.04	5.36	0.0	A	26	39
B-A	0.04	8.14	0.0	A	17	26
C-AB	0.09	6.68	0.1	A	44	66
C-A					21	32
A-B					43	65
A-C					17	26

Main Results for each time segment

05:45 - 06:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	21	5	708	0.030	21	0.0	0.0	5.237	A
B-A	14	4	499	0.029	14	0.0	0.0	7.865	A
C-AB	36	9	592	0.060	36	0.0	0.1	6.471	A
C-A	18	4			18				
A-B	35	9			35				
A-C	14	4			14				

06:00 - 06:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	706	0.036	25	0.0	0.0	5.289	A
B-A	17	4	495	0.034	17	0.0	0.0	7.980	A
C-AB	43	11	593	0.073	43	0.1	0.1	6.558	A
C-A	21	5			21				
A-B	42	11			42				
A-C	17	4			17				

06:15 - 06:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	31	8	702	0.044	31	0.0	0.0	5.362	A
B-A	21	5	490	0.043	21	0.0	0.0	8.142	A
C-AB	53	13	593	0.090	53	0.1	0.1	6.677	A
C-A	25	6			25				
A-B	52	13			52				
A-C	21	5			21				

06:30 - 06:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	31	8	702	0.044	31	0.0	0.0	5.362	A
B-A	21	5	490	0.043	21	0.0	0.0	8.142	A
C-AB	53	13	593	0.090	53	0.1	0.1	6.682	A
C-A	25	6			25				
A-B	52	13			52				
A-C	21	5			21				

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	706	0.036	25	0.0	0.0	5.290	A
B-A	17	4	495	0.034	17	0.0	0.0	7.982	A
C-AB	43	11	593	0.073	43	0.1	0.1	6.563	A
C-A	21	5			21				
A-B	42	11			42				
A-C	17	4			17				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	21	5	708	0.030	21	0.0	0.0	5.241	A
B-A	14	4	499	0.029	14	0.0	0.0	7.870	A
C-AB	36	9	592	0.060	36	0.1	0.1	6.482	A
C-A	18	4			18				
A-B	35	9			35				
A-C	14	4			14				

2027 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		6.71	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.71	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2027 Base	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	332	100.000
B - Moss Lane		ONE HOUR	✓	56	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	325	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	246	86
	B - Moss Lane	23	0	33
	C - Ulnes Walton Lane (N)	72	253	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	0	1
	B - Moss Lane	2	0	3
	C - Ulnes Walton Lane (N)	10	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.06	6.01	0.1	A	30	45
B-A	0.07	10.71	0.1	B	21	32
C-AB	0.57	15.08	1.5	C	264	396
C-A					34	51
A-B					226	339
A-C					79	118

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	676	0.037	25	0.0	0.0	5.695	A
B-A	17	4	418	0.041	17	0.0	0.0	9.165	A
C-AB	210	53	573	0.367	208	0.0	0.6	9.884	A
C-A	34	9			34				
A-B	185	46			185				
A-C	65	16			65				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	30	7	666	0.045	30	0.0	0.0	5.823	A
B-A	21	5	397	0.052	21	0.0	0.1	9.758	A
C-AB	257	64	570	0.450	256	0.6	0.9	11.523	B
C-A	35	9			35				
A-B	221	55			221				
A-C	77	19			77				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	36	9	654	0.056	36	0.0	0.1	6.007	A
B-A	25	6	369	0.069	25	0.1	0.1	10.685	B
C-AB	324	81	567	0.572	322	0.9	1.4	14.797	B
C-A	33	8			33				
A-B	271	68			271				
A-C	95	24			95				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	36	9	653	0.056	36	0.1	0.1	6.008	A
B-A	25	6	368	0.069	25	0.1	0.1	10.709	B
C-AB	325	81	567	0.573	325	1.4	1.5	15.082	C
C-A	33	8			33				
A-B	271	68			271				
A-C	95	24			95				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	30	7	666	0.045	30	0.1	0.0	5.828	A
B-A	21	5	396	0.052	21	0.1	0.1	9.790	A
C-AB	257	64	571	0.451	259	1.5	0.9	11.805	B
C-A	35	9			35				
A-B	221	55			221				
A-C	77	19			77				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	675	0.037	25	0.0	0.0	5.701	A
B-A	17	4	417	0.042	17	0.1	0.0	9.197	A
C-AB	211	53	574	0.367	212	0.9	0.6	10.094	B
C-A	34	8			34				
A-B	185	46			185				
A-C	65	16			65				

2027 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		3.83	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.83	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D11	2027 Base	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	132	100.000
B - Moss Lane		ONE HOUR	✓	190	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	145	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	23	109
	B - Moss Lane	94	0	96
	C - Ulnes Walton Lane (N)	120	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	10	2
	B - Moss Lane	1	0	2
	C - Ulnes Walton Lane (N)	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.17	7.14	0.2	A	88	132
B-A	0.22	9.79	0.3	A	86	129
C-AB	0.05	6.04	0.1	A	28	42
C-A					105	158
A-B					21	32
A-C					100	150

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	72	18	648	0.112	72	0.0	0.1	6.368	A
B-A	71	18	496	0.143	70	0.0	0.2	8.518	A
C-AB	22	5	630	0.035	22	0.0	0.0	6.032	A
C-A	87	22			87				
A-B	17	4			17				
A-C	82	21			82				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	86	22	636	0.136	86	0.1	0.2	6.671	A
B-A	85	21	488	0.173	84	0.2	0.2	9.011	A
C-AB	27	7	638	0.042	27	0.0	0.1	6.006	A
C-A	103	26			103				
A-B	21	5			21				
A-C	98	24			98				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	106	26	620	0.171	106	0.2	0.2	7.139	A
B-A	103	26	475	0.218	103	0.2	0.3	9.773	A
C-AB	35	9	650	0.053	35	0.1	0.1	5.973	A
C-A	125	31			125				
A-B	25	6			25				
A-C	120	30			120				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	106	26	620	0.171	106	0.2	0.2	7.143	A
B-A	103	26	475	0.218	103	0.3	0.3	9.786	A
C-AB	35	9	650	0.053	35	0.1	0.1	5.974	A
C-A	125	31			125				
A-B	25	6			25				
A-C	120	30			120				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	86	22	636	0.136	86	0.2	0.2	6.683	A
B-A	85	21	488	0.173	85	0.3	0.2	9.030	A
C-AB	27	7	638	0.042	27	0.1	0.1	6.008	A
C-A	103	26			103				
A-B	21	5			21				
A-C	98	24			98				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	72	18	647	0.112	72	0.2	0.1	6.389	A
B-A	71	18	496	0.143	71	0.2	0.2	8.547	A
C-AB	22	6	630	0.035	22	0.1	0.0	6.036	A
C-A	87	22			87				
A-B	17	4			17				
A-C	82	21			82				

2027 Base + Construction, AM Construction

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		8.10	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.10	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	365	100.000
B - Moss Lane		ONE HOUR	✓	47	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	306	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	346	19
	B - Moss Lane	19	0	28
	C - Ulnes Walton Lane (N)	25	281	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	0	7
	B - Moss Lane	6	0	0
	C - Ulnes Walton Lane (N)	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.05	5.68	0.0	A	26	39
B-A	0.06	10.88	0.1	B	17	26
C-AB	0.63	18.52	1.7	C	270	405
C-A					11	16
A-B					317	476
A-C					17	26

Main Results for each time segment

05:45 - 06:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	21	5	683	0.031	21	0.0	0.0	5.434	A
B-A	14	4	420	0.034	14	0.0	0.0	9.402	A
C-AB	219	55	543	0.404	216	0.0	0.7	10.959	B
C-A	11	3			11				
A-B	260	65			260				
A-C	14	4			14				

06:00 - 06:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	676	0.037	25	0.0	0.0	5.533	A
B-A	17	4	400	0.043	17	0.0	0.0	9.971	A
C-AB	264	66	534	0.494	263	0.7	1.0	13.241	B
C-A	11	3			11				
A-B	311	78			311				
A-C	17	4			17				

06:15 - 06:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	31	8	665	0.046	31	0.0	0.0	5.677	A
B-A	21	5	372	0.056	21	0.0	0.1	10.854	B
C-AB	327	82	521	0.627	324	1.0	1.6	18.061	C
C-A	10	3			10				
A-B	381	95			381				
A-C	21	5			21				

06:30 - 06:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	31	8	665	0.046	31	0.0	0.0	5.678	A
B-A	21	5	372	0.056	21	0.1	0.1	10.881	B
C-AB	327	82	522	0.627	327	1.6	1.7	18.520	C
C-A	10	2			10				
A-B	381	95			381				
A-C	21	5			21				

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	675	0.037	25	0.0	0.0	5.538	A
B-A	17	4	398	0.043	17	0.1	0.0	10.010	B
C-AB	264	66	534	0.494	267	1.7	1.0	13.634	B
C-A	11	3			11				
A-B	311	78			311				
A-C	17	4			17				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	21	5	683	0.031	21	0.0	0.0	5.437	A
B-A	14	4	419	0.034	14	0.0	0.0	9.436	A
C-AB	219	55	543	0.404	221	1.0	0.7	11.236	B
C-A	11	3			11				
A-B	260	65			260				
A-C	14	4			14				

2027 Base + Construction, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		9.83	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	9.83	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	399	100.000
B - Moss Lane		ONE HOUR	✓	63	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	372	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	313	86
	B - Moss Lane	30	0	33
	C - Ulnes Walton Lane (N)	72	300	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	1	1
	B - Moss Lane	15	0	3
	C - Ulnes Walton Lane (N)	10	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.06	6.27	0.1	A	30	45
B-A	0.09	13.04	0.1	B	28	41
C-AB	0.70	22.18	2.5	C	314	472
C-A					27	41
A-B					287	431
A-C					79	118

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	655	0.038	25	0.0	0.0	5.882	A
B-A	23	6	410	0.055	22	0.0	0.1	10.683	B
C-AB	250	62	562	0.444	247	0.0	0.8	11.397	B
C-A	30	8			30				
A-B	236	59			236				
A-C	65	16			65				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	30	7	644	0.046	30	0.0	0.0	6.037	A
B-A	27	7	385	0.070	27	0.1	0.1	11.555	B
C-AB	306	76	558	0.548	304	0.8	1.3	14.244	B
C-A	29	7			29				
A-B	281	70			281				
A-C	77	19			77				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	36	9	628	0.058	36	0.0	0.1	6.261	A
B-A	33	8	352	0.094	33	0.1	0.1	12.979	B
C-AB	387	97	551	0.701	382	1.3	2.4	21.116	C
C-A	23	6			23				
A-B	345	86			345				
A-C	95	24			95				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	36	9	628	0.058	36	0.1	0.1	6.265	A
B-A	33	8	350	0.094	33	0.1	0.1	13.040	B
C-AB	387	97	552	0.702	387	2.4	2.5	22.180	C
C-A	22	6			22				
A-B	345	86			345				
A-C	95	24			95				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	30	7	643	0.046	30	0.1	0.1	6.045	A
B-A	27	7	383	0.070	27	0.1	0.1	11.625	B
C-AB	306	77	558	0.548	311	2.5	1.4	15.034	C
C-A	28	7			28				
A-B	281	70			281				
A-C	77	19			77				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	654	0.038	25	0.1	0.0	5.894	A
B-A	23	6	408	0.055	23	0.1	0.1	10.734	B
C-AB	250	63	563	0.445	252	1.4	0.9	11.811	B
C-A	30	7			30				
A-B	236	59			236				
A-C	65	16			65				

2027 Base + Construction, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Moss Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		21.54	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	21.54	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Ulnes Walton Lane (S)		ONE HOUR	✓	138	100.000
B - Moss Lane		ONE HOUR	✓	521	100.000
C - Ulnes Walton Lane (N)		ONE HOUR	✓	145	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	29	109
	B - Moss Lane	282	0	239
	C - Ulnes Walton Lane (N)	120	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Ulnes Walton Lane (S)	B - Moss Lane	C - Ulnes Walton Lane (N)
From	A - Ulnes Walton Lane (S)	0	23	2
	B - Moss Lane	1	0	1
	C - Ulnes Walton Lane (N)	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.68	29.24	2.0	D	219	329
B-A	0.76	35.98	2.9	E	259	388
C-AB	0.05	6.05	0.1	A	28	42
C-A					105	158
A-B					27	40
A-C					100	150

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	180	45	544	0.331	178	0.0	0.5	9.877	A
B-A	212	53	491	0.433	209	0.0	0.8	12.792	B
C-AB	22	5	629	0.035	22	0.0	0.0	6.041	A
C-A	87	22			87				
A-B	22	5			22				
A-C	82	21			82				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	215	54	491	0.438	214	0.5	0.8	13.063	B
B-A	254	63	465	0.546	252	0.8	1.2	16.954	C
C-AB	27	7	637	0.043	27	0.0	0.1	6.019	A
C-A	103	26			103				
A-B	26	7			26				
A-C	98	24			98				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	263	66	395	0.666	259	0.8	1.9	25.835	D
B-A	310	78	413	0.752	304	1.2	2.7	31.777	D
C-AB	35	9	648	0.053	35	0.1	0.1	5.984	A
C-A	125	31			125				
A-B	32	8			32				
A-C	120	30			120				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	263	66	385	0.683	262	1.9	2.0	29.237	D
B-A	310	78	408	0.760	309	2.7	2.9	35.980	E
C-AB	35	9	648	0.053	35	0.1	0.1	5.987	A
C-A	125	31			125				
A-B	32	8			32				
A-C	120	30			120				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	215	54	480	0.447	220	2.0	0.8	14.185	B
B-A	254	63	461	0.550	260	2.9	1.3	18.672	C
C-AB	27	7	637	0.043	27	0.1	0.1	6.019	A
C-A	103	26			103				
A-B	26	7			26				
A-C	98	24			98				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	180	45	539	0.334	181	0.8	0.5	10.189	B
B-A	212	53	489	0.434	214	1.3	0.8	13.310	B
C-AB	22	6	629	0.035	22	0.1	0.0	6.048	A
C-A	87	22			87				
A-B	22	5			22				
A-C	82	21			82				

Appendix R - Junctions 10 Outputs – School Lane/Dunkirk Lane (Construction)

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: Dunkirk School Ln PICADY v1.3.j10
Path: P:\GBBMA\HandT\CS\Projects\5200124-MACE_Prisons_ROGE6351\06_Reports\15_Garth Wymott SoS\12_Models\scn7_Constr_peak
Report generation date: 14/02/2023 17:13:19

»2021 Baseline, AM
»2021 Baseline, PM
»2025 Opening Year without Development, AM
»2025 Opening Year without Development, PM
»2025 Opening Year with Development, AM
»2025 Opening Year with Development, PM
»2026 with Development (Sensitivity Test), AM
»2026 with Development (Sensitivity Test), PM
»2027 Base, AM Construction
»2027 Base, AM
»2027 Base, PM
»2027 Base + Construction, AM Construction
»2027 Base + Construction, AM
»2027 Base + Construction, PM

Summary of junction performance

	AM					PM					AM Construction				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2021 Baseline														
Stream B-C	D1	0.3	7.63	0.20	A	D2	0.3	9.44	0.23	A					
Stream B-A		0.2	11.35	0.16	B		0.7	17.13	0.42	C					
Stream C-AB		0.5	7.10	0.26	A		0.6	7.20	0.30	A					
	2025 Opening Year without Development														
Stream B-C	D3	0.3	7.80	0.21	A	D4	0.3	7.80	0.21	A					
Stream B-A		0.2	11.71	0.17	B		0.2	11.71	0.17	B					
Stream C-AB		0.5	7.20	0.27	A		0.5	7.20	0.27	A					
	2025 Opening Year with Development														
Stream B-C	D5	0.3	8.07	0.22	A	D6	0.9	20.26	0.47	C					
Stream B-A		0.2	12.66	0.20	B		2.5	37.98	0.73	E					
Stream C-AB		0.7	8.18	0.35	A		0.7	7.33	0.32	A					
	2026 with Development (Sensitivity Test)														
Stream B-C	D7	0.3	8.09	0.22	A	D8	0.9	20.98	0.48	C					
Stream B-A		0.2	12.30	0.19	B		2.6	39.16	0.73	E					
Stream C-AB		0.6	7.46	0.28	A		0.7	7.36	0.32	A					
	2027 Base														
Stream B-C	D10	0.3	7.86	0.21	A	D11	0.3	10.13	0.26	B	D9	0.0	5.46	0.04	A
Stream B-A		0.2	11.80	0.17	B		0.8	18.93	0.46	C		0.1	8.20	0.06	A
Stream C-AB		0.6	7.25	0.28	A		0.7	7.39	0.33	A		0.0	5.61	0.02	A
	2027 Base + Construction														
Stream B-C	D13	0.3	7.93	0.22	A	D14	1.7	38.89	0.65	E	D12	0.0	5.64	0.04	A
Stream B-A		0.2	12.14	0.17	B		4.3	60.27	0.84	F		0.1	9.04	0.07	A
Stream C-AB		0.7	7.75	0.32	A		0.7	7.38	0.33	A		0.2	6.99	0.17	A

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

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

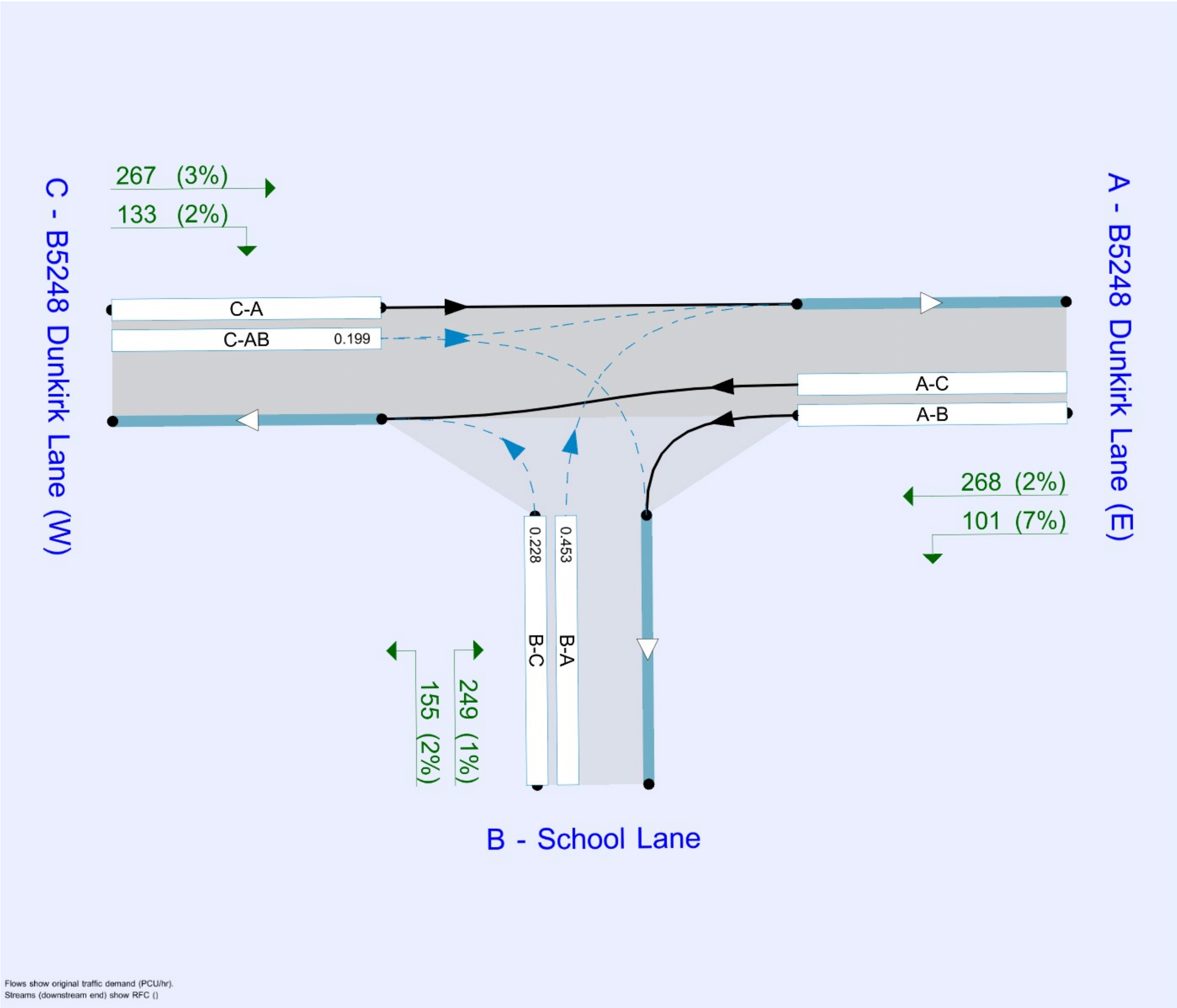
File summary

File Description

Title	Albatross / Razorbill
Location	Dunkirk Lane / School Lane
Site number	
Date	14/02/2023
Version	1.3
Status	existing
Identifier	DC
Client	MACE / MoJ
Jobnumber	5200124
Enumerator	WSATKINS\CART5172
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2021 Baseline	AM	ONE HOUR	06:45	08:15	15	✓
D2	2021 Baseline	PM	ONE HOUR	16:45	18:15	15	✓
D3	2025 Opening Year without Development	AM	ONE HOUR	06:45	08:15	15	✓
D4	2025 Opening Year without Development	PM	ONE HOUR	16:45	18:15	15	✓
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15	✓
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15	✓
D7	2026 with Development (Sensitivity Test)	AM	ONE HOUR	06:45	08:15	15	✓
D8	2026 with Development (Sensitivity Test)	PM	ONE HOUR	16:45	18:15	15	✓
D9	2027 Base	AM Construction	ONE HOUR	05:45	07:15	15	✓
D10	2027 Base	AM	ONE HOUR	06:45	08:15	15	✓
D11	2027 Base	PM	ONE HOUR	16:45	18:15	15	✓
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15	✓
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15	✓
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

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

2021 Baseline, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		2.89	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.89	A

Arms

Arms

Arm	Name	Description	Arm type
A	B5248 Dunkirk Lane (E)		Major
B	School Lane		Minor
C	B5248 Dunkirk Lane (W)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - B5248 Dunkirk Lane (W)	6.60			104.2	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - School Lane	One lane plus flare	8.60	3.70	3.50	3.50	3.30	✓	1.00	25	36

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	534	0.095	0.239	0.151	0.342
B-C	698	0.104	0.264	-	-
C-B	634	0.239	0.239	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

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

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2021 Baseline	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	388	100.000
B - School Lane		ONE HOUR	✓	163	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	329	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	211	177
	B - School Lane	55	0	108
	C - B5248 Dunkirk Lane (W)	222	107	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	5	7
	B - School Lane	2	0	1
	C - B5248 Dunkirk Lane (W)	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.20	7.63	0.3	A	99	149
B-A	0.16	11.35	0.2	B	50	76
C-AB	0.26	7.10	0.5	A	141	212
C-A					161	241
A-B					194	290
A-C					162	244

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	81	20	631	0.129	81	0.0	0.1	6.606	A
B-A	41	10	433	0.096	41	0.0	0.1	9.355	A
C-AB	107	27	679	0.157	106	0.0	0.2	6.463	A
C-A	141	35			141				
A-B	159	40			159				
A-C	133	33			133				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	97	24	616	0.158	97	0.1	0.2	7.002	A
B-A	49	12	413	0.120	49	0.1	0.1	10.102	B
C-AB	136	34	689	0.197	135	0.2	0.3	6.694	A
C-A	160	40			160				
A-B	190	47			190				
A-C	159	40			159				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	119	30	595	0.200	119	0.2	0.2	7.627	A
B-A	61	15	384	0.158	60	0.1	0.2	11.326	B
C-AB	181	45	705	0.257	180	0.3	0.5	7.081	A
C-A	181	45			181				
A-B	232	58			232				
A-C	195	49			195				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	119	30	595	0.200	119	0.2	0.3	7.635	A
B-A	61	15	384	0.158	61	0.2	0.2	11.346	B
C-AB	181	45	705	0.257	181	0.5	0.5	7.095	A
C-A	181	45			181				
A-B	232	58			232				
A-C	195	49			195				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	97	24	616	0.158	97	0.3	0.2	7.016	A
B-A	49	12	412	0.120	50	0.2	0.1	10.128	B
C-AB	136	34	690	0.197	137	0.5	0.3	6.717	A
C-A	160	40			160				
A-B	190	47			190				
A-C	159	40			159				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	81	20	630	0.129	81	0.2	0.2	6.629	A
B-A	41	10	433	0.096	42	0.1	0.1	9.391	A
C-AB	107	27	679	0.158	108	0.3	0.3	6.495	A
C-A	141	35			141				
A-B	159	40			159				
A-C	133	33			133				

2021 Baseline, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		4.90	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.90	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2021 Baseline	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	349	100.000
B - School Lane		ONE HOUR	✓	247	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	378	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	96	253
	B - School Lane	140	0	107
	C - B5248 Dunkirk Lane (W)	252	126	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	7	2
	B - School Lane	1	0	2
	C - B5248 Dunkirk Lane (W)	3	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.23	9.44	0.3	A	98	147
B-A	0.42	17.13	0.7	C	128	193
C-AB	0.30	7.20	0.6	A	173	260
C-A					173	260
A-B					88	132
A-C					232	348

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	81	20	588	0.137	80	0.0	0.2	7.212	A
B-A	105	26	425	0.248	104	0.0	0.3	11.276	B
C-AB	130	33	701	0.186	129	0.0	0.3	6.428	A
C-A	155	39			155				
A-B	72	18			72				
A-C	190	48			190				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	96	24	559	0.172	96	0.2	0.2	7.933	A
B-A	126	31	401	0.314	125	0.3	0.5	13.162	B
C-AB	166	42	716	0.232	166	0.3	0.4	6.701	A
C-A	174	43			174				
A-B	86	22			86				
A-C	227	57			227				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	118	29	508	0.232	117	0.2	0.3	9.384	A
B-A	154	39	366	0.421	153	0.5	0.7	16.957	C
C-AB	223	56	737	0.303	223	0.4	0.6	7.175	A
C-A	193	48			193				
A-B	106	26			106				
A-C	279	70			279				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	118	29	507	0.232	118	0.3	0.3	9.437	A
B-A	154	39	366	0.421	154	0.7	0.7	17.132	C
C-AB	224	56	737	0.303	224	0.6	0.6	7.202	A
C-A	193	48			193				
A-B	106	26			106				
A-C	279	70			279				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	96	24	557	0.173	97	0.3	0.2	7.987	A
B-A	126	31	401	0.314	127	0.7	0.5	13.324	B
C-AB	167	42	716	0.233	167	0.6	0.4	6.735	A
C-A	173	43			173				
A-B	86	22			86				
A-C	227	57			227				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	81	20	586	0.137	81	0.2	0.2	7.266	A
B-A	105	26	425	0.248	106	0.5	0.3	11.421	B
C-AB	131	33	701	0.186	131	0.4	0.3	6.471	A
C-A	154	39			154				
A-B	72	18			72				
A-C	190	48			190				

2025 Opening Year without Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		2.96	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.96	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2025 Opening Year without Development	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	406	100.000
B - School Lane		ONE HOUR	✓	170	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	343	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	221	185
	B - School Lane	58	0	112
	C - B5248 Dunkirk Lane (W)	232	111	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	5	7
	B - School Lane	2	0	1
	C - B5248 Dunkirk Lane (W)	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.21	7.80	0.3	A	103	154
B-A	0.17	11.71	0.2	B	53	80
C-AB	0.27	7.20	0.5	A	149	224
C-A					165	248
A-B					203	304
A-C					170	255

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	84	21	627	0.134	84	0.0	0.2	6.685	A
B-A	44	11	429	0.102	43	0.0	0.1	9.520	A
C-AB	112	28	681	0.165	111	0.0	0.3	6.498	A
C-A	146	36			146				
A-B	166	42			166				
A-C	139	35			139				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	101	25	612	0.165	101	0.2	0.2	7.110	A
B-A	52	13	407	0.128	52	0.1	0.1	10.335	B
C-AB	143	36	692	0.207	143	0.3	0.4	6.751	A
C-A	165	41			165				
A-B	199	50			199				
A-C	166	42			166				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	123	31	589	0.209	123	0.2	0.3	7.790	A
B-A	64	16	378	0.169	64	0.1	0.2	11.688	B
C-AB	192	48	708	0.271	191	0.4	0.5	7.179	A
C-A	186	46			186				
A-B	243	61			243				
A-C	204	51			204				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	123	31	589	0.209	123	0.3	0.3	7.802	A
B-A	64	16	377	0.169	64	0.2	0.2	11.711	B
C-AB	192	48	708	0.271	192	0.5	0.5	7.197	A
C-A	186	46			186				
A-B	243	61			243				
A-C	204	51			204				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	101	25	612	0.165	101	0.3	0.2	7.123	A
B-A	52	13	407	0.128	52	0.2	0.2	10.360	B
C-AB	143	36	693	0.207	144	0.5	0.4	6.776	A
C-A	165	41			165				
A-B	199	50			199				
A-C	166	42			166				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	84	21	627	0.135	84	0.2	0.2	6.706	A
B-A	44	11	428	0.102	44	0.2	0.1	9.558	A
C-AB	113	28	682	0.165	113	0.4	0.3	6.534	A
C-A	145	36			145				
A-B	166	42			166				
A-C	139	35			139				

2025 Opening Year without Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		2.96	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.96	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2025 Opening Year without Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	364	100.000
B - School Lane		ONE HOUR	✓	258	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	394	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	100	264
	B - School Lane	146	0	112
	C - B5248 Dunkirk Lane (W)	263	131	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	7	2
	B - School Lane	1	0	2
	C - B5248 Dunkirk Lane (W)	3	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.21	7.80	0.3	A	103	154
B-A	0.17	11.71	0.2	B	53	80
C-AB	0.27	7.20	0.5	A	149	224
C-A					165	248
A-B					203	304
A-C					170	255

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	84	21	627	0.134	84	0.0	0.2	6.685	A
B-A	44	11	429	0.102	43	0.0	0.1	9.520	A
C-AB	112	28	681	0.165	111	0.0	0.3	6.498	A
C-A	146	36			146				
A-B	166	42			166				
A-C	139	35			139				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	101	25	612	0.165	101	0.2	0.2	7.110	A
B-A	52	13	407	0.128	52	0.1	0.1	10.335	B
C-AB	143	36	692	0.207	143	0.3	0.4	6.751	A
C-A	165	41			165				
A-B	199	50			199				
A-C	166	42			166				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	123	31	589	0.209	123	0.2	0.3	7.790	A
B-A	64	16	378	0.169	64	0.1	0.2	11.688	B
C-AB	192	48	708	0.271	191	0.4	0.5	7.179	A
C-A	186	46			186				
A-B	243	61			243				
A-C	204	51			204				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	123	31	589	0.209	123	0.3	0.3	7.802	A
B-A	64	16	377	0.169	64	0.2	0.2	11.711	B
C-AB	192	48	708	0.271	192	0.5	0.5	7.197	A
C-A	186	46			186				
A-B	243	61			243				
A-C	204	51			204				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	101	25	612	0.165	101	0.3	0.2	7.123	A
B-A	52	13	407	0.128	52	0.2	0.2	10.360	B
C-AB	143	36	693	0.207	144	0.5	0.4	6.776	A
C-A	165	41			165				
A-B	199	50			199				
A-C	166	42			166				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	84	21	627	0.135	84	0.2	0.2	6.706	A
B-A	44	11	428	0.102	44	0.2	0.1	9.558	A
C-AB	113	28	682	0.165	113	0.4	0.3	6.534	A
C-A	145	36			145				
A-B	166	42			166				
A-C	139	35			139				

2025 Opening Year with Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		3.34	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.34	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	468	100.000
B - School Lane		ONE HOUR	✓	179	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	369	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	283	185
	B - School Lane	64	0	115
	C - B5248 Dunkirk Lane (W)	232	137	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	3	7
	B - School Lane	2	0	1
	C - B5248 Dunkirk Lane (W)	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.22	8.07	0.3	A	106	158
B-A	0.20	12.66	0.2	B	59	88
C-AB	0.35	8.18	0.7	A	186	279
C-A					153	229
A-B					260	390
A-C					170	255

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	87	22	620	0.140	86	0.0	0.2	6.801	A
B-A	48	12	417	0.115	48	0.0	0.1	9.918	A
C-AB	139	35	671	0.208	138	0.0	0.3	6.943	A
C-A	138	35			138				
A-B	213	53			213				
A-C	139	35			139				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	103	26	603	0.172	103	0.2	0.2	7.279	A
B-A	58	14	394	0.146	57	0.1	0.2	10.912	B
C-AB	178	45	681	0.262	178	0.3	0.5	7.377	A
C-A	154	38			154				
A-B	254	64			254				
A-C	166	42			166				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	127	32	577	0.219	126	0.2	0.3	8.061	A
B-A	70	18	361	0.195	70	0.2	0.2	12.626	B
C-AB	240	60	694	0.345	238	0.5	0.7	8.144	A
C-A	167	42			167				
A-B	312	78			312				
A-C	204	51			204				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	127	32	577	0.219	127	0.3	0.3	8.074	A
B-A	70	18	360	0.196	70	0.2	0.2	12.664	B
C-AB	240	60	695	0.345	240	0.7	0.7	8.181	A
C-A	166	42			166				
A-B	312	78			312				
A-C	204	51			204				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	103	26	602	0.172	104	0.3	0.2	7.297	A
B-A	58	14	393	0.146	58	0.2	0.2	10.954	B
C-AB	178	45	681	0.262	179	0.7	0.5	7.420	A
C-A	153	38			153				
A-B	254	64			254				
A-C	166	42			166				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	87	22	620	0.140	87	0.2	0.2	6.826	A
B-A	48	12	417	0.116	48	0.2	0.1	9.970	A
C-AB	140	35	672	0.208	140	0.5	0.4	6.995	A
C-A	138	34			138				
A-B	213	53			213				
A-C	139	35			139				

2025 Opening Year with Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		11.47	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	11.47	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	364	100.000
B - School Lane		ONE HOUR	✓	369	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	394	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	100	264
	B - School Lane	225	0	144
	C - B5248 Dunkirk Lane (W)	263	131	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	7	2
	B - School Lane	1	0	2
	C - B5248 Dunkirk Lane (W)	3	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.47	20.26	0.9	C	132	198
B-A	0.73	37.98	2.5	E	206	310
C-AB	0.32	7.33	0.7	A	184	276
C-A					178	267
A-B					92	138
A-C					242	363

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	108	27	530	0.204	107	0.0	0.3	8.663	A
B-A	169	42	417	0.406	167	0.0	0.7	14.359	B
C-AB	137	34	704	0.195	136	0.0	0.3	6.473	A
C-A	159	40			159				
A-B	75	19			75				
A-C	199	50			199				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	129	32	469	0.276	129	0.3	0.4	10.766	B
B-A	202	51	388	0.521	201	0.7	1.1	19.234	C
C-AB	176	44	720	0.244	175	0.3	0.4	6.772	A
C-A	178	45			178				
A-B	90	22			90				
A-C	237	59			237				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	159	40	350	0.453	157	0.4	0.8	18.861	C
B-A	248	62	343	0.723	243	1.1	2.3	34.643	D
C-AB	237	59	742	0.320	237	0.4	0.7	7.303	A
C-A	196	49			196				
A-B	110	28			110				
A-C	291	73			291				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	159	40	339	0.467	158	0.8	0.9	20.265	C
B-A	248	62	341	0.726	247	2.3	2.5	37.978	E
C-AB	238	59	742	0.320	238	0.7	0.7	7.333	A
C-A	196	49			196				
A-B	110	28			110				
A-C	291	73			291				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	129	32	460	0.282	131	0.9	0.4	11.242	B
B-A	202	51	387	0.523	208	2.5	1.2	20.830	C
C-AB	176	44	720	0.245	177	0.7	0.5	6.813	A
C-A	178	44			178				
A-B	90	22			90				
A-C	237	59			237				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	108	27	526	0.206	109	0.4	0.3	8.822	A
B-A	169	42	416	0.407	171	1.2	0.7	14.928	B
C-AB	138	34	705	0.195	138	0.5	0.3	6.518	A
C-A	159	40			159				
A-B	75	19			75				
A-C	199	50			199				

2026 with Development (Sensitivity Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		2.97	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.97	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2026 with Development (Sensitivity Test)	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	471	100.000
B - School Lane		ONE HOUR	✓	180	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	346	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	285	186
	B - School Lane	64	0	116
	C - B5248 Dunkirk Lane (W)	234	112	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	3	7
	B - School Lane	2	0	1
	C - B5248 Dunkirk Lane (W)	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.22	8.09	0.3	A	106	160
B-A	0.19	12.30	0.2	B	59	88
C-AB	0.28	7.46	0.6	A	152	229
C-A					165	248
A-B					262	392
A-C					171	256

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	87	22	620	0.141	87	0.0	0.2	6.811	A
B-A	48	12	423	0.114	48	0.0	0.1	9.766	A
C-AB	114	29	672	0.170	113	0.0	0.3	6.631	A
C-A	146	37			146				
A-B	215	54			215				
A-C	140	35			140				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	104	26	603	0.173	104	0.2	0.2	7.291	A
B-A	58	14	401	0.144	57	0.1	0.2	10.690	B
C-AB	146	37	681	0.214	146	0.3	0.4	6.927	A
C-A	165	41			165				
A-B	256	64			256				
A-C	167	42			167				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	128	32	578	0.221	127	0.2	0.3	8.072	A
B-A	70	18	369	0.191	70	0.2	0.2	12.267	B
C-AB	197	49	695	0.283	196	0.4	0.6	7.434	A
C-A	184	46			184				
A-B	314	78			314				
A-C	205	51			205				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	128	32	577	0.221	128	0.3	0.3	8.085	A
B-A	70	18	369	0.191	70	0.2	0.2	12.297	B
C-AB	197	49	695	0.283	197	0.6	0.6	7.456	A
C-A	184	46			184				
A-B	314	78			314				
A-C	205	51			205				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	104	26	602	0.173	105	0.3	0.2	7.306	A
B-A	58	14	400	0.144	58	0.2	0.2	10.725	B
C-AB	146	37	682	0.215	147	0.6	0.4	6.959	A
C-A	165	41			165				
A-B	256	64			256				
A-C	167	42			167				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	87	22	619	0.141	88	0.2	0.2	6.839	A
B-A	48	12	423	0.114	48	0.2	0.1	9.813	A
C-AB	115	29	672	0.171	115	0.4	0.3	6.667	A
C-A	146	36			146				
A-B	215	54			215				
A-C	140	35			140				

2026 with Development (Sensitivity Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		11.80	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	11.80	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2026 with Development (Sensitivity Test)	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	366	100.000
B - School Lane		ONE HOUR	✓	371	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	397	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	100	266
	B - School Lane	226	0	145
	C - B5248 Dunkirk Lane (W)	265	132	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	7	2
	B - School Lane	1	0	2
	C - B5248 Dunkirk Lane (W)	3	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.48	20.98	0.9	C	133	200
B-A	0.73	39.16	2.6	E	207	311
C-AB	0.32	7.36	0.7	A	186	279
C-A					179	268
A-B					92	138
A-C					244	366

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	109	27	529	0.206	108	0.0	0.3	8.705	A
B-A	170	43	416	0.409	167	0.0	0.7	14.455	B
C-AB	139	35	705	0.197	137	0.0	0.3	6.481	A
C-A	160	40			160				
A-B	75	19			75				
A-C	200	50			200				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	130	33	467	0.279	130	0.3	0.4	10.868	B
B-A	203	51	387	0.525	202	0.7	1.1	19.450	C
C-AB	178	44	721	0.247	177	0.3	0.5	6.785	A
C-A	179	45			179				
A-B	90	22			90				
A-C	239	60			239				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	160	40	345	0.462	158	0.4	0.8	19.407	C
B-A	249	62	341	0.730	244	1.1	2.4	35.519	E
C-AB	240	60	743	0.323	239	0.5	0.7	7.327	A
C-A	197	49			197				
A-B	110	28			110				
A-C	293	73			293				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	160	40	334	0.478	159	0.8	0.9	20.976	C
B-A	249	62	339	0.733	248	2.4	2.6	39.156	E
C-AB	241	60	743	0.324	241	0.7	0.7	7.355	A
C-A	197	49			197				
A-B	110	28			110				
A-C	293	73			293				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	130	33	457	0.285	132	0.9	0.4	11.381	B
B-A	203	51	386	0.527	209	2.6	1.2	21.155	C
C-AB	178	45	721	0.247	179	0.7	0.5	6.827	A
C-A	179	45			179				
A-B	90	22			90				
A-C	239	60			239				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	109	27	524	0.208	110	0.4	0.3	8.871	A
B-A	170	43	415	0.410	172	1.2	0.7	15.042	C
C-AB	139	35	705	0.197	140	0.5	0.3	6.527	A
C-A	160	40			160				
A-B	75	19			75				
A-C	200	50			200				

2027 Base, AM Construction

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.80	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.80	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2027 Base	AM Construction	ONE HOUR	05:45	07:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	105	100.000
B - School Lane		ONE HOUR	✓	54	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	93	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	54	51
	B - School Lane	28	0	26
	C - B5248 Dunkirk Lane (W)	80	13	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	7	5
	B - School Lane	7	0	0
	C - B5248 Dunkirk Lane (W)	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.04	5.46	0.0	A	24	36
B-A	0.06	8.20	0.1	A	26	39
C-AB	0.02	5.61	0.0	A	13	20
C-A					72	108
A-B					50	74
A-C					47	70

Main Results for each time segment

05:45 - 06:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	20	5	698	0.028	19	0.0	0.0	5.303	A
B-A	21	5	513	0.041	21	0.0	0.0	7.832	A
C-AB	11	3	655	0.016	11	0.0	0.0	5.607	A
C-A	59	15			59				
A-B	41	10			41				
A-C	38	10			38				

06:00 - 06:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	23	6	694	0.034	23	0.0	0.0	5.370	A
B-A	25	6	508	0.050	25	0.0	0.1	7.984	A
C-AB	13	3	659	0.020	13	0.0	0.0	5.593	A
C-A	70	18			70				
A-B	49	12			49				
A-C	46	11			46				

06:15 - 06:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	29	7	687	0.042	29	0.0	0.0	5.463	A
B-A	31	8	501	0.062	31	0.1	0.1	8.196	A
C-AB	17	4	665	0.025	16	0.0	0.0	5.576	A
C-A	86	21			86				
A-B	59	15			59				
A-C	56	14			56				

06:30 - 06:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	29	7	687	0.042	29	0.0	0.0	5.464	A
B-A	31	8	501	0.062	31	0.1	0.1	8.198	A
C-AB	17	4	665	0.025	17	0.0	0.0	5.581	A
C-A	86	21			86				
A-B	59	15			59				
A-C	56	14			56				

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	23	6	693	0.034	23	0.0	0.0	5.373	A
B-A	25	6	508	0.050	25	0.1	0.1	7.986	A
C-AB	13	3	659	0.020	13	0.0	0.0	5.598	A
C-A	70	18			70				
A-B	49	12			49				
A-C	46	11			46				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	20	5	698	0.028	20	0.0	0.0	5.307	A
B-A	21	5	513	0.041	21	0.1	0.0	7.839	A
C-AB	11	3	655	0.016	11	0.0	0.0	5.609	A
C-A	59	15			59				
A-B	41	10			41				
A-C	38	10			38				

2027 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		2.99	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.99	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2027 Base	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	411	100.000
B - School Lane		ONE HOUR	✓	172	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	348	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	224	187
	B - School Lane	58	0	114
	C - B5248 Dunkirk Lane (W)	235	113	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	5	7
	B - School Lane	2	0	1
	C - B5248 Dunkirk Lane (W)	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.21	7.86	0.3	A	105	157
B-A	0.17	11.80	0.2	B	53	80
C-AB	0.28	7.25	0.6	A	153	229
C-A					167	250
A-B					206	308
A-C					172	257

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	86	21	626	0.137	85	0.0	0.2	6.713	A
B-A	44	11	427	0.102	43	0.0	0.1	9.549	A
C-AB	115	29	682	0.168	114	0.0	0.3	6.518	A
C-A	147	37			147				
A-B	169	42			169				
A-C	141	35			141				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	102	26	611	0.168	102	0.2	0.2	7.148	A
B-A	52	13	405	0.129	52	0.1	0.1	10.380	B
C-AB	146	37	693	0.211	146	0.3	0.4	6.780	A
C-A	166	42			166				
A-B	201	50			201				
A-C	168	42			168				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	126	31	588	0.213	125	0.2	0.3	7.846	A
B-A	64	16	375	0.170	64	0.1	0.2	11.773	B
C-AB	197	49	709	0.277	196	0.4	0.6	7.227	A
C-A	187	47			187				
A-B	247	62			247				
A-C	206	51			206				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	126	31	588	0.213	126	0.3	0.3	7.858	A
B-A	64	16	375	0.170	64	0.2	0.2	11.797	B
C-AB	197	49	710	0.277	197	0.6	0.6	7.247	A
C-A	186	47			186				
A-B	247	62			247				
A-C	206	51			206				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	102	26	611	0.168	103	0.3	0.2	7.163	A
B-A	52	13	405	0.129	52	0.2	0.2	10.413	B
C-AB	147	37	694	0.212	147	0.6	0.4	6.806	A
C-A	166	42			166				
A-B	201	50			201				
A-C	168	42			168				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	86	21	626	0.137	86	0.2	0.2	6.736	A
B-A	44	11	427	0.102	44	0.2	0.1	9.595	A
C-AB	115	29	682	0.169	116	0.4	0.3	6.555	A
C-A	147	37			147				
A-B	169	42			169				
A-C	141	35			141				

2027 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		5.30	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.30	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D11	2027 Base	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	369	100.000
B - School Lane		ONE HOUR	✓	261	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	400	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	101	268
	B - School Lane	148	0	113
	C - B5248 Dunkirk Lane (W)	267	133	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	7	2
	B - School Lane	1	0	2
	C - B5248 Dunkirk Lane (W)	3	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.26	10.13	0.3	B	104	156
B-A	0.46	18.93	0.8	C	136	204
C-AB	0.33	7.39	0.7	A	188	282
C-A					179	269
A-B					93	139
A-C					246	369

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	85	21	580	0.147	84	0.0	0.2	7.392	A
B-A	111	28	418	0.266	110	0.0	0.4	11.741	B
C-AB	140	35	705	0.199	139	0.0	0.3	6.491	A
C-A	161	40			161				
A-B	76	19			76				
A-C	202	50			202				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	102	25	547	0.186	101	0.2	0.2	8.235	A
B-A	133	33	392	0.339	132	0.4	0.5	13.958	B
C-AB	180	45	721	0.249	179	0.3	0.5	6.800	A
C-A	180	45			180				
A-B	91	23			91				
A-C	241	60			241				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	124	31	489	0.254	124	0.2	0.3	10.048	B
B-A	163	41	355	0.459	162	0.5	0.8	18.667	C
C-AB	243	61	744	0.327	242	0.5	0.7	7.355	A
C-A	197	49			197				
A-B	111	28			111				
A-C	295	74			295				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	124	31	487	0.256	124	0.3	0.3	10.128	B
B-A	163	41	355	0.459	163	0.8	0.8	18.929	C
C-AB	243	61	744	0.327	243	0.7	0.7	7.387	A
C-A	197	49			197				
A-B	111	28			111				
A-C	295	74			295				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	102	25	545	0.187	102	0.3	0.2	8.306	A
B-A	133	33	392	0.339	134	0.8	0.5	14.177	B
C-AB	180	45	722	0.250	181	0.7	0.5	6.843	A
C-A	179	45			179				
A-B	91	23			91				
A-C	241	60			241				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	85	21	578	0.147	85	0.2	0.2	7.454	A
B-A	111	28	418	0.267	112	0.5	0.4	11.917	B
C-AB	141	35	706	0.199	141	0.5	0.3	6.538	A
C-A	161	40			161				
A-B	76	19			76				
A-C	202	50			202				

2027 Base + Construction, AM Construction

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		2.16	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.16	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	271	100.000
B - School Lane		ONE HOUR	✓	54	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	162	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	220	51
	B - School Lane	28	0	26
	C - B5248 Dunkirk Lane (W)	80	82	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	2	5
	B - School Lane	7	0	0
	C - B5248 Dunkirk Lane (W)	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.04	5.64	0.0	A	24	36
B-A	0.07	9.04	0.1	A	26	39
C-AB	0.17	6.99	0.2	A	86	128
C-A					63	94
A-B					202	303
A-C					47	70

Main Results for each time segment

05:45 - 06:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	20	5	685	0.029	19	0.0	0.0	5.412	A
B-A	21	5	483	0.044	21	0.0	0.0	8.337	A
C-AB	68	17	626	0.109	68	0.0	0.1	6.466	A
C-A	54	13			54				
A-B	166	41			166				
A-C	38	10			38				

06:00 - 06:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	23	6	677	0.035	23	0.0	0.0	5.506	A
B-A	25	6	472	0.053	25	0.0	0.1	8.622	A
C-AB	83	21	625	0.133	83	0.1	0.2	6.673	A
C-A	62	16			62				
A-B	198	49			198				
A-C	46	11			46				

06:15 - 06:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	29	7	667	0.043	29	0.0	0.0	5.638	A
B-A	31	8	457	0.067	31	0.1	0.1	9.039	A
C-AB	105	26	623	0.169	105	0.2	0.2	6.977	A
C-A	73	18			73				
A-B	242	61			242				
A-C	56	14			56				

06:30 - 06:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	29	7	667	0.043	29	0.0	0.0	5.639	A
B-A	31	8	457	0.067	31	0.1	0.1	9.042	A
C-AB	105	26	624	0.169	105	0.2	0.2	6.986	A
C-A	73	18			73				
A-B	242	61			242				
A-C	56	14			56				

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	23	6	677	0.035	23	0.0	0.0	5.512	A
B-A	25	6	472	0.053	25	0.1	0.1	8.630	A
C-AB	83	21	625	0.133	84	0.2	0.2	6.688	A
C-A	62	16			62				
A-B	198	49			198				
A-C	46	11			46				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	20	5	684	0.029	20	0.0	0.0	5.418	A
B-A	21	5	483	0.044	21	0.1	0.0	8.349	A
C-AB	68	17	626	0.109	69	0.2	0.1	6.485	A
C-A	54	13			54				
A-B	166	41			166				
A-C	38	10			38				

2027 Base + Construction, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		3.13	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.13	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	444	100.000
B - School Lane		ONE HOUR	✓	172	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	362	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	257	187
	B - School Lane	58	0	114
	C - B5248 Dunkirk Lane (W)	235	127	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	4	7
	B - School Lane	2	0	1
	C - B5248 Dunkirk Lane (W)	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.22	7.93	0.3	A	105	157
B-A	0.17	12.14	0.2	B	53	80
C-AB	0.32	7.75	0.7	A	173	259
C-A					160	239
A-B					236	354
A-C					172	257

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	86	21	624	0.138	85	0.0	0.2	6.743	A
B-A	44	11	421	0.104	43	0.0	0.1	9.703	A
C-AB	129	32	677	0.191	128	0.0	0.3	6.753	A
C-A	143	36			143				
A-B	193	48			193				
A-C	141	35			141				

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	102	26	607	0.169	102	0.2	0.2	7.196	A
B-A	52	13	398	0.131	52	0.1	0.2	10.597	B
C-AB	165	41	687	0.241	165	0.3	0.4	7.106	A
C-A	160	40			160				
A-B	231	58			231				
A-C	168	42			168				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	126	31	584	0.215	125	0.2	0.3	7.923	A
B-A	64	16	367	0.174	64	0.2	0.2	12.113	B
C-AB	222	56	702	0.317	221	0.4	0.7	7.723	A
C-A	176	44			176				
A-B	283	71			283				
A-C	206	51			206				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	126	31	584	0.215	126	0.3	0.3	7.935	A
B-A	64	16	366	0.174	64	0.2	0.2	12.142	B
C-AB	223	56	702	0.317	223	0.7	0.7	7.750	A
C-A	176	44			176				
A-B	283	71			283				
A-C	206	51			206				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	102	26	607	0.169	103	0.3	0.2	7.213	A
B-A	52	13	398	0.131	52	0.2	0.2	10.634	B
C-AB	166	41	687	0.241	167	0.7	0.4	7.144	A
C-A	160	40			160				
A-B	231	58			231				
A-C	168	42			168				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	86	21	623	0.138	86	0.2	0.2	6.771	A
B-A	44	11	421	0.104	44	0.2	0.1	9.749	A
C-AB	130	32	677	0.192	130	0.4	0.3	6.795	A
C-A	143	36			143				
A-B	193	48			193				
A-C	141	35			141				

2027 Base + Construction, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - School Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - School Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		19.22	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	19.22	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - B5248 Dunkirk Lane (E)		ONE HOUR	✓	369	100.000
B - School Lane		ONE HOUR	✓	404	100.000
C - B5248 Dunkirk Lane (W)		ONE HOUR	✓	400	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	101	268
	B - School Lane	249	0	155
	C - B5248 Dunkirk Lane (W)	267	133	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - B5248 Dunkirk Lane (E)	B - School Lane	C - B5248 Dunkirk Lane (W)
From	A - B5248 Dunkirk Lane (E)	0	7	2
	B - School Lane	1	0	2
	C - B5248 Dunkirk Lane (W)	3	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.65	38.89	1.7	E	142	213
B-A	0.84	60.27	4.3	F	228	343
C-AB	0.33	7.38	0.7	A	188	282
C-A					179	269
A-B					93	139
A-C					246	369

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	117	29	511	0.228	116	0.0	0.3	9.260	A
B-A	187	47	414	0.453	184	0.0	0.8	15.632	C
C-AB	140	35	705	0.199	139	0.0	0.3	6.491	A
C-A	161	40			161				
A-B	76	19			76				
A-C	202	50			202				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	139	35	436	0.319	139	0.3	0.5	12.310	B
B-A	224	56	382	0.586	222	0.8	1.4	22.325	C
C-AB	180	45	721	0.249	179	0.3	0.5	6.800	A
C-A	180	45			180				
A-B	91	23			91				
A-C	241	60			241				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	171	43	285	0.599	167	0.5	1.4	30.263	D
B-A	274	69	332	0.827	265	1.4	3.7	48.837	E
C-AB	243	61	744	0.327	242	0.5	0.7	7.355	A
C-A	197	49			197				
A-B	111	28			111				
A-C	295	74			295				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	171	43	262	0.652	169	1.4	1.7	38.893	E
B-A	274	69	328	0.836	272	3.7	4.3	60.274	F
C-AB	243	61	744	0.327	243	0.7	0.7	7.384	A
C-A	197	49			197				
A-B	111	28			111				
A-C	295	74			295				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	139	35	415	0.336	144	1.7	0.5	13.814	B
B-A	224	56	379	0.590	235	4.3	1.5	26.746	D
C-AB	180	45	722	0.250	181	0.7	0.5	6.843	A
C-A	179	45			179				
A-B	91	23			91				
A-C	241	60			241				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	117	29	504	0.232	118	0.5	0.3	9.523	A
B-A	187	47	413	0.454	190	1.5	0.9	16.536	C
C-AB	141	35	706	0.199	141	0.5	0.3	6.538	A
C-A	161	40			161				
A-B	76	19			76				
A-C	202	50			202				

Appendix S - Junctions 10 Outputs – A581/UWL (Construction - Existing)

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: A581 Ulnes Ln PICADY v1.3.j10
Path: P:\GBBMA\HandT\CS\Projects\5200124-MACE_Prisons_ROGE6351\06_Reports\15_Garth Wymott SoS\12_Models\scn7_Constr_peak
Report generation date: 14/02/2023 17:49:51

»2021 Baseline, AM
»2021 Baseline, PM
»2025 Opening Year without Development, AM
»2025 Opening Year without Development, PM
»2025 Opening Year with Development, AM
»2025 Opening Year with Development, PM
»2026 with Development (Sensitivity Test), AM
»2026 with Development (Sensitivity Test), PM
»2027 Base, AM Construction
»2027 Base, AM
»2027 Base, PM
»2027 Base + Construction, AM Construction
»2027 Base + Construction, AM
»2027 Base + Construction, PM

Summary of junction performance

	AM					PM					AM Construction				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2021 Baseline														
Stream B-C	D1	0.2	8.64	0.17	A	D2	0.7	11.84	0.41	B					
Stream B-A		0.1	19.98	0.06	C		0.3	19.95	0.25	C					
Stream C-AB		6.5	31.84	0.84	D		0.8	5.77	0.29	A					
	2025 Opening Year without Development														
Stream B-C	D3	0.2	8.86	0.19	A	D4	0.8	12.60	0.43	B					
Stream B-A		0.1	21.46	0.07	C		0.4	21.51	0.28	C					
Stream C-AB		9.5	45.36	0.90	E		0.9	5.86	0.31	A					
	2025 Opening Year with Development														
Stream B-C	D5	0.3	9.29	0.20	A	D6	3.1	37.11	0.78	E					
Stream B-A		0.1	29.28	0.12	D		1.7	58.16	0.66	F					
Stream C-AB		46.4	198.02	1.10	F		0.9	5.86	0.31	A					
	2026 with Development (Sensitivity Test)														
Stream B-C	D7	0.3	9.36	0.21	A	D8	3.3	39.46	0.79	E					
Stream B-A		0.1	30.13	0.12	D		1.9	62.23	0.68	F					
Stream C-AB		49.7	210.49	1.11	F		0.9	5.88	0.32	A					
	2027 Base														
Stream B-C	D10	0.2	8.93	0.19	A	D11	0.8	12.87	0.44	B	D9	0.1	6.92	0.07	A
Stream B-A		0.1	22.00	0.07	C		0.4	22.00	0.28	C		0.0	10.72	0.03	B
Stream C-AB		11.2	52.70	0.92	F		0.9	5.91	0.32	A		0.2	6.59	0.12	A
	2027 Base + Construction														
Stream B-C	D13	0.3	9.52	0.20	A	D14	12.4	123.86	1.00	F	D12	0.1	7.07	0.07	A
Stream B-A		0.1	25.91	0.08	D		6.3	183.86	0.95	F		0.0	13.45	0.04	B
Stream C-AB		30.9	137.13	1.04	F		1.0	6.15	0.34	A		1.4	13.47	0.56	B

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

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

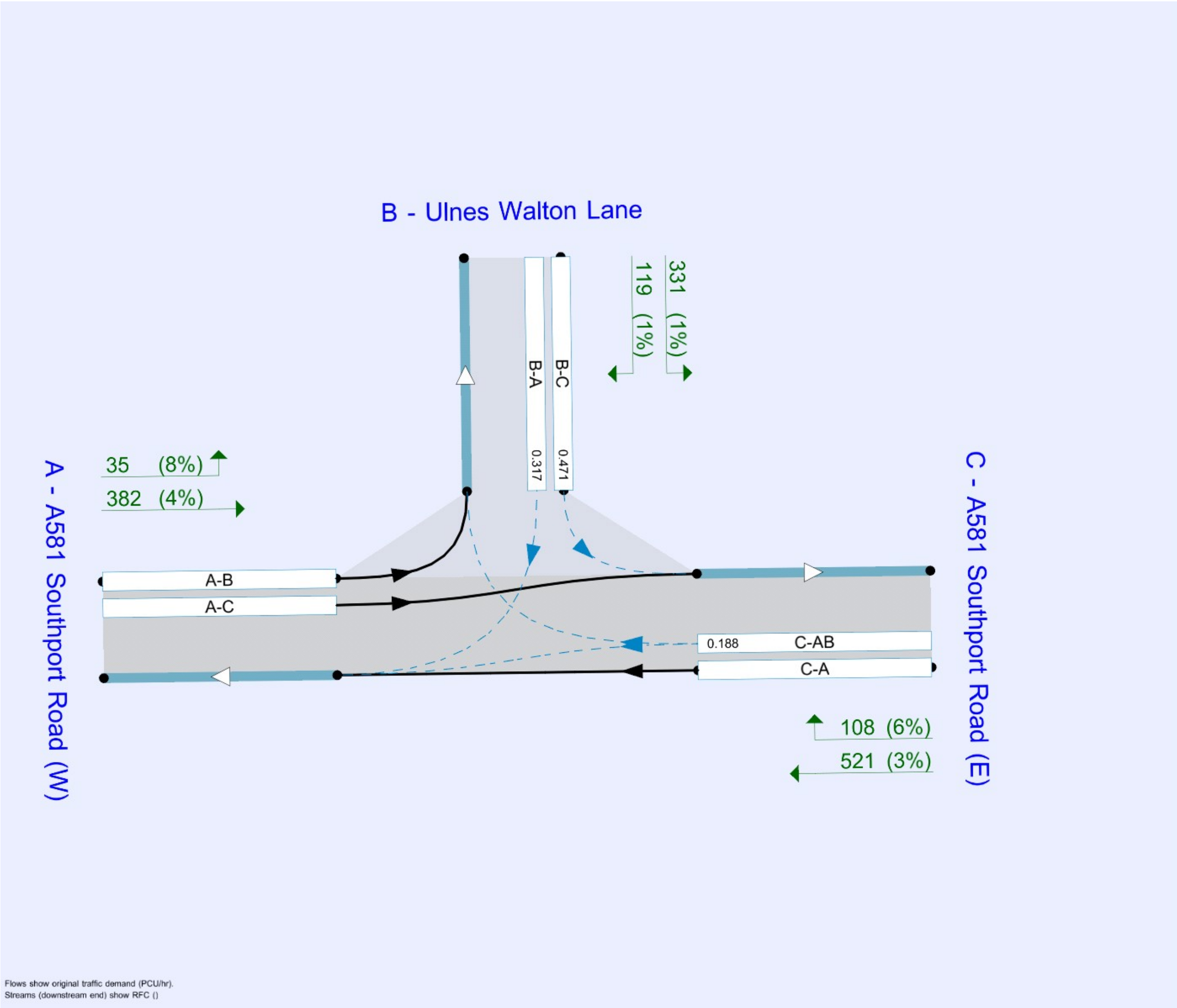
File summary

File Description

Title	Albatross / Razorbill
Location	A581 Southport Road / Ulnes Walton Lane
Site number	
Date	14/02/2023
Version	
Status	Existing
Identifier	DC
Client	MACE /MoJ
Jobnumber	5200124
Enumerator	WSATKINS\CART5172
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2021 Baseline	AM	ONE HOUR	06:45	08:15	15
D2	2021 Baseline	PM	ONE HOUR	16:45	18:15	15
D3	2025 Opening Year without Development	AM	ONE HOUR	06:45	08:15	15
D4	2025 Opening Year without Development	PM	ONE HOUR	16:45	18:15	15
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15
D7	2026 with Development (Sensitivity Test)	AM	ONE HOUR	06:45	08:15	15
D8	2026 with Development (Sensitivity Test)	PM	ONE HOUR	16:45	18:15	15
D9	2027 Base	AM Construction	ONE HOUR	05:45	07:15	15
D10	2027 Base	AM	ONE HOUR	06:45	08:15	15
D11	2027 Base	PM	ONE HOUR	16:45	18:15	15
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2021 Baseline, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		14.70	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	14.70	B

Arms

Arms

Arm	Name	Description	Arm type
A	A581 Southport Road (W)		Major
B	Ulnes Walton Lane		Minor
C	A581 Southport Road (E)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - A581 Southport Road (E)	6.60			90.3	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Ulnes Walton Lane	One lane plus flare	7.00	3.80	3.20	2.90	2.70	✓	1.00	17	15

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	441	0.078	0.198	0.125	0.283
B-C	666	0.099	0.251	-	-
C-B	626	0.236	0.236	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

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

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2021 Baseline	AM	ONE HOUR	06:45	08:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	480	100.000
B - Ulnes Walton Lane		✓	96	100.000
C - A581 Southport Road (E)		✓	612	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	62	418
	B - Ulnes Walton Lane	11	0	85
	C - A581 Southport Road (E)	303	309	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	0	5
	B - Ulnes Walton Lane	5	0	6
	C - A581 Southport Road (E)	7	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.17	8.64	0.2	A
B-A	0.06	19.98	0.1	C
C-AB	0.84	31.84	6.5	D
C-A				
A-B				
A-C				

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	64	578	0.111	63	0.1	7.405	A
B-A	8	281	0.029	8	0.0	13.852	B
C-AB	345	700	0.493	340	1.2	10.201	B
C-A	116			116			
A-B	47			47			
A-C	315			315			

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	76	560	0.136	76	0.2	7.878	A
B-A	10	248	0.040	10	0.0	15.837	C
C-AB	450	718	0.626	446	2.2	13.612	B
C-A	100			100			
A-B	56			56			
A-C	376			376			

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	94	535	0.175	93	0.2	8.629	A
B-A	12	204	0.059	12	0.1	19.656	C
C-AB	623	744	0.837	608	5.8	26.483	D
C-A	51			51			
A-B	68			68			
A-C	460			460			

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	94	535	0.175	94	0.2	8.641	A
B-A	12	201	0.060	12	0.1	19.984	C
C-AB	631	750	0.841	628	6.5	31.836	D
C-A	43			43			
A-B	68			68			
A-C	460			460			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	76	560	0.136	77	0.2	7.894	A
B-A	10	244	0.041	10	0.0	16.150	C
C-AB	458	726	0.631	474	2.5	16.041	C
C-A	92			92			
A-B	56			56			
A-C	376			376			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	64	578	0.111	64	0.1	7.428	A
B-A	8	279	0.030	8	0.0	13.981	B
C-AB	348	703	0.495	353	1.3	10.816	B
C-A	113			113			
A-B	47			47			
A-C	315			315			

2021 Baseline, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		3.73	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.73	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2021 Baseline	PM	ONE HOUR	16:45	18:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	394	100.000
B - Ulnes Walton Lane		✓	247	100.000
C - A581 Southport Road (E)		✓	589	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	33	361
	B - Ulnes Walton Lane	56	0	191
	C - A581 Southport Road (E)	493	96	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	8	4
	B - Ulnes Walton Lane	2	0	1
	C - A581 Southport Road (E)	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.41	11.84	0.7	B
B-A	0.25	19.95	0.3	C
C-AB	0.29	5.77	0.8	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	144	574	0.251	142	0.3	8.409	A
B-A	42	314	0.134	42	0.2	13.428	B
C-AB	133	813	0.164	132	0.3	5.445	A
C-A	310			310			
A-B	25			25			
A-C	272			272			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	172	552	0.311	171	0.4	9.543	A
B-A	50	287	0.176	50	0.2	15.506	C
C-AB	181	853	0.212	180	0.5	5.522	A
C-A	349			349			
A-B	30			30			
A-C	325			325			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	210	518	0.406	209	0.7	11.756	B
B-A	62	246	0.251	61	0.3	19.810	C
C-AB	264	909	0.290	263	0.8	5.752	A
C-A	384			384			
A-B	36			36			
A-C	397			397			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	210	517	0.407	210	0.7	11.845	B
B-A	62	246	0.251	62	0.3	19.952	C
C-AB	265	910	0.291	265	0.8	5.771	A
C-A	384			384			
A-B	36			36			
A-C	397			397			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	172	551	0.312	173	0.5	9.626	A
B-A	50	286	0.176	51	0.2	15.633	C
C-AB	181	854	0.212	183	0.5	5.552	A
C-A	348			348			
A-B	30			30			
A-C	325			325			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	144	573	0.251	144	0.3	8.491	A
B-A	42	314	0.134	42	0.2	13.543	B
C-AB	134	813	0.165	135	0.4	5.478	A
C-A	310			310			
A-B	25			25			
A-C	272			272			

2025 Opening Year without Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		21.17	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	21.17	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2025 Opening Year without Development	AM	ONE HOUR	06:45	08:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	501	100.000
B - Ulnes Walton Lane		✓	101	100.000
C - A581 Southport Road (E)		✓	638	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	65	436
	B - Ulnes Walton Lane	12	0	89
	C - A581 Southport Road (E)	316	322	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	0	5
	B - Ulnes Walton Lane	5	0	6
	C - A581 Southport Road (E)	7	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.19	8.86	0.2	A
B-A	0.07	21.46	0.1	C
C-AB	0.90	45.36	9.5	E
C-A				
A-B				
A-C				

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	67	574	0.117	66	0.1	7.509	A
B-A	9	274	0.033	9	0.0	14.250	B
C-AB	366	704	0.520	361	1.4	10.700	B
C-A	114			114			
A-B	49			49			
A-C	328			328			

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	80	555	0.144	80	0.2	8.021	A
B-A	11	240	0.045	11	0.0	16.481	C
C-AB	480	723	0.664	475	2.5	14.940	B
C-A	94			94			
A-B	58			58			
A-C	392			392			

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	98	529	0.185	98	0.2	8.849	A
B-A	13	194	0.068	13	0.1	20.909	C
C-AB	669	751	0.891	647	8.0	33.692	D
C-A	33			33			
A-B	72			72			
A-C	480			480			

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	98	528	0.185	98	0.2	8.864	A
B-A	13	189	0.070	13	0.1	21.456	C
C-AB	681	759	0.897	675	9.5	45.357	E
C-A	21			21			
A-B	72			72			
A-C	480			480			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	80	555	0.144	80	0.2	8.039	A
B-A	11	233	0.046	11	0.1	16.994	C
C-AB	493	735	0.670	519	3.0	19.755	C
C-A	81			81			
A-B	58			58			
A-C	392			392			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	67	574	0.117	67	0.1	7.531	A
B-A	9	271	0.033	9	0.0	14.416	B
C-AB	370	708	0.523	376	1.5	11.526	B
C-A	110			110			
A-B	49			49			
A-C	328			328			

2025 Opening Year without Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		3.98	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.98	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2025 Opening Year without Development	PM	ONE HOUR	16:45	18:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	410	100.000
B - Ulnes Walton Lane		✓	258	100.000
C - A581 Southport Road (E)		✓	614	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	34	376
	B - Ulnes Walton Lane	59	0	199
	C - A581 Southport Road (E)	514	100	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	8	4
	B - Ulnes Walton Lane	2	0	1
	C - A581 Southport Road (E)	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.43	12.60	0.8	B
B-A	0.28	21.51	0.4	C
C-AB	0.31	5.86	0.9	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	150	569	0.263	148	0.4	8.619	A
B-A	44	309	0.144	44	0.2	13.828	B
C-AB	142	821	0.173	141	0.4	5.447	A
C-A	320			320			
A-B	26			26			
A-C	283			283			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	179	546	0.328	178	0.5	9.889	A
B-A	53	279	0.190	53	0.2	16.186	C
C-AB	195	863	0.225	194	0.5	5.550	A
C-A	357			357			
A-B	31			31			
A-C	338			338			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	219	508	0.431	218	0.7	12.485	B
B-A	65	236	0.275	64	0.4	21.307	C
C-AB	287	923	0.311	285	0.9	5.832	A
C-A	389			389			
A-B	37			37			
A-C	414			414			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	219	507	0.432	219	0.8	12.602	B
B-A	65	236	0.276	65	0.4	21.506	C
C-AB	287	924	0.311	287	0.9	5.859	A
C-A	389			389			
A-B	37			37			
A-C	414			414			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	179	545	0.328	180	0.5	9.992	A
B-A	53	279	0.190	54	0.2	16.350	C
C-AB	195	864	0.226	197	0.6	5.582	A
C-A	357			357			
A-B	31			31			
A-C	338			338			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	150	568	0.264	150	0.4	8.715	A
B-A	44	308	0.144	45	0.2	13.964	B
C-AB	143	822	0.174	144	0.4	5.485	A
C-A	319			319			
A-B	26			26			
A-C	283			283			

2025 Opening Year with Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		100.01	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	100.01	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	538	100.000
B - Ulnes Walton Lane		✓	112	100.000
C - A581 Southport Road (E)		✓	714	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	102	436
	B - Ulnes Walton Lane	16	0	96
	C - A581 Southport Road (E)	316	398	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	0	5
	B - Ulnes Walton Lane	4	0	6
	C - A581 Southport Road (E)	7	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.20	9.29	0.3	A
B-A	0.12	29.28	0.1	D
C-AB	1.10	198.02	46.4	F
C-A				
A-B				
A-C				

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	72	569	0.127	72	0.2	7.659	A
B-A	12	256	0.047	12	0.1	15.349	C
C-AB	454	698	0.651	445	2.3	14.280	B
C-A	83			83			
A-B	77			77			
A-C	328			328			

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	86	549	0.157	86	0.2	8.243	A
B-A	14	217	0.066	14	0.1	18.447	C
C-AB	598	717	0.833	585	5.4	26.938	D
C-A	44			44			
A-B	92			92			
A-C	392			392			

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	106	519	0.204	105	0.3	9.226	A
B-A	18	164	0.107	17	0.1	25.477	D
C-AB	786	717	1.096	696	27.9	98.579	F
C-A	0			0			
A-B	112			112			
A-C	480			480			

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	106	516	0.205	106	0.3	9.294	A
B-A	18	145	0.121	18	0.1	29.284	D
C-AB	786	718	1.094	712	46.4	198.021	F
C-A	0			0			
A-B	112			112			
A-C	480			480			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	86	546	0.158	87	0.2	8.303	A
B-A	14	180	0.080	15	0.1	22.676	C
C-AB	642	749	0.857	728	24.9	176.431	F
C-A	0			0			
A-B	92			92			
A-C	392			392			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	72	568	0.127	72	0.2	7.699	A
B-A	12	234	0.051	12	0.1	16.858	C
C-AB	488	729	0.670	577	2.9	38.740	E
C-A	49			49			
A-B	77			77			
A-C	328			328			

2025 Opening Year with Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		12.89	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	12.89	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	410	100.000
B - Ulnes Walton Lane		✓	399	100.000
C - A581 Southport Road (E)		✓	614	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	34	376
	B - Ulnes Walton Lane	105	0	294
	C - A581 Southport Road (E)	514	100	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	8	4
	B - Ulnes Walton Lane	1	0	0
	C - A581 Southport Road (E)	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.78	37.11	3.1	E
B-A	0.66	58.16	1.7	F
C-AB	0.31	5.86	0.9	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	221	542	0.408	219	0.7	11.044	B
B-A	79	295	0.268	78	0.4	16.617	C
C-AB	142	821	0.173	141	0.4	5.447	A
C-A	320			320			
A-B	26			26			
A-C	283			283			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	264	502	0.526	263	1.1	14.930	B
B-A	94	253	0.372	94	0.6	22.602	C
C-AB	195	863	0.225	194	0.5	5.550	A
C-A	357			357			
A-B	31			31			
A-C	338			338			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	324	425	0.761	317	2.8	31.417	D
B-A	116	182	0.636	112	1.5	49.473	E
C-AB	287	923	0.311	285	0.9	5.832	A
C-A	389			389			
A-B	37			37			
A-C	414			414			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	324	417	0.777	322	3.1	37.113	E
B-A	116	176	0.658	115	1.7	58.158	F
C-AB	287	924	0.311	287	0.9	5.857	A
C-A	389			389			
A-B	37			37			
A-C	414			414			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	264	495	0.534	272	1.2	16.707	C
B-A	94	248	0.380	99	0.6	24.964	C
C-AB	195	864	0.226	197	0.6	5.582	A
C-A	357			357			
A-B	31			31			
A-C	338			338			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	221	539	0.410	223	0.7	11.452	B
B-A	79	293	0.270	80	0.4	17.143	C
C-AB	143	822	0.174	144	0.4	5.485	A
C-A	319			319			
A-B	26			26			
A-C	283			283			

2026 with Development (Sensitivity Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		106.49	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	106.49	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2026 with Development (Sensitivity Test)	AM	ONE HOUR	06:45	08:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	543	100.000
B - Ulnes Walton Lane		✓	113	100.000
C - A581 Southport Road (E)		✓	719	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	103	440
	B - Ulnes Walton Lane	16	0	97
	C - A581 Southport Road (E)	318	401	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	0	5
	B - Ulnes Walton Lane	4	0	6
	C - A581 Southport Road (E)	7	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.21	9.36	0.3	A
B-A	0.12	30.13	0.1	D
C-AB	1.11	210.49	49.7	F
C-A				
A-B				
A-C				

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	73	568	0.128	72	0.2	7.685	A
B-A	12	254	0.047	12	0.1	15.444	C
C-AB	459	699	0.657	450	2.3	14.516	B
C-A	82			82			
A-B	78			78			
A-C	331			331			

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	87	548	0.159	87	0.2	8.281	A
B-A	14	215	0.067	14	0.1	18.615	C
C-AB	605	718	0.843	591	5.7	28.011	D
C-A	41			41			
A-B	93			93			
A-C	396			396			

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	107	517	0.206	107	0.3	9.283	A
B-A	18	162	0.109	17	0.1	25.906	D
C-AB	792	716	1.106	696	29.6	103.688	F
C-A	0			0			
A-B	113			113			
A-C	484			484			

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	107	515	0.208	107	0.3	9.358	A
B-A	18	142	0.124	18	0.1	30.129	D
C-AB	792	716	1.105	711	49.7	210.487	F
C-A	0			0			
A-B	113			113			
A-C	484			484			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	87	545	0.160	87	0.2	8.342	A
B-A	14	175	0.082	15	0.1	23.319	C
C-AB	646	748	0.864	728	29.3	194.822	F
C-A	0			0			
A-B	93			93			
A-C	396			396			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	73	567	0.129	73	0.2	7.725	A
B-A	12	229	0.053	12	0.1	17.267	C
C-AB	500	735	0.680	605	3.1	50.098	F
C-A	41			41			
A-B	78			78			
A-C	331			331			

2026 with Development (Sensitivity Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		13.67	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	13.67	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2026 with Development (Sensitivity Test)	PM	ONE HOUR	16:45	18:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	413	100.000
B - Ulnes Walton Lane		✓	401	100.000
C - A581 Southport Road (E)		✓	619	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	34	379
	B - Ulnes Walton Lane	106	0	295
	C - A581 Southport Road (E)	518	101	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	8	4
	B - Ulnes Walton Lane	1	0	0
	C - A581 Southport Road (E)	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.79	39.46	3.3	E
B-A	0.68	62.23	1.9	F
C-AB	0.32	5.88	0.9	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	222	541	0.411	219	0.7	11.117	B
B-A	80	294	0.272	78	0.4	16.770	C
C-AB	145	823	0.176	143	0.4	5.451	A
C-A	321			321			
A-B	26			26			
A-C	285			285			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	265	500	0.531	264	1.1	15.124	C
B-A	95	252	0.379	94	0.6	22.978	C
C-AB	198	865	0.228	197	0.5	5.557	A
C-A	359			359			
A-B	31			31			
A-C	341			341			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	325	421	0.772	317	2.9	32.758	D
B-A	117	179	0.652	113	1.6	51.885	F
C-AB	292	926	0.315	291	0.9	5.858	A
C-A	390			390			
A-B	37			37			
A-C	417			417			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	325	411	0.790	323	3.3	39.459	E
B-A	117	172	0.677	116	1.9	62.231	F
C-AB	293	926	0.316	293	0.9	5.884	A
C-A	389			389			
A-B	37			37			
A-C	417			417			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	265	491	0.540	274	1.2	17.124	C
B-A	95	246	0.387	100	0.7	25.666	D
C-AB	199	866	0.229	200	0.6	5.590	A
C-A	358			358			
A-B	31			31			
A-C	341			341			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	222	538	0.413	224	0.7	11.541	B
B-A	80	292	0.273	81	0.4	17.326	C
C-AB	146	824	0.177	146	0.4	5.490	A
C-A	320			320			
A-B	26			26			
A-C	285			285			

2027 Base, AM Construction

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		2.01	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.01	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2027 Base	AM Construction	ONE HOUR	05:45	07:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	211	100.000
B - Ulnes Walton Lane		✓	46	100.000
C - A581 Southport Road (E)		✓	146	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	18	193
	B - Ulnes Walton Lane	10	0	36
	C - A581 Southport Road (E)	86	60	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	11	6
	B - Ulnes Walton Lane	6	0	9
	C - A581 Southport Road (E)	9	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.07	6.92	0.1	A
B-A	0.03	10.72	0.0	B
C-AB	0.12	6.59	0.2	A
C-A				
A-B				
A-C				

Main Results for each time segment

05:45 - 06:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	27	625	0.043	27	0.0	6.554	A
B-A	8	391	0.019	7	0.0	9.954	A
C-AB	50	632	0.080	50	0.1	6.287	A
C-A	60			60			
A-B	14			14			
A-C	145			145			

06:00 - 06:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	32	617	0.052	32	0.1	6.706	A
B-A	9	381	0.024	9	0.0	10.263	B
C-AB	61	634	0.097	61	0.1	6.405	A
C-A	70			70			
A-B	16			16			
A-C	174			174			

06:15 - 06:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	40	606	0.065	40	0.1	6.924	A
B-A	11	367	0.030	11	0.0	10.716	B
C-AB	78	636	0.122	78	0.2	6.577	A
C-A	83			83			
A-B	20			20			
A-C	212			212			

06:30 - 06:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	40	606	0.065	40	0.1	6.924	A
B-A	11	367	0.030	11	0.0	10.717	B
C-AB	78	636	0.122	78	0.2	6.588	A
C-A	83			83			
A-B	20			20			
A-C	212			212			

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	32	617	0.052	32	0.1	6.710	A
B-A	9	381	0.024	9	0.0	10.269	B
C-AB	62	634	0.097	62	0.1	6.425	A
C-A	70			70			
A-B	16			16			
A-C	174			174			

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	27	625	0.043	27	0.0	6.558	A
B-A	8	391	0.019	8	0.0	9.964	A
C-AB	50	632	0.080	50	0.1	6.303	A
C-A	60			60			
A-B	14			14			
A-C	145			145			

2027 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		24.73	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	24.73	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2027 Base	AM	ONE HOUR	06:45	08:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	508	100.000
B - Ulnes Walton Lane		✓	102	100.000
C - A581 Southport Road (E)		✓	647	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	66	442
	B - Ulnes Walton Lane	12	0	90
	C - A581 Southport Road (E)	320	327	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	0	5
	B - Ulnes Walton Lane	5	0	6
	C - A581 Southport Road (E)	7	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.19	8.93	0.2	A
B-A	0.07	22.00	0.1	C
C-AB	0.92	52.70	11.2	F
C-A				
A-B				
A-C				

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	68	573	0.118	67	0.1	7.539	A
B-A	9	272	0.033	9	0.0	14.380	B
C-AB	374	705	0.530	368	1.5	10.904	B
C-A	113			113			
A-B	50			50			
A-C	333			333			

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	81	554	0.146	81	0.2	8.062	A
B-A	11	237	0.046	11	0.0	16.692	C
C-AB	491	725	0.678	486	2.7	15.512	C
C-A	91			91			
A-B	59			59			
A-C	397			397			

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	99	527	0.188	99	0.2	8.910	A
B-A	13	190	0.070	13	0.1	21.342	C
C-AB	686	753	0.911	661	9.0	37.143	E
C-A	26			26			
A-B	73			73			
A-C	487			487			

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	99	526	0.188	99	0.2	8.928	A
B-A	13	185	0.071	13	0.1	22.003	C
C-AB	700	762	0.919	692	11.2	52.700	F
C-A	12			12			
A-B	73			73			
A-C	487			487			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	81	554	0.146	81	0.2	8.083	A
B-A	11	229	0.047	11	0.1	17.320	C
C-AB	506	739	0.686	538	3.3	22.001	C
C-A	75			75			
A-B	59			59			
A-C	397			397			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	68	573	0.118	68	0.1	7.561	A
B-A	9	269	0.034	9	0.0	14.561	B
C-AB	378	709	0.534	385	1.6	11.838	B
C-A	109			109			
A-B	50			50			
A-C	333			333			

2027 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		4.06	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.06	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D11	2027 Base	PM	ONE HOUR	16:45	18:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	417	100.000
B - Ulnes Walton Lane		✓	261	100.000
C - A581 Southport Road (E)		✓	623	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	35	382
	B - Ulnes Walton Lane	59	0	202
	C - A581 Southport Road (E)	521	102	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	8	4
	B - Ulnes Walton Lane	2	0	1
	C - A581 Southport Road (E)	3	3	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.44	12.87	0.8	B
B-A	0.28	22.00	0.4	C
C-AB	0.32	5.91	0.9	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	152	567	0.268	151	0.4	8.692	A
B-A	44	306	0.145	44	0.2	13.949	B
C-AB	147	824	0.178	145	0.4	5.460	A
C-A	322			322			
A-B	26			26			
A-C	288			288			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	182	544	0.334	181	0.5	10.010	B
B-A	53	276	0.192	53	0.2	16.392	C
C-AB	201	867	0.232	200	0.6	5.574	A
C-A	359			359			
A-B	31			31			
A-C	343			343			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	222	506	0.440	221	0.8	12.740	B
B-A	65	232	0.280	64	0.4	21.784	C
C-AB	297	927	0.320	295	0.9	5.885	A
C-A	389			389			
A-B	39			39			
A-C	421			421			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	222	505	0.441	222	0.8	12.868	B
B-A	65	232	0.280	65	0.4	21.999	C
C-AB	298	928	0.321	297	0.9	5.914	A
C-A	388			388			
A-B	39			39			
A-C	421			421			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	182	543	0.334	183	0.5	10.122	B
B-A	53	276	0.192	54	0.2	16.567	C
C-AB	202	868	0.232	203	0.6	5.608	A
C-A	359			359			
A-B	31			31			
A-C	343			343			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	152	567	0.268	153	0.4	8.791	A
B-A	44	306	0.145	45	0.2	14.085	B
C-AB	148	825	0.179	148	0.4	5.496	A
C-A	321			321			
A-B	26			26			
A-C	288			288			

2027 Base + Construction, AM Construction

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		6.33	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.33	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	310	100.000
B - Ulnes Walton Lane		✓	46	100.000
C - A581 Southport Road (E)		✓	347	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	117	193
	B - Ulnes Walton Lane	10	0	36
	C - A581 Southport Road (E)	86	261	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	2	6
	B - Ulnes Walton Lane	6	0	9
	C - A581 Southport Road (E)	9	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.07	7.07	0.1	A
B-A	0.04	13.45	0.0	B
C-AB	0.56	13.47	1.4	B
C-A				
A-B				
A-C				

Main Results for each time segment

05:45 - 06:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	27	618	0.044	27	0.0	6.641	A
B-A	8	342	0.022	7	0.0	11.400	B
C-AB	220	615	0.357	217	0.6	9.078	A
C-A	42			42			
A-B	88			88			
A-C	145			145			

06:00 - 06:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	32	608	0.053	32	0.1	6.816	A
B-A	9	322	0.028	9	0.0	12.183	B
C-AB	269	614	0.438	268	0.8	10.484	B
C-A	43			43			
A-B	105			105			
A-C	174			174			

06:15 - 06:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	40	594	0.067	40	0.1	7.072	A
B-A	11	295	0.037	11	0.0	13.421	B
C-AB	341	612	0.557	339	1.4	13.253	B
C-A	41			41			
A-B	129			129			
A-C	212			212			

06:30 - 06:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	40	594	0.067	40	0.1	7.073	A
B-A	11	295	0.037	11	0.0	13.448	B
C-AB	341	612	0.557	341	1.4	13.471	B
C-A	41			41			
A-B	129			129			
A-C	212			212			

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	32	608	0.053	32	0.1	6.821	A
B-A	9	321	0.028	9	0.0	12.219	B
C-AB	269	614	0.438	271	0.9	10.707	B
C-A	43			43			
A-B	105			105			
A-C	174			174			

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	27	618	0.044	27	0.1	6.645	A
B-A	8	341	0.022	8	0.0	11.440	B
C-AB	220	616	0.357	221	0.6	9.253	A
C-A	41			41			
A-B	88			88			
A-C	145			145			

2027 Base + Construction, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		67.86	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	67.86	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	527	100.000
B - Ulnes Walton Lane		✓	109	100.000
C - A581 Southport Road (E)		✓	694	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	85	442
	B - Ulnes Walton Lane	12	0	97
	C - A581 Southport Road (E)	320	374	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	0	5
	B - Ulnes Walton Lane	5	0	10
	C - A581 Southport Road (E)	7	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.20	9.52	0.3	A
B-A	0.08	25.91	0.1	D
C-AB	1.04	137.13	30.9	F
C-A				
A-B				
A-C				

Main Results for each time segment

06:45 - 07:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	73	571	0.128	72	0.2	7.929	A
B-A	9	260	0.035	9	0.0	15.026	C
C-AB	429	702	0.610	421	2.0	12.984	B
C-A	94			94			
A-B	64			64			
A-C	333			333			

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	87	552	0.158	87	0.2	8.514	A
B-A	11	223	0.048	11	0.1	17.787	C
C-AB	564	722	0.781	555	4.2	21.885	C
C-A	60			60			
A-B	76			76			
A-C	397			397			

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	107	524	0.204	107	0.3	9.487	A
B-A	13	172	0.077	13	0.1	23.735	C
C-AB	764	735	1.039	700	20.3	73.691	F
C-A	0			0			
A-B	94			94			
A-C	487			487			

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	107	523	0.204	107	0.3	9.525	A
B-A	13	159	0.083	13	0.1	25.913	D
C-AB	764	736	1.038	722	30.9	137.131	F
C-A	0			0			
A-B	94			94			
A-C	487			487			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	87	551	0.158	87	0.2	8.555	A
B-A	11	199	0.054	11	0.1	20.098	C
C-AB	615	760	0.809	708	7.6	89.715	F
C-A	9			9			
A-B	76			76			
A-C	397			397			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	73	571	0.128	73	0.2	7.958	A
B-A	9	254	0.036	9	0.0	15.444	C
C-AB	439	712	0.616	460	2.2	16.261	C
C-A	84			84			
A-B	64			64			
A-C	333			333			

2027 Base + Construction, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	B - Ulnes Walton Lane - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Minor arm visibility to right	B - Ulnes Walton Lane - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
2	A581 Southport Road / Ulnes Walton Lane	T-Junction	Two-way	Two-way	Two-way		43.05	E

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	43.05	E

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A581 Southport Road (W)		✓	417	100.000
B - Ulnes Walton Lane		✓	450	100.000
C - A581 Southport Road (E)		✓	629	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	35	382
	B - Ulnes Walton Lane	119	0	331
	C - A581 Southport Road (E)	521	108	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A581 Southport Road (W)	B - Ulnes Walton Lane	C - A581 Southport Road (E)
From	A - A581 Southport Road (W)	0	8	4
	B - Ulnes Walton Lane	1	0	1
	C - A581 Southport Road (E)	3	6	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	1.00	123.86	12.4	F
B-A	0.95	183.86	6.3	F
C-AB	0.34	6.15	1.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	249	529	0.471	246	0.9	12.695	B
B-A	90	283	0.317	88	0.5	18.495	C
C-AB	155	824	0.188	154	0.4	5.611	A
C-A	318			318			
A-B	26			26			
A-C	288			288			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	298	479	0.621	295	1.6	19.436	C
B-A	107	232	0.462	106	0.8	28.458	D
C-AB	213	867	0.245	212	0.6	5.755	A
C-A	353			353			
A-B	31			31			
A-C	343			343			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	364	376	0.969	339	8.0	71.543	F
B-A	131	138	0.950	116	4.6	122.188	F
C-AB	314	927	0.339	313	1.0	6.127	A
C-A	378			378			
A-B	39			39			
A-C	421			421			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	364	364	1.002	347	12.4	123.860	F
B-A	131	137	0.954	124	6.3	183.861	F
C-AB	315	928	0.340	315	1.0	6.150	A
C-A	377			377			
A-B	39			39			
A-C	421			421			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	298	436	0.682	338	2.4	47.227	E
B-A	107	197	0.544	127	1.3	62.477	F
C-AB	213	868	0.246	215	0.6	5.775	A
C-A	352			352			
A-B	31			31			
A-C	343			343			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	249	523	0.477	255	0.9	13.868	B
B-A	90	278	0.322	93	0.5	19.955	C
C-AB	156	825	0.189	157	0.4	5.645	A
C-A	317			317			
A-B	26			26			
A-C	288			288			

Appendix T - Junctions 10 Outputs – A581/UWL (Construction - Proposed)

Junctions 10

ARCADY 10 - Roundabout Module

Filename: A581_Ulnes Walton Lane_Mini-Rbt_v1.j10
Path: P:\GBBMA\HandT\CS\Projects\5200124-MACE_Prisons_ROGE6351\06_Reports\15_Garth Wymott SoS\12_Models\scn7_Constr_peak
Report generation date: 14/02/2023 18:09:49

»2025 Opening Year with Development, AM
»2025 Opening Year with Development, PM
»2026 with Development, AM
»2026 with Development, PM
»2027 Base + Construction, AM Construction
»2027 Base + Construction, AM
»2027 Base + Construction, PM

Summary of junction performance

	AM					PM					AM Construction				
	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)
	2025 Opening Year with Development														
1 - A581 Southport Road (W)	D5	6.1	39.56	0.87	25.62	D6	1.1	8.80	0.51	14.01					
2 - Ulnes Walton Lane		0.3	8.08	0.21			2.2	18.59	0.69						
3 - A581 Southport Road (E)		3.8	17.87	0.79			2.7	14.52	0.73						
	2026 with Development														
1 - A581 Southport Road (W)	D7	6.6	42.38	0.88	27.00	D8	1.1	8.88	0.52	14.30					
2 - Ulnes Walton Lane		0.3	8.14	0.21			2.3	18.99	0.70						
3 - A581 Southport Road (E)		3.9	18.34	0.80			2.7	14.88	0.73						
	2027 Base + Construction														
1 - A581 Southport Road (W)	D13	4.8	31.34	0.83	21.51	D14	1.1	9.08	0.53	17.40	D12	0.8	8.76	0.44	7.18
2 - Ulnes Walton Lane		0.3	8.38	0.20			3.5	26.77	0.79			0.1	5.56	0.07	
3 - A581 Southport Road (E)		3.3	16.11	0.77			3.0	16.22	0.75			0.6	5.99	0.38	

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

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages.

File summary

File Description

Title	Albatross / Razorbill
Location	A581 Southport Road / Ulnes Walton Lane
Site number	
Date	14/02/2023
Version	
Status	Proposed
Identifier	DC
Client	
Jobnumber	5200124
Enumerator	WSATKINS\CART5172
Description	

Units

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

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75						0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15	✓
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15	✓
D7	2026 with Development	AM	ONE HOUR	06:45	08:15	15	✓
D8	2026 with Development	PM	ONE HOUR	16:45	18:15	15	✓
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15	✓
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15	✓
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

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

2025 Opening Year with Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 91% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	25.62	D

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		25.62	D

Arms

Arms

Arm	Name	Description
1	A581 Southport Road (W)	
2	Ulnes Walton Lane	
3	A581 Southport Road (E)	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1 - A581 Southport Road (W)	3.25	3.25	3.50	2.3	9.81	7.20	0.0	
2 - Ulnes Walton Lane	2.55	2.55	3.25	7.9	9.81	7.36	0.0	
3 - A581 Southport Road (E)	3.50	3.50	3.90	2.8	11.74	11.80	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A581 Southport Road (W)	0.607	945
2 - Ulnes Walton Lane	0.594	878
3 - A581 Southport Road (E)	0.624	1002

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	538	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	112	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	714	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	102	436
	2 - Ulnes Walton Lane	16	0	96
	3 - A581 Southport Road (E)	316	398	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	0	5
	2 - Ulnes Walton Lane	4	0	6
	3 - A581 Southport Road (E)	7	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.87	39.56	6.1	E	494	741
2 - Ulnes Walton Lane	0.21	8.08	0.3	A	103	154
3 - A581 Southport Road (E)	0.79	17.87	3.8	C	655	983

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	405	101	297	765	0.530	400	248	0.0	1.1	10.161	B
2 - Ulnes Walton Lane	84	21	325	686	0.123	84	373	0.0	0.1	6.318	A
3 - A581 Southport Road (E)	538	134	12	995	0.540	533	396	0.0	1.2	7.942	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	484	121	356	729	0.664	480	297	1.1	2.0	14.890	B
2 - Ulnes Walton Lane	101	25	389	647	0.156	101	447	0.1	0.2	6.960	A
3 - A581 Southport Road (E)	642	160	14	994	0.646	639	475	1.2	1.8	10.389	B

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	592	148	434	681	0.869	578	362	2.0	5.4	32.716	D
2 - Ulnes Walton Lane	123	31	469	600	0.206	123	544	0.2	0.3	7.975	A
3 - A581 Southport Road (E)	786	197	18	992	0.793	779	574	1.8	3.6	16.872	C

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	592	148	438	679	0.872	590	365	5.4	6.1	39.563	E
2 - Ulnes Walton Lane	123	31	478	594	0.207	123	550	0.3	0.3	8.076	A
3 - A581 Southport Road (E)	786	197	18	991	0.793	786	584	3.6	3.8	17.869	C

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	484	121	362	725	0.667	499	302	6.1	2.2	17.592	C
2 - Ulnes Walton Lane	101	25	405	638	0.158	101	457	0.3	0.2	7.088	A
3 - A581 Southport Road (E)	642	160	14	993	0.646	649	491	3.8	1.9	10.987	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	405	101	301	762	0.532	409	251	2.2	1.2	10.721	B
2 - Ulnes Walton Lane	84	21	331	682	0.124	85	379	0.2	0.2	6.375	A
3 - A581 Southport Road (E)	538	134	12	995	0.540	540	404	1.9	1.2	8.206	A

2025 Opening Year with Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	14.01	B

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		14.01	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	410	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	399	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	614	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	34	376
	2 - Ulnes Walton Lane	105	0	294
	3 - A581 Southport Road (E)	514	100	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	8	4
	2 - Ulnes Walton Lane	1	0	0
	3 - A581 Southport Road (E)	3	3	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)
1 - A581 Southport Road (W)	0.51	8.80	1.1	A	376	564
2 - Ulnes Walton Lane	0.69	18.59	2.2	C	366	549
3 - A581 Southport Road (E)	0.73	14.52	2.7	B	563	845

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	309	77	75	900	0.343	307	462	0.0	0.5	6.310	A
2 - Ulnes Walton Lane	300	75	281	711	0.422	298	100	0.0	0.7	8.662	A
3 - A581 Southport Road (E)	462	116	78	954	0.485	458	500	0.0	1.0	7.433	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	369	92	90	890	0.414	368	555	0.5	0.7	7.175	A
2 - Ulnes Walton Lane	359	90	337	678	0.529	357	120	0.7	1.1	11.196	B
3 - A581 Southport Road (E)	552	138	94	944	0.585	550	601	1.0	1.4	9.372	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	451	113	109	878	0.514	450	677	0.7	1.1	8.734	A
2 - Ulnes Walton Lane	439	110	413	633	0.694	435	147	1.1	2.1	17.847	C
3 - A581 Southport Road (E)	676	169	115	931	0.726	671	733	1.4	2.6	14.026	B

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	451	113	110	878	0.514	451	681	1.1	1.1	8.797	A
2 - Ulnes Walton Lane	439	110	414	633	0.695	439	147	2.1	2.2	18.587	C
3 - A581 Southport Road (E)	676	169	116	930	0.727	676	737	2.6	2.7	14.519	B

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	369	92	91	890	0.414	370	561	1.1	0.7	7.245	A
2 - Ulnes Walton Lane	359	90	339	677	0.530	363	121	2.2	1.2	11.642	B
3 - A581 Southport Road (E)	552	138	95	943	0.585	557	607	2.7	1.5	9.713	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	309	77	76	899	0.343	309	468	0.7	0.6	6.380	A
2 - Ulnes Walton Lane	300	75	284	710	0.423	302	101	1.2	0.7	8.886	A
3 - A581 Southport Road (E)	462	116	79	953	0.485	464	506	1.5	1.0	7.622	A

2026 with Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 91% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	27.00	D

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		27.00	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2026 with Development	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	543	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	113	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	719	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	103	440
	2 - Ulnes Walton Lane	16	0	97
	3 - A581 Southport Road (E)	318	401	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	0	5
	2 - Ulnes Walton Lane	4	0	6
	3 - A581 Southport Road (E)	7	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.88	42.38	6.6	E	498	747
2 - Ulnes Walton Lane	0.21	8.14	0.3	A	104	156
3 - A581 Southport Road (E)	0.80	18.34	3.9	C	660	990

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	409	102	299	763	0.536	404	249	0.0	1.2	10.300	B
2 - Ulnes Walton Lane	85	21	327	684	0.124	84	376	0.0	0.1	6.342	A
3 - A581 Southport Road (E)	541	135	12	995	0.544	536	400	0.0	1.2	8.004	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	488	122	359	727	0.672	485	299	1.2	2.0	15.241	C
2 - Ulnes Walton Lane	102	25	393	645	0.157	101	451	0.1	0.2	6.998	A
3 - A581 Southport Road (E)	646	162	14	994	0.651	644	480	1.2	1.9	10.517	B

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	598	149	437	679	0.880	583	364	2.0	5.8	34.380	D
2 - Ulnes Walton Lane	124	31	472	598	0.208	124	548	0.2	0.3	8.028	A
3 - A581 Southport Road (E)	792	198	18	992	0.798	784	579	1.9	3.7	17.259	C

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	598	149	441	677	0.883	595	367	5.8	6.6	42.383	E
2 - Ulnes Walton Lane	124	31	482	592	0.210	124	554	0.3	0.3	8.136	A
3 - A581 Southport Road (E)	792	198	18	991	0.798	791	589	3.7	3.9	18.343	C

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	488	122	365	723	0.675	505	304	6.6	2.3	18.361	C
2 - Ulnes Walton Lane	102	25	409	635	0.160	102	461	0.3	0.2	7.142	A
3 - A581 Southport Road (E)	646	162	14	993	0.651	654	497	3.9	2.0	11.155	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	409	102	304	761	0.537	413	253	2.3	1.2	10.895	B
2 - Ulnes Walton Lane	85	21	335	680	0.125	85	382	0.2	0.2	6.404	A
3 - A581 Southport Road (E)	541	135	12	995	0.544	544	408	2.0	1.3	8.277	A

2026 with Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	14.30	B

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		14.30	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2026 with Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	413	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	401	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	619	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	34	379
	2 - Ulnes Walton Lane	106	0	295
	3 - A581 Southport Road (E)	518	101	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	8	4
	2 - Ulnes Walton Lane	1	0	0
	3 - A581 Southport Road (E)	3	3	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)
1 - A581 Southport Road (W)	0.52	8.88	1.1	A	379	568
2 - Ulnes Walton Lane	0.70	18.99	2.3	C	368	552
3 - A581 Southport Road (E)	0.73	14.88	2.7	B	568	852

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	311	78	75	899	0.346	309	466	0.0	0.5	6.339	A
2 - Ulnes Walton Lane	302	75	283	710	0.425	299	101	0.0	0.7	8.720	A
3 - A581 Southport Road (E)	466	117	79	953	0.489	462	503	0.0	1.0	7.495	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	371	93	90	890	0.417	371	559	0.5	0.7	7.220	A
2 - Ulnes Walton Lane	360	90	340	676	0.533	359	121	0.7	1.1	11.312	B
3 - A581 Southport Road (E)	556	139	95	943	0.590	555	604	1.0	1.4	9.491	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	455	114	110	878	0.518	453	682	0.7	1.1	8.814	A
2 - Ulnes Walton Lane	442	110	416	631	0.699	437	148	1.1	2.2	18.194	C
3 - A581 Southport Road (E)	682	170	116	930	0.733	677	738	1.4	2.7	14.338	B

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	455	114	111	877	0.518	455	687	1.1	1.1	8.881	A
2 - Ulnes Walton Lane	442	110	417	631	0.700	441	149	2.2	2.3	18.987	C
3 - A581 Southport Road (E)	682	170	117	930	0.733	681	742	2.7	2.7	14.876	B

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	371	93	92	889	0.418	373	566	1.1	0.8	7.291	A
2 - Ulnes Walton Lane	360	90	342	675	0.534	365	122	2.3	1.2	11.785	B
3 - A581 Southport Road (E)	556	139	96	942	0.591	561	610	2.7	1.5	9.855	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	311	78	76	898	0.346	312	472	0.8	0.6	6.410	A
2 - Ulnes Walton Lane	302	75	286	708	0.426	304	102	1.2	0.8	8.950	A
3 - A581 Southport Road (E)	466	117	80	952	0.489	468	509	1.5	1.0	7.689	A

2027 Base + Construction, AM Construction

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 93% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	7.18	A

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		7.18	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	310	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	46	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	347	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	117	193
	2 - Ulnes Walton Lane	10	0	36
	3 - A581 Southport Road (E)	86	261	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	2	6
	2 - Ulnes Walton Lane	6	0	9
	3 - A581 Southport Road (E)	9	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.44	8.76	0.8	A	284	427
2 - Ulnes Walton Lane	0.07	5.56	0.1	A	42	63
3 - A581 Southport Road (E)	0.38	5.99	0.6	A	318	478

Main Results for each time segment

05:45 - 06:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	233	58	195	826	0.282	232	72	0.0	0.4	6.309	A
2 - Ulnes Walton Lane	35	9	144	793	0.044	34	283	0.0	0.0	5.141	A
3 - A581 Southport Road (E)	261	65	7	998	0.262	260	171	0.0	0.4	4.971	A

06:00 - 06:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	279	70	234	803	0.347	278	86	0.4	0.5	7.162	A
2 - Ulnes Walton Lane	41	10	173	776	0.053	41	339	0.0	0.1	5.311	A
3 - A581 Southport Road (E)	312	78	9	997	0.313	312	205	0.4	0.5	5.358	A

06:15 - 06:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	341	85	287	771	0.443	340	106	0.5	0.8	8.713	A
2 - Ulnes Walton Lane	51	13	212	753	0.067	51	415	0.1	0.1	5.555	A
3 - A581 Southport Road (E)	382	96	11	996	0.384	381	251	0.5	0.6	5.977	A

06:30 - 06:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	341	85	287	770	0.443	341	106	0.8	0.8	8.761	A
2 - Ulnes Walton Lane	51	13	212	752	0.067	51	416	0.1	0.1	5.558	A
3 - A581 Southport Road (E)	382	96	11	996	0.384	382	252	0.6	0.6	5.989	A

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	279	70	235	802	0.347	280	86	0.8	0.6	7.211	A
2 - Ulnes Walton Lane	41	10	174	775	0.053	41	341	0.1	0.1	5.318	A
3 - A581 Southport Road (E)	312	78	9	997	0.313	313	207	0.6	0.5	5.375	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	233	58	197	825	0.283	234	72	0.6	0.4	6.366	A
2 - Ulnes Walton Lane	35	9	146	792	0.044	35	285	0.1	0.0	5.150	A
3 - A581 Southport Road (E)	261	65	8	998	0.262	262	173	0.5	0.4	4.997	A

2027 Base + Construction, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 91% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	21.51	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		21.51	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	527	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	109	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	694	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	85	442
	2 - Ulnes Walton Lane	12	0	97
	3 - A581 Southport Road (E)	320	374	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	0	5
	2 - Ulnes Walton Lane	5	0	10
	3 - A581 Southport Road (E)	7	1	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)
1 - A581 Southport Road (W)	0.83	31.34	4.8	D	484	725
2 - Ulnes Walton Lane	0.20	8.38	0.3	A	100	150
3 - A581 Southport Road (E)	0.77	16.11	3.3	C	637	955

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	397	99	279	775	0.512	392	248	0.0	1.1	9.689	A
2 - Ulnes Walton Lane	82	21	329	683	0.120	81	342	0.0	0.1	6.543	A
3 - A581 Southport Road (E)	522	131	9	997	0.524	518	402	0.0	1.1	7.724	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	474	118	335	742	0.639	471	297	1.1	1.8	13.711	B
2 - Ulnes Walton Lane	98	24	395	644	0.152	98	411	0.1	0.2	7.214	A
3 - A581 Southport Road (E)	624	156	11	996	0.627	622	482	1.1	1.7	9.913	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	580	145	408	697	0.833	570	363	1.8	4.4	27.442	D
2 - Ulnes Walton Lane	120	30	478	595	0.202	120	500	0.2	0.3	8.291	A
3 - A581 Southport Road (E)	764	191	13	994	0.769	758	584	1.7	3.2	15.401	C

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	580	145	412	695	0.835	579	365	4.4	4.8	31.336	D
2 - Ulnes Walton Lane	120	30	485	590	0.203	120	505	0.3	0.3	8.380	A
3 - A581 Southport Road (E)	764	191	13	994	0.769	764	592	3.2	3.3	16.109	C

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	474	118	340	739	0.641	485	301	4.8	1.9	15.383	C
2 - Ulnes Walton Lane	98	24	407	637	0.154	98	418	0.3	0.2	7.319	A
3 - A581 Southport Road (E)	624	156	11	996	0.627	630	494	3.3	1.8	10.371	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	397	99	283	773	0.513	400	251	1.9	1.1	10.138	B
2 - Ulnes Walton Lane	82	21	336	679	0.121	82	347	0.2	0.2	6.601	A
3 - A581 Southport Road (E)	522	131	9	997	0.524	525	409	1.8	1.2	7.953	A

2027 Base + Construction, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	17.40	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		17.40	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	417	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	450	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	629	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	35	382
	2 - Ulnes Walton Lane	119	0	331
	3 - A581 Southport Road (E)	521	108	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	8	4
	2 - Ulnes Walton Lane	1	0	1
	3 - A581 Southport Road (E)	3	6	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)
1 - A581 Southport Road (W)	0.53	9.08	1.1	A	383	574
2 - Ulnes Walton Lane	0.79	26.77	3.5	D	413	619
3 - A581 Southport Road (E)	0.75	16.22	3.0	C	577	866

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	314	78	81	896	0.350	312	477	0.0	0.6	6.404	A
2 - Ulnes Walton Lane	339	85	286	709	0.478	335	107	0.0	0.9	9.642	A
3 - A581 Southport Road (E)	474	118	89	947	0.500	469	532	0.0	1.0	7.736	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	375	94	97	886	0.423	374	573	0.6	0.8	7.321	A
2 - Ulnes Walton Lane	405	101	343	675	0.599	402	128	0.9	1.5	13.230	B
3 - A581 Southport Road (E)	565	141	106	936	0.604	563	639	1.0	1.5	9.940	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	459	115	118	873	0.526	458	698	0.8	1.1	9.002	A
2 - Ulnes Walton Lane	495	124	419	629	0.787	488	156	1.5	3.3	24.498	C
3 - A581 Southport Road (E)	693	173	129	922	0.751	687	778	1.5	2.9	15.493	C

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	459	115	119	873	0.526	459	704	1.1	1.1	9.076	A
2 - Ulnes Walton Lane	495	124	421	629	0.788	495	157	3.3	3.5	26.769	D
3 - A581 Southport Road (E)	693	173	131	921	0.752	692	784	2.9	3.0	16.220	C

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	375	94	98	885	0.423	376	582	1.1	0.8	7.402	A
2 - Ulnes Walton Lane	405	101	345	674	0.601	412	130	3.5	1.6	14.303	B
3 - A581 Southport Road (E)	565	141	109	934	0.605	571	648	3.0	1.6	10.406	B

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	314	78	82	895	0.351	315	484	0.8	0.6	6.480	A
2 - Ulnes Walton Lane	339	85	288	707	0.479	341	108	1.6	0.9	10.007	B
3 - A581 Southport Road (E)	474	118	90	946	0.501	476	539	1.6	1.1	7.961	A

Appendix U - Guidance on the Use of Tactile Paving Surfaces

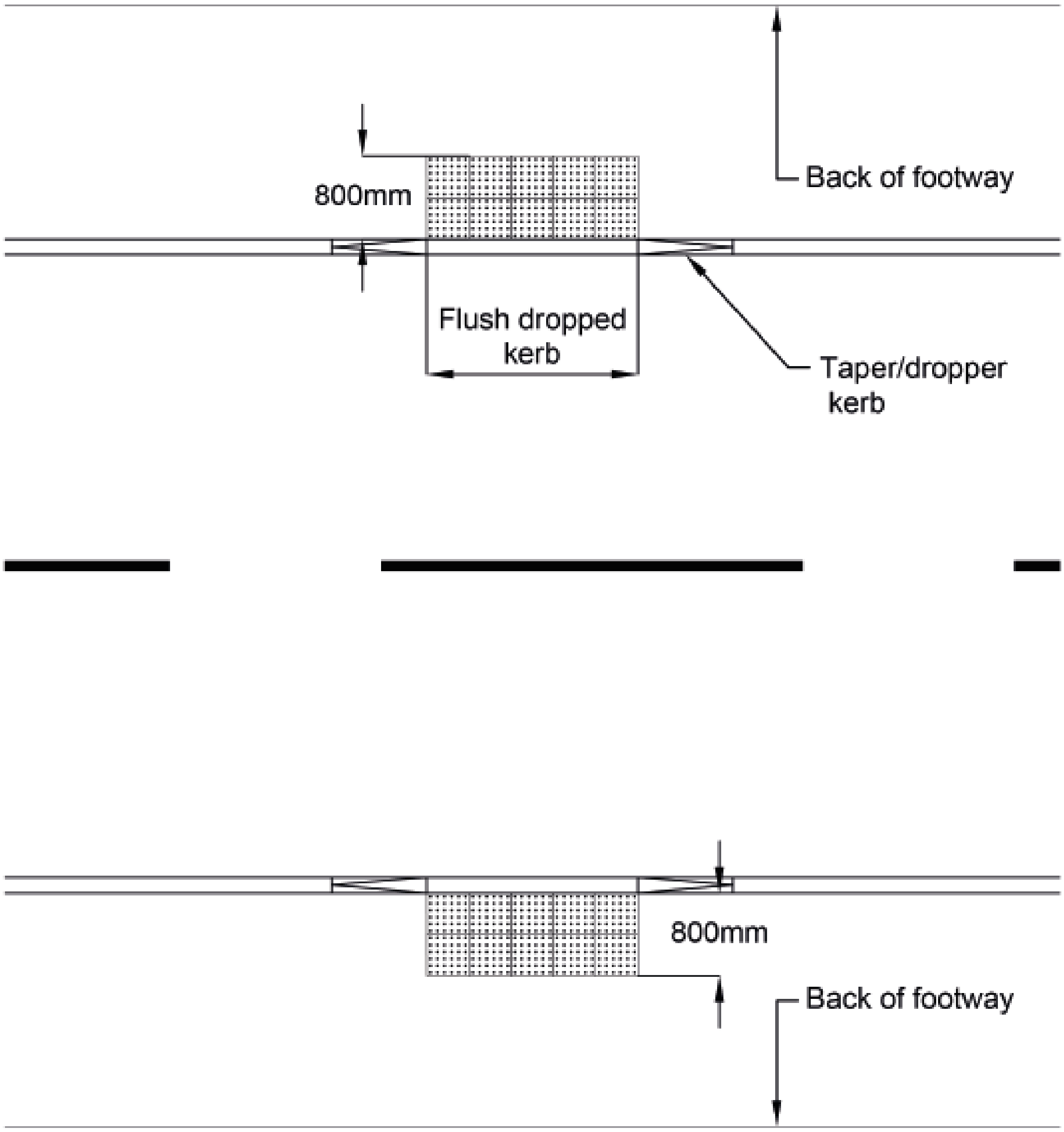
EXTRACT ONLY

Department for Transport

Guidance on the Use of Tactile Paving Surfaces

December 2021

Figure 8: Layout of the blister surface at uncontrolled crossing away from a junction



Note: Not to scale, all dimensions in mm

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