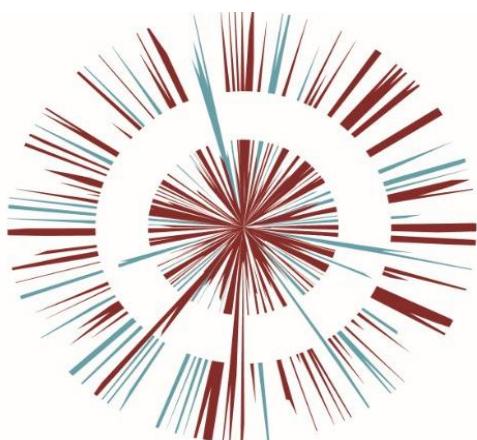




OMEGA ZONE 8, ST HELENS

Omega St Helens Ltd / T. J. Morris Limited



**Transport Assessment
Appendices
OPP DOC. 4.2**

Appendix A

SCOPING DISCUSSIONS WITH RELEVANT STAKEHOLDERS



OMEGA TRANSPORT STUDY

SCOPING NOTE

27 MAY 2019

Introduction

WSP has been commissioned by Omega Warrington Limited (OWL) to prepare a series of Transport related submissions in support of planning applications for various parts of the Omega development site, located in the Boroughs of Warrington and St Helens.

The note is intended to form the scoping study for the various Transport Assessments and Technical Notes required for the Omega site, summarising the outcome of a scoping meeting held with St Helens Metropolitan Borough Council, Warrington Borough Council and Highways England on 15 May 2019.

Planning Submissions

It is proposed to prepare three separate planning submissions for the Omega site as follows:

- A reserved matters application for B2/B8 development on Omega Zones 1&2, located to the south of Skyline Drive and west of Burtonwood Road accessed from Fairchild Road;
- A hybrid application for c. 185,800sqm (2,000,000sqft) B2/B8 industrial uses on Omega Zone 8, located to the west of Omega Zone 7 and accessed from the Omega Boulevard / Catalina Way roundabout, together with a Section 73 application to delete the B1 floorspace on Omega Zones 1&2; and
- An outline planning application for c. 600 residential units, located south of the Zones 1&2 reserved matters application site. This is a net increase of 300 residential units over the currently consented residential development on Omega South, reflecting the necessary changes in the various redline boundaries as a consequence of the changes in use on Omega Zones 1-6. The application for 600 residential units will coincide with a relinquishment of consent for 300 residential units on Zones 3-6.

Figure 1 below shows the location of the three areas that would form the separate planning submissions.

Figure 1: Location Plan





Current Planning Consents

The entire Omega site (excluding Zone 8) currently has planning consent, covering a variety of land uses. As part of the suite of applications outlined above it is proposed, in planning terms, to link the various applications through a legal agreement to enable (in transportation terms) an offsetting of currently consented development trips against the future development proposals for the site. In this respect, it is proposed to relinquish the current B1 land use consent against the B2/B8 proposals for Zone 8 and the residential proposals south of Zone 1&2, together with a relinquishment of consent for 300 residential units on Zones 3-6. The current Zone 1&2 site has consent for B1/B2/B8 development.

In order to support the various applications, it is proposed to undertake a series of traffic analyses framed against a baseline of currently consented Omega development.

Study Network

Following scoping meeting discussions, the agreed study network comprises the following junctions:

- Burtonwood Road / Lockheed Road roundabout
- J62 Junction 8 signalised gyratory
- Burtonwood Road / Charon Way signalised junction
- Burtonwood Road / Kingswood Road signalised junction
- Burtonwood Road / Westbrook Way roundabout
- Skyline Drive / Fairchild Road priority junction
- Omega Boulevard / Catalina Way roundabout

In addition, an assessment of the M62 Junction 8 merge and diverge slip roads will be undertaken with reference to the Design Manual for Roads and Bridges (DMRB)

Traffic Surveys

As agreed during scoping discussions, traffic surveys (classified junction turning count surveys and queue surveys) will be carried out for the agreed study network on a weekday in June between the hours of 05:30-10:00 and 16:00-19:00.

Network Assessment

The study network will be assessed using traditional junction modelling software (Transyt or Linsig for signalised junctions, Junctions 9 for priority junctions).

The M62 Junction 8 merge and diverge slip roads will be assessed in accordance with DMRB 6.2.1 (TD 22/06 Layout of Grade Separated Junctions).

It was agreed that Warrington Borough Council would supply MOVA data for those junctions within the study network that operated under MOVA control.

In order to build up a suitable evidence base to support the various planning applications, it has been discussed that the development impact analyses be undertaken and presented in stages within an overall impact assessment report, which could be produced as an Appendix to the various planning submissions with the key relevant outputs for that particular application being reported within that application's transport report.

The proposed stages of impact analysis are outlined below:

1. 2019 Existing network flows
2. Base (existing + currently committed Omega developments)
3. Base + Zone 1&2 B2/B8 development (existing + currently committed Omega developments – Omega B1 development)
4. Base + Zone 1&2 B2/B8 development + 300-unit residential development
5. Base + Zone 1&2 B2/B8 development + 300-unit residential development + Omega Zone 8 B2/B8 development

Trip Generation

Trip generation characteristics for the newly proposed development will be calculated as follows:

RESIDENTIAL DEVELOPMENT

The agreed residential trip rates used in the Omega Zone 3-6 Transport Assessment will be applied to the proposed 600-unit (300-unit net) residential development located south of Omega Zones 1&2. The residential trip rates are shown in Table 1.

Table 1: Residential Development - Trip Rates

Trip Rates	AM peak (08:00-09:00)		PM Peak (17:00-18:00)	
Mode	Arrivals	Departures	Arrivals	Departures
Pedestrians	0.043	0.135	0.055	0.050
Cyclists	0.005	0.016	0.011	0.011
Public Transport Users	0.003	0.016	0.014	0.005
Vehicles	0.148	0.419	0.372	0.224
Vehicle Occupants	0.184	0.623	0.484	0.303
Total People	0.234	0.789	0.564	0.370

ZONE 8 – B2/B8 DEVELOPMENT

Omega Zone 8 is proposed to comprise a mix of B2 and B8 development and, in line with other industrial development within Omega will be assessed as a maximum of 30% B2 development, with the remainder being B8 development.

It has been agreed to derive trip rates for the proposed development through surveys of existing B2 and B8 uses on the Omega site. Classified vehicle arrival and departure surveys will be undertaken as follows to determine an Omega B2 and B8 trip rate:

- B2 Development – surveys will be undertaken of the Dominos industrial unit located to the south of Skyline Drive, accessed from Fairchild Road.
- B8 development – surveys will be undertaken of the Asda industrial unit located on Skyline Drive, together with a combined survey of Lockheed Road (serving numerous industrial units), to determine a blended B8 trip rate.

It is anticipated that the surveys will cover 05:00-19:00 to ensure the corresponding morning and evening peak hours are captured.



RESERVED MATTERS APPLICATION ZONE 1&2 DEVELOPMENT

Omega Zones 1&2 currently has planning consent for B1, B2 and B8 development, with agreed trip rates. The B2 and B8 trip rates are shown in Tables 2 and 3 below.

Table 2: Omega Zone 1&2: B2 Trip Rates

Trip rates	AM peak (08:00-09:00)		PM Peak (17:00-18:00)	
Mode	Arrivals	Departures	Arrivals	Departures
Total Vehicles	0.459	0.223	0.118	0.395
Car	0.442	0.203	0.111	0.385
HGV	0.017	0.02	0.007	0.01

Table 3: Omega Zone 1&2: B8 Trip Rates

Trip rates	AM peak (08:00-09:00)		PM Peak (17:00-18:00)	
Mode	Arrivals	Departures	Arrivals	Departures
Total Vehicles	0.048	0.027	0.024	0.044
Car	0.033	0.009	0.009	0.031
HGV	0.015	0.018	0.015	0.013

Trip Distribution

Trip distribution patterns for the various developments will be calculated as follows:

RESIDENTIAL DEVELOPMENT

The proposed 600-unit (300-unit net) residential development is essentially an extension of the currently consented residential development located on Omega south. It is proposed to utilise the agreed trip distribution pattern for the currently consented Omega residential development and apply this to the proposed extension.

ZONE 8 – B2/B8 DEVELOPMENT

It is proposed to calculate the trip distribution pattern for cars and HGV's separately. For cars it is proposed to examine partial postcode data from employee travel plan surveys within the Omega site. This will provide a good proxy for the likelihood of employee based travel to work, based on existing industrial uses within the Omega site. For HGVs it is proposed to route all HGV movements to/from M62 Junction 8, via Catalina Way to Skyline Drive and then distribute HGV movements in accordance with existing HGV turning proportions at Junction 8 to/from Skyline Drive, based on the propensity for existing HGV movements within the Omega site to provide a good proxy for future HGV movements from Zone 8.

RESERVED MATTERS APPLICATION ZONE 1&2 DEVELOPMENT

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In order to undertake the B2 and B8 trip distribution calculations, we would be grateful if Warrington Borough Council could supply partial postcode data from the Omega travel plan surveys to inform the calculations.



Sustainable Travel

The Omega site currently enjoys an excellent network of sustainable travel infrastructure, in the form of segregated footways and cycleways throughout the site, including through the green heart, together with a bespoke public transport service funded through S.106 contributions. It is proposed to build upon the existing network of infrastructure, providing footways and cycleways as part of the masterplanning for the various planning applications, together with investigating additional and/or re-routed /extended public transport services through the Omega south site. Discussions will be undertaken with both Warrington and St Helens to determine the most appropriate provision of public transport services, ensuring that all zones of development on Omega south are appropriately served by public transport.

Framework Travel Plan

RESIDENTIAL DEVELOPMENT

A framework residential travel plan was prepared as part of the proposed residential development for Omega Zones 3-6. For the residential planning application, we would propose to prepare a similar framework residential travel plan to ensure that future residents have access to suitable information and are aware of the sustainable travel measures throughout the Omega site, encouraging the use of sustainable modes of travel in preference to the private car.

ZONE 8 – B2/B8 DEVELOPMENT

We would propose to prepare a Framework Travel Plan to support the planning application for Omega Zone 8. The Framework will identify measures that could be implemented to reduce dependency on the private car, together with the method for reviewing, managing, implementing and promoting sustainable travel initiatives for the subject site.

Stone, Adam

From: Taylor, Mike <mike.taylor@warrington.gov.uk>
Sent: 14 June 2019 08:44
To: Pendergast, John; Bisset, Douglas; Fiona Soutar; Mark Osborne; McKenzie, Neville
Cc: Chris Gardner; Colin Graham (colin.graham@millerdevelopments.co.uk)
(colin.graham@millerdevelopments.co.uk); Griffin, Sandy; Melanie Hale; Alan
Kilroe; Johnson, Adam; Marsh, Kristian; spatialplanningNW
Subject: RE Omega Transport Studies - scoping note

Douglas,

Just as a follow-on from the comprehensive review provided by John I would make the following comments:

Warrington Policies and policy documents, particularly transport policies, should be given due consideration.

The following committed developments in Warrington are appropriate for consideration: Apollo Way (Outline 2007/11923; site part built out and subject to a number of reserved matters applications) and Lingley Mere East (Outline 2007/11923; site part built out (not occupied) and subject to reserved matters). Further information available from my planning colleagues on devcontrol@warrington.gov.uk

Regards

Mike

Mike Taylor
Transport Development Control Team Leader

Environment and Transport Directorate
Transport for Warrington
Warrington Borough Council
New Town House, Buttermarket Street, Warrington, WA1 2NH

 mike.taylor@warrington.gov.uk

 Office: 01925 444086 Mobile: 07966 884639

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From: Pendergast, John [mailto:john.Pendergast@wsp.com]
Sent: 13 June 2019 10:34
To: Bisset, Douglas <Douglas.Bisset@wsp.com>; Fiona Soutar <FionaSoutar@sthelens.gov.uk>; Mark Osborne <markosborne@sthelens.gov.uk>; Taylor, Mike <mike.taylor@warrington.gov.uk>; McKenzie, Neville <Neville.McKenzie@wsp.com>
Cc: Chris Gardner <chris@progresspc.co.uk>; Colin Graham (<colin.graham@millerdevelopments.co.uk> <colin.graham@millerdevelopments.co.uk>); Griffin, Sandy <Alexander.Griffin@wsp.com>; Melanie Hale <MelanieHale@sthelens.gov.uk>; Alan Kilroe <AlanKilroe@sthelens.gov.uk>; Johnson, Adam <Adam.Johnson@highwaysengland.co.uk>; Marsh, Kristian <Kristian.Marsh@highwaysengland.co.uk>; spatialplanningNW <spatialplanningNW@wsp.com>
Subject: RE Omega Transport Studies - scoping note

Douglas,

Adam Johnson has asked me to send you a copy of our scoping note response directly on behalf of Highways England.

Please do let us know if you have any questions or require any additional information.

Regards,

John

John Pendergast
Principal Transport Planner



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From: Bisset, Douglas
Sent: 27 May 2019 16:16
To: Fiona Soutar <FionaSoutar@sthelens.gov.uk>; Mark Osborne <markosborne@sthelens.gov.uk>; Taylor, Mike <mike.taylor@warrington.gov.uk>; McKenzie, Neville <Neville.McKenzie@wsp.com>; Pendergast, John <jhn.Pendergast@wsp.com>
Cc: Chris Gardner <chris@progresspc.co.uk>; Colin Graham (colin.graham@millerdevelopments.co.uk) (colin.graham@millerdevelopments.co.uk) <colin.graham@millerdevelopments.co.uk>; Griffin, Sandy <Alexander.Griffin@wsp.com>; Melanie Hale <MelanieHale@sthelens.gov.uk>; Alan Kilroe <AlanKilroe@sthelens.gov.uk>
Subject: Omega Transport Studies - scoping note

All,

Following our meeting on 15 May 2019, please find attached our scoping note setting out the transport matters and assessment methodology to be adopted for the various forthcoming Omega applications.

I trust this reflects the discussions that took place however, if you have any queries please don't hesitate to get in touch.

Regards,
Douglas.

Douglas Bisset
Technical Director



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Stone, Adam

From: Taylor, Mike <mike.taylor@warrington.gov.uk>
Sent: 11 June 2019 09:16
To: Fiona Soutar; Bisset, Douglas
Cc: Alan Kilroe; Griffin, Sandy; Chris Gardner; Colin Graham
(colin.graham@millerdevelopments.co.uk)
(colin.graham@millerdevelopments.co.uk); Pendergast, John; Mark Osborne;
Melanie Hale; McKenzie, Neville
Subject: RE Omega Transport Studies - scoping note

Douglas,

Thank you for the Scoping Report. Apologies for my delay in replying, I've only just returned following an absence.

I have passed on your request for postcode data from the existing Omega Travel Plan surveys to Lesley McAllister, the Council's Travel Choices Manager, who will respond direct. I have also spoken to our Traffic Signals Team who will be happy to provide data in relation to signal timings and MOVA logs, however, they will need a direct request from yourself and this will involve a fee. Please email them direct at utmc@warrington.gov.uk and they will provide the data.

In respect of the Note I am happy that it reflects our discussions but would highlight a few issues that have been touched upon but not fully addressed:

1. I agree with Fiona that any application needs to consider cross boundary sustainable transport linkage and the potential to utilise the existing crossings of the M62 should be fully examined.
2. The layout will involve a cul-de-sac in excess of our usual standards and pedestrian/cycle linkage and provision to cater for bus services needs to be included within the final layout.
3. We have previously raised concerns about the pressure placed on the local and strategic road network when the current extent of Omega is fully developed, particularly on M62 J8, and the long-term future-proofing of the network needs consideration given future wider development possibilities in the area; potentially a new access to the M62 either catering for all movements or as a minimum with west facing slip roads. Any proposal should be able to demonstrate that such a solution would not be physically prohibited.

Let me know if you need any further information.

Regards

Mike

Mike Taylor
Transport Development Control Team Leader

Environment and Transport Directorate
Transport for Warrington
Warrington Borough Council
New Town House, Buttermarket Street, Warrington, WA1 2NH

 mike.taylor@warrington.gov.uk

 Office: 01925 444086 Mobile: 07966 884639

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From: Fiona Soutar [mailto:FionaSoutar@sthelens.gov.uk]
Sent: 28 May 2019 11:20
To: Bisset, Douglas <Douglas.Bisset@wsp.com>
Cc: Alan Kilroe <AlanKilroe@sthelens.gov.uk>; Griffin, Sandy <Alexander.Griffin@wsp.com>; Chris Gardner <chris@progresspc.co.uk>; Colin Graham (colin.graham@millerdevelopments.co.uk) <colin.graham@millerdevelopments.co.uk> <colin.graham@millerdevelopments.co.uk>; Pendergast, John <john.Pendergast@wsp.com>; Mark Osborne <markosborne@sthelens.gov.uk>; Melanie Hale <MelanieHale@sthelens.gov.uk>; Taylor, Mike <mike.taylor@warrington.gov.uk>; McKenzie, Neville <Neville.McKenzie@wsp.com>
Subject: Re: Omega Transport Studies - scoping note

Hello Douglas,

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From St Helens perspective, we would like sustainable transport links to St Helens to be considered within the transport work, in particular any improvements to the existing Right of Way across the M62 and any opportunities to improve sustainable transport links to St Helens. These should also support the travel plan aspirations for the Zone 8 application.

In terms of the highway impact, we are happy for Warrington Council and Highways England to take the lead. However, depending on the identified distribution and trip generation, we may require junctions within St Helens boundary to be considered within the Transport Assessment. However, we can only take a view on this once the distribution and trip generation have been agreed with Warrington Council and Highways England.

Many thanks,

Fiona

Fiona Soutar
Principal Transport Officer (Specialist Advice Team)
St. Helens Council

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E: fionasoutar@sthelens.gov.uk
A: Place Services, Town Hall,
Victoria Square, St Helens, Merseyside, WA10 1HP

▼ "Bisset, Douglas" --27/05/2019 16:16:41---All, Following our meeting on 15 May 2019, please find attached our scoping note setting out the tra

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Cc: Chris Gardner <chris@progresspc.co.uk>, "Colin Graham (colin.graham@millerdevelopments.co.uk)" <colin.graham@millerdevelopments.co.uk> <colin.graham@millerdevelopments.co.uk>, "Griffin, Sandy" <Alexander.Griffin@wsp.com>, Melanie Hale <MelanieHale@sthelens.gov.uk>, Alan Kilroe <AlanKilroe@sthelens.gov.uk>
Date: 27/05/2019 16:16
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Regards,

Douglas.

Douglas Bisset

Technical Director

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-LAEmHhHzdJzBITWfa4Hgs7pbKI [attachment "image001.png" deleted by Fiona Soutar/CEXEC/STHMBC]
[attachment "190527 Omega Transport Study scoping note.pdf" deleted by Fiona Soutar/CEXEC/STHMBC]

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Stone, Adam

From: Fiona Soutar <FionaSoutar@sthelens.gov.uk>
Sent: 28 May 2019 11:20
To: Bisset, Douglas
Cc: Alan Kilroe; Griffin, Sandy; Chris Gardner; Colin Graham
(colin.graham@millerdevelopments.co.uk)
(colin.graham@millerdevelopments.co.uk); Pendergast, John; Mark Osborne;
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Fiona

Fiona Soutar
Principal Transport Officer (Specialist Advice Team)
St. Helens Council

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Cc: Chris Gardner <chris@progresspc.co.uk>, "Colin Graham (colin.graham@millerdevelopments.co.uk)" <colin.graham@millerdevelopments.co.uk>, "Griffin, Sandy" <Alexander.Griffin@wsp.com>, Melanie Hale <MelanieHale@sthelens.gov.uk>, Alan Kilroe <AlanKilroe@sthelens.gov.uk>
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Regards,

Douglas.

Douglas Bisset

Technical Director

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TECHNICAL NOTE

Project:	Omega Development Site	Date:	05 th June 2019
		TN Ref:	001
Subject:	Review of Transport Scoping Note		
Author:	MC	Project Ref:	70058845-024
Reviewed:	JP / NM		

1.1 PREAMBLE

Highways England has been appointed by the Secretary of State for Transport as a strategic highway company under the provisions of the Infrastructure Act 2015. Highways England is responsible for operating, maintaining and improving the SRN in England, in accordance with the Licence issued by the Secretary of State for Transport (April 2015) and Government policies and objectives.

Highways England's approach to engaging with the planning system is governed by the advice and guidance set out in:

The Strategic Road Network Planning for the Future - A guide to working with Highways England on planning matters (2015).

The document is written in the context of statutory responsibilities as set out in Highways England's Licence, and in the light of Government policy and regulation, including the:

- National Planning Policy Framework (NPPF);
- Town and Country Planning Development Management (Procedure) Order (England) 2015 (DMPO); and
- DfT Circular 02/2013 The Strategic Road Network and the delivery of sustainable development ('the Circular').

As a statutory consultee in the planning system, Highways England has a regulatory duty to co-operate. Consequently, Highways England are obliged to give consideration to all proposals received and to provide appropriate, timely and substantive responses.

Highways England's desire to be a proactive planning partner goes beyond this statutory role, but follows the spirit of the Licence which stipulates that Highways England should:

"Support local and national economic growth and regeneration"

1.2 INTRODUCTION

1.2.1 Overview of Development Proposals

WSP (Scotland), appointed by Omega Warrington Limited (OWL), have prepared a Transport Scoping Note prior to the submission of a Transport Assessment (TA) and Framework Travel Plan (FTP) to support the latest planning applications for various parts of the existing Omega development site, located adjacent to the M62 Junction 8 in Warrington and St. Helens.

The scoping note states that entire Omega site (excluding Zone 8) currently has planning consent, covering a variety of land uses. The following three planning submissions are being proposed within the existing site and on the proposed Omega Zone 8 site:

- A reserved matters application for B2/B8 development on Omega Zones 1&2, located to the south of Skyline Drive and west of Burtonwood Road accessed from Fairchild Road;
- A hybrid application for c. 185,800sqm (2,000,000sqft) B2/B8 industrial uses on Omega Zone 8, located to the west of Omega Zone 7 and accessed from the Omega Boulevard / Catalina Way roundabout, together with a Section 73 application to delete the B1 floorspace on Omega Zones 1&2; and
- An outline planning application for c. 600 residential units, located south of the Zones 1&2 reserved matters application site. This is a net increase of 300 residential units over the currently consented residential development on Omega South, reflecting the necessary changes in the various redline boundaries as a consequence of the changes in use on Omega Zones 1-6. The application for 600 residential units will coincide with a relinquishment of consent for 300 residential units on Zones 3-6.

An extract of the revised site layout plan at the Omega development site is shown in **Figure 1**, below.

Figure 1: Proposed Site Layout Plan





1.2.2 Background

WSP will undertake a review of the Transport Scoping Note setting out the approach to the transportation elements of the latest planning applications, in order to determine if a robust assessment methodology has been adopted which accounts for the potential development impacts to the Strategic Road Network (SRN), as a result of the revised development quantum at the Omega site. WSP are aware of several emerging applications across the Omega site, with the varying and complex nature of the development, newly consented developments, change of use applications and the opening of new developments at the site.

Prior to the production of the scoping note, consultation has taken place with the Omega site owners, applicant and local authority stakeholders and Highways England. A meeting was held on the 2nd May 2019 and was attended by the developers, Warrington Borough Council (WBC) and Highways England / WSP concerning the Omega West section of the entire development site, at Homes England in Warrington.

Subsequently, a scoping meeting relating to the proposed planning applications was held on the 15th May 2019 between the developers and the transport consultants (WSP Scotland), WSP representing Highways England, St. Helens Metropolitan Borough Council (SHMBC) and Warrington Borough Council (WBC).

The following parameters to be used within the Transport Assessment, were agreed to by all parties at the preceding scoping meetings:

- Scope of study area;
- The commission of new survey counts at the agreed junctions; and
- The assessment of M62 Junction 8 using TRANSYT modelling software and the subsequent assessment of the merge / diverges at the junction itself.

1.3 REVIEW OF TRANSPORT SCOPING NOTE

1.3.1 National, Regional & Local Policy

No reference has been made to any national, regional and local planning policy within the Scoping Note. With regards to national planning policy, the National Planning Policy Framework (NPPF) has not been referred to. From Highways England's perspective, the key documents to be noted within the forthcoming Transport Assessment are:

- *DfT Circular 02/2013: The Strategic Road Network and the Delivery of Sustainable Development;*
- *The Strategic Road Network – Planning for the Future – A Guide to Working with Highways England on Planning Matters (2015)*

It is suggested that the applicant review the guidance above to assist in the production of the forthcoming TA. From a local perspective, the following policies have also not been referred to:

- *St. Helens Local Plan 2018-2033 Preferred Options (2016);*
- *Warrington Draft Local Plan (2019) [Under Consultation] –Reviewed by Atkins; and*
- *St. Helens Supplementary Planning Document, Ensuring a Choice of Travel (June 2010)*

Key aspects of the above documents relating to the proposed development have not been referenced within the Scoping Note. WSP (Manchester), who will undertake a review on behalf of Highways England of the emerging St. Helens Local Plan document identified that Site Allocation EA1 is of a significant size, and considering its probable use for freight and logistics the site is likely to generate a significant number of trips that will predominantly impact on the SRN.

WSP understands that “Zone 8” of the Omega site currently lies within ‘Greenbelt’ land in the borough of St. Helens, located next to and bordering the Warrington borough. Zone 8 lies within and apparently beyond the current extent of the “EA1” site within the local plan preferred options, and is described as the “*Omega South Western Extension*”. The site has been identified as a Strategic Employment Site Allocation within Policy LAP04.1 of the St. Helens Local Plan Options Report (December 2016), and is set to be removed from greenbelt and designated as an allocated site (St. Helens Borough Draft Local Plan 2020-2035). **Figure 2** illustrates a plan of the allocated EA1 site.

It should be noted that this local plan is currently in draft and not anticipated for adoption until next year. As such, if the application comes forward in advance of the local plan being adopted the application site status will be an unallocated green belt site. Section 87 and 88 of *The Strategic Road Network – Planning for the Future* states “*If, however, the development proposed has not been subject to an appropriate level of assessment, or is not included or consistent with an approved local plan, then we would anticipate agreeing the scope of work required to make a full assessment.*”

The current Zone 8 proposals will need to rely on vehicular access from the existing Omega South sites, therefore the planning of the development and transport access requirements will require close cooperation with the developers of Omega and with WBC.

Figure 2: Site EA1 from St. Helens Local Plan



Key Points:

The forthcoming Transport Assessment will need to pay due cognisance to the appropriate national, regional and local plan policies, particularly as Zone 8 of the Omega development currently lies within greenbelt land.

The proposed Zone 8 site (Omega South Western Extension site) will rely on access from the existing Omega South sites and the planning of the development and transport access requirements will require close cooperation with the developers of Omega and with Warrington Borough Council.

1.3.2 Study Area

It is suggested that peak periods for both the AM and PM will be derived from surveys that will be undertaken on a neutral weekday in June between the hours of 05:30 – 10:00 and 16:00 – 19:00. Manual Classified Counts and queue length counts will be undertaken at the following locations:

- *Burtonwood Road / Lockheed Road roundabout;*
- *M62 Junction 8 signalised gyratory;*
- *Burtonwood Road / Charon Way signalised junction;*
- *Burtonwood Road / Kingswood Road signalised junction;*
- *Burtonwood Road / Westbrook Way roundabout;*
- *Skyline Drive / Fairchild Road priority junction; and*
- *Omega Boulevard / Catalina Way roundabout.*

Additionally, the scoping note states that the assessment of M62 Junction 8 will be supported by a demonstration that future development traffic can be suitably accommodated at the merges and diverges of the junction. Based on capacity assessments as specified within DMRB's TD 22/06 document (*Layout of Grade Separated Junctions*).

This extent of study network is considered appropriate for the assessment of the development impacts at the SRN.

1.3.3 Assessment Years

It is noted that proposed opening and future year assessments has not been set out within the Scoping Note.

In accordance with Highways England's key guidance document; *The Strategic Road Network: Planning for the Future (2015)*, the document requires the following scenarios to inform judgement:

- *at opening year, assuming full build-out and occupation; and*
- *either a date ten years after the date of registration of the associated planning or at the end of the Local Plan period (whichever is the greater).*

WSP recommend that the proposed opening year for the developments is realistic of when the developments would be built-out and occupied, and therefore request clarification to what the opening, and future years used for the assessment of M62 Junction 8 will be within the forthcoming TA and how this would be dealt with if the different elements of the applications have varying opening years.

Key Point:

WSP request clarification on the proposed opening year for the proposed development and future year of assessment at the key SRN junction of M62 Junction 8.

1.3.4 Development Traffic – Trip Generation

Residential Development

It is stated within the Scoping Note that trip generation forecasts for the residential development will be based on the agreed trip rates used within the "Omega Zone 3-6" TA. The approach to calculating the proposed increase in residential trips is deemed appropriate. Notwithstanding, WSP have undertaken a review of the agreed residential trip rates using trips rates extracted from the TRICS database.

Table 1-1: Trip Rate Comparison

Time	Trip Rates (Within Scoping Note)			Trip Rates (Obtained from TRICS V7.6.1)		
	Arrivals	Departures	Total	Arrivals	Departures	Total
08:00 – 09:00	0.148	0.419	0.567	0.179	0.398	0.577
17:00 – 18:00	0.372	0.224	0.596	0.389	0.181	0.570

Based upon the above comparison, the previously agreed trips rates used for the residential aspect of Zone 3-6 are considered appropriate for use.

Zone 8 (B2 / B8 Development)

With regards to the B2 & B8 development within Zone 8, it has been agreed that trip rates for the land uses for the proposed development will be derived through surveys of existing B2 and B8 uses on the Omega site. Classified vehicle arrival and departure surveys will be undertaken at the following sites:

- *B2 Development – surveys will be undertaken of the Dominos industrial unit located to the south of Skyline Drive, accessed from Fairchild Road; and*
- *B8 development – surveys will be undertaken of the Asda industrial unit located on Skyline Drive, together with a combined survey of Lockheed Road (serving numerous industrial units), to determine a blended B8 trip rate.*

The methodology of the trip rate generation set out within the Scoping Note regarding the B2 and B8 aspects of Zone 8 is deemed appropriate. However, it is suggested that an additional site survey of an existing development, similar in size for the development proposals for the B2 land use is used to supplement the proposed survey undertaken at the Dominos industrial unit, to derive a more robust and generic trip generation for the B2 land use quantum. Separate trip rates will be obtained for light and heavy vehicles, which is appropriate for the assessment of logistics type developments.

It is important to note that as residential, B2 and B8 land uses have varying peak vehicle generations throughout the day. Additionally, the SRN can experience notably different peak traffic periods to that of the local highway network. On this basis, it is therefore requested that the entire daily trip generations are presented in order for the full development traffic impacts to be understood by Highways England at the SRN.

Table 2 and 3 of the scoping note set out the agreed trip rates for Zone 1&2 of the existing Omega consent. Please could the applicant clarify the reason for the inclusion of these tables. Is it proposed that the Zone 1 and 2 reserved matters application will retain the use of these trip rates for any further assessment?

Key Point:

It is suggested that at least one additional site survey of an existing development, similar in size and use for the B2 aspect of Zone 8 is used to supplement the proposed survey undertaken at the Omega Dominos industrial unit, to derive a more robust trip generation for the B2 land use quantum.

The development traffic generation should be presented for the full daily period representative of the proposed land-use mix in order for Highways England to fully understand the development traffic impacts along the SRN.

Please could the applicant clarify the inclusion of the agreed Zone 1 and 2 trip rates and if they will be applied to the reserved matters application proposals.

1.3.5 Development Traffic – Trip Distribution

Residential Development

The methodology proposed to distribute the additional residential traffic is deemed appropriate. The 300 unit increase for the proposed development will use the agreed trip distribution pattern for the Omega south residential developments

Zone 8 (B2 / B8 Development)

The proposed methodology to distribute the B2 / B8 development traffic generated at Zone 8 is considered sensible. Where for the distribution of cars and light vehicles, a review of partial postcode data from existing employee travel plan surveys within the Omega site will be used. Whilst for HGVs it is proposed to route all HGV movements to / from M62 Junction 8, via Catalina Way to Skyline Drive and then distribute HGV movements in accordance with existing HGV turning proportions using the commissioned surveys at the SRN junction.

Key Point:

Full datasets used in deriving the trip distribution for both the residential and B2 / B8 aspects of the latest proposed developments at Omega should be provided within the forthcoming TA, for clarity and to provide an audit trail of the distribution assumptions.

1.3.6 Committed Developments

The Scoping Note does not state any committed developments that have been considered for the proposed developments. Both SHMBC and WBC should be consulted to confirm the status of the committed developments within the area to ensure that the correct background growth assumptions have been accounted for as part of the highways assessment.

Key Point:

The applicant should confirm with the local authority any committed development that should be included within the study.

1.3.7 Network Assessment

The network will be assessed using traditional junction modelling such as LinSig or TRANSYT. WSP would recommend that TRANSYT is adopted for the M62 J8 signal network because it is better suited to modelling this type of closely spaced network of junctions. TRANSYT can also model the effects of queue blocking between junctions.

WSP are aware that M62 J8 runs MOVA control and can vary timings dependant on traffic conditions it is therefore recommended that signal timings from the survey day are recorded for model calibration / validation. This will be particularly important because of the need for close co-ordination of signals in a junction of this type. The scoping note proposes this will be undertaken through the provision of MOVA logs from WBC.

Following correspondence between the consultant and the appropriate highway authorities, it had been discussed that the development impact assessments for the TA would be undertaken and presented in stages coinciding with the existing, currently committed and proposed Omega developments situated within the overall site:

1. *2019 Existing network flows;*
2. *Base (existing + currently committed Omega developments);*
3. *Base + Zone 1&2 B2/B8 development (existing + currently committed Omega developments – Omega B1 development);*
4. *Base + Zone 1&2 B2/B8 development + 300-unit residential development; and*
5. *Base + Zone 1&2 B2/B8 development + 300-unit residential development + Omega Zone 8 B2/B8 development.*

The above scenarios have been cross referenced with the proposed planning submissions to understand if these will provide suitable scenarios to understand the implications of each proposed application and cumulative impacts. Based on the scenarios they appear to match as follows:

- Scenario 3 would support the reserved matters application for Zone 1 and 2
- Scenario 5 would support the hybrid application on Zone 8 (with the assumption that reserved matters Z1&2 comes forward due to the legal linking of the applications).
- Scenario 4 would support the outline application for residential development (again with the assumption that Z1&2 reserved matters is implemented)
- Based on the above Scenario 5 would demonstrate the cumulative impact of all the proposed development for comparison with the base scenario (2).

For scenarios to be comparable it is suggested all assessments are undertaken with consistent assumptions around any wider committed developments (details to be confirmed by local planning authorities) and background traffic growth. It should be noted that if the applicants planning strategy is subject to change then differing or further scenario assessments may be considered necessary.

1.3.8 Sustainable Travel and Framework Travel Plan

WSP are aware, through the Omega Transport Steering Group, that the existing development benefits from sustainable travel infrastructure including a well-used bus service. It is anticipated that the TA will include details of how this provision will be maintained or enhanced into the reconfigured and new areas of the Omega site. This will also help to ensure that vehicle trip rates derived from the existing units remain representative of those proposed through providing genuine access by sustainable modes.

It is proposed that a Framework Travel Plan (FTP) will accompany the planning application for both the residential and Zone 8 (B2 / B8) aspects of the development to identify measures for reducing car dependency. It is acknowledged that the upcoming Framework Travel Plan would be updated to a Full Travel Plan prior to occupation of the developments and a full review of the forthcoming FTP will be undertaken with regards to the SRN. Given the wealth of Travel Plan information available from the existing Omega site it is suggested this could be used to inform initial targets for the proposed FTPs.

1.4 CONCLUSION

WSP (Manchester), on behalf of Highways England, have undertaken a review of the Scoping Transport Note, setting out the methodology for the Transport Assessment and Framework Travel Plan associated with the forthcoming planning applications at the Omega site in Warrington. The following key points have been raised.

- Reference should be made in the forthcoming Transport Assessment (TA) to the relevant local and national planning policy documents in the context of the proposed development and, from Highways England's perspective, reference should be made to its key document; The Strategic Road Network – Planning for the Future – A Guide to Working with Highways England on Planning Matters (2015).
- The forthcoming TA will need to pay due cognisance to the appropriate local plan policies, particularly as Zone 8 of the Omega site lies within greenbelt land within St. Helens, is bordering the Warrington borough and has been subsequently identified for allocation within the draft local plan.
- The proposed Zone 8 site (Omega South Western Extension site) will rely on access from the existing Omega South site and the planning of the development and transport access requirements will require close co-operation with the developers of Omega and with Warrington Borough Council.
- WSP suggest that an additional site survey of an existing development, similar in size and use for the B2 aspect of Zone 8 is used to supplement the proposed survey undertaken at the Dominos industrial unit, to derive a more robust trip generation for the B2 land use quantum.

- The development traffic generation should be presented for the full daily period representative of the proposed land-use mix in order for Highways England to fully understand the development traffic impacts along the SRN.
- Please could the applicant clarify the inclusion of the agreed Zone 1 and 2 trip rates and if they will be applied to the reserved matters application proposals.
- Full datasets used in deriving the trip distribution for both the residential and B2 / B8 aspects of the proposed developments at Omega should be provided within the forthcoming TA for clarity.
- The committed developments to be included in the assessment should be confirmed with both SHMBC and WBC.
- WSP recommend that the proposed opening year for the developments is realistic of when the developments would be built-out and occupied, therefore, WSP request clarification on the proposed opening year for the developments and future year of assessment at the key SRN junction of M62 Junction 8.



OMEGA TRANSPORT STUDY SCOPING NOTE CLARIFICATIONS/UPDATE

21 JUNE 2019

Introduction

WSP has been commissioned by Omega Warrington Limited (OWL) to prepare a series of Transport related submissions in support of planning applications for various parts of the Omega development site, located in the Boroughs of Warrington and St Helens.

A scoping note, outlining the scoping study for the various Transport Assessments and Technical Notes required for the Omega site, was submitted to St Helens Metropolitan Borough Council, Warrington Borough Council and Highways England on 27 May 2019.

Since submission of the scoping note, responses have been received from all three authorities and this note seeks to provide additional information, confirmation and clarification on the various points raised. This note should be read in conjunction with the original scoping submission dated 27 May 2019.

St Helens Metropolitan Borough Council

St Helens Metropolitan Borough Council's response dated 28 May 2019 states:

"From St Helens perspective, we would like sustainable transport links to St Helens to be considered within the transport work, in particular any improvements to the existing Right of Way across the M62 and any opportunities to improve sustainable transport links to St Helens. These should also support the travel plan aspirations for the Zone 8 application."

In terms of the highway impact, we are happy for Warrington Council and Highways England to take the lead. However, depending on the identified distribution and trip generation, we may require junctions within St Helens boundary to be considered within the Transport Assessment. However, we can only take a view on this once the distribution and trip generation have been agreed with Warrington Council and Highways England."

WSP RESPONSE

We confirm that sustainable transport links to St Helens will be considered within the transport studies for Omega, including a review of the existing right of way across the M62.

We note the comments on highway impact and it is proposed to circulate the trip distribution and trip generation information for review prior to inclusion within the various transport studies.



Warrington Borough Council

Warrington Borough Council responded on 11 June 2019 and further clarified matters on 14 June 2019. The 11 June response states:

"I have passed on your request for postcode data from the existing Omega Travel Plan surveys to Lesley McAllister, the Council's Travel Choices Manager, who will respond direct. I have also spoken to our Traffic Signals Team who will be happy to provide data in relation to signal timings and MOVA logs, however, they will need a direct request from yourself and this will involve a fee. Please email them direct at utmc@warrington.gov.uk and they will provide the data.

In respect of the Note I am happy that it reflects our discussions but would highlight a few issues that have been touched upon but not fully addressed:

1. I agree with Fiona that any application needs to consider cross boundary sustainable transport linkage and the potential to utilise the existing crossings of the M62 should be fully examined.
2. The layout will involve a cul-de-sac in excess of our usual standards and pedestrian/cycle linkage and provision to cater for bus services needs to be included within the final layout.
3. We have previously raised concerns about the pressure placed on the local and strategic road network when the current extent of Omega is fully developed, particularly on M62 J8, and the long-term future-proofing of the network needs consideration given future wider development possibilities in the area; potentially a new access to the M62 either catering for all movements or as a minimum with west facing slip roads. Any proposal should be able to demonstrate that such a solution would not be physically prohibited."

WSP RESPONSE

We await the relevant postcode data from the Council, to inform the trip distribution patterns for the various Omega studies.

We confirm that we have requested the signal timing and MOVA log data from the Council's Traffic Signals Team for the signalised junctions contained within the agreed study network, for the day of the traffic surveys (Tuesday 11 June).

We confirm that sustainable cross boundary transport links will be considered within the transport studies for Omega, including a review of the existing routes across the M62.

The masterplan for Omega Zone 8 will include pedestrian and cycle facilities to serve the uses on this part of Omega and will link into the surrounding existing facilities. Public transport infrastructure (including suitable turning facilities) will be provided within Omega Zone 8, to enable bus services to serve this part of Omega.

The Omega Zone 8 application is not proposing additional access onto the M62 however, the issue of whether potential new connections on to or off the M62 may be required, either now or in the future, in light of the applicant's surrender of its existing B1 consents will be considered through the traffic assessment work.



The 14 June response states:

"Warrington Policies and policy documents, particularly transport policies, should be given due consideration."

The following committed developments in Warrington are appropriate for consideration: Apollo Way (Outline 2007/11923; site part built out and subject to a number of reserved matters applications) and Lingley Mere East (Outline 2007/11923; site part built out (not occupied) and subject to reserved matters). Further information available from my planning colleagues on devcontrol@warrington.gov.uk"

WSP RESPONSE

We confirm that the various transport studies will take due consideration of the Council's various policy documents and transport policies.

We note the committed developments to be included in the transport studies. Further details for these committed developments have been sought from Warrington Borough Council's planning department.

Highways England

Highways England's consultants provided a comprehensive response/review in the form of a technical note on 13 June 2019. The key points, under various headings, are summarised below together with WSP's response. A copy of the Consultant's Technical Note is appended for ease of reference.

NATIONAL, REGIONAL AND LOCAL POLICY

"The forthcoming Transport Assessment will need to pay due cognisance to the appropriate national, regional and local plan policies, particularly as Zone 8 of the Omega development currently lies within greenbelt land."

The proposed Zone 8 site (Omega South Western Extension site) will rely on access from the existing Omega South sites and the planning of the development and transport access requirements will require close cooperation with the developers of Omega and with Warrington Borough Council."

WSP RESPONSE

It is noted that a review is required of the appropriate national, regional and local plan policies within the Transport Assessment for Omega Zone 8.

In relation to the Zone 8 site, the applicant is liaising closely with both St Helens Metropolitan Borough Council (as the planning authority) and Warrington Borough Council (where development access will be taken) to ensure that all parties are fully apprised of the applicant's proposals and are satisfied with these.

ASSESSMENT YEARS

"WSP request clarification on the proposed opening year for the proposed development and future year of assessment at the key SRN junction of M62 Junction 8."

WSP RESPONSE

In consultation with the applicant, the following assumptions have been made with respect to years of opening and future year assessment.



Application	Year of Application	Year of Opening	Future Year
Omega Zone 8	2019	2021	2029
Omega Residential OPP	2019	2021	2029

DEVELOPMENT TRAFFIC – TRIP GENERATION

"It is suggested that at least one additional site survey of an existing development, similar in size and use for the B2 aspect of Zone 8 is used to supplement the proposed survey undertaken at the Omega Dominos industrial unit, to derive a more robust trip generation for the B2 land use quantum."

The development traffic generation should be presented for the full daily period representative of the proposed land-use mix in order for Highways England to fully understand the development traffic impacts along the SRN.

Please could the applicant clarify the inclusion of the agreed Zone 1 and 2 trip rates and if they will be applied to the reserved matters application proposals."

WSP RESPONSE

WSP have commissioned an additional classified vehicle arrival and departure survey at the Plastic Omnium B2 development located within Omega South, which will enable a blended B2 trip rate to be calculated with the Dominos industrial unit.

We will present the B2 and B8 derived daily trip generation profiles upon receipt of the survey data.

We have included the agreed Zone 1 and 2 trip rates within the scoping note as they will be applied to the reserved matters application for that development zone, in relation to purifying a planning condition.

DEVELOPMENT TRAFFIC – TRIP DISTRIBUTION

"Full datasets used in deriving the trip distribution for both the residential and B2 / B8 aspects of the latest proposed developments at Omega should be provided within the forthcoming TA, for clarity and to provide an audit trail of the distribution assumptions."

WSP RESPONSE

We confirm that the relevant datasets will be supplied within the Transport Assessment, to enable an audit of the trip distribution patterns for the proposed developments.

COMMITTED DEVELOPMENTS

"The applicant should confirm with the local authority any committed development that should be included within the study."

WSP RESPONSE

As outlined earlier in this note, two committed developments have been identified by Warrington Borough Council and will be included within the analysis.



TECHNICAL NOTE

Project:	Omega Development Site	Date:	05 th June 2019
		TN Ref:	001
Subject:	Review of Transport Scoping Note		
Author:	MC	Project Ref:	70058845-024
Reviewed:	JP / NM		

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An extract of the revised site layout plan at the Omega development site is shown in **Figure 1**, below.

Figure 1: Proposed Site Layout Plan





1.2.2 Background

WSP will undertake a review of the Transport Scoping Note setting out the approach to the transportation elements of the latest planning applications, in order to determine if a robust assessment methodology has been adopted which accounts for the potential development impacts to the Strategic Road Network (SRN), as a result of the revised development quantum at the Omega site. WSP are aware of several emerging applications across the Omega site, with the varying and complex nature of the development, newly consented developments, change of use applications and the opening of new developments at the site.

Prior to the production of the scoping note, consultation has taken place with the Omega site owners, applicant and local authority stakeholders and Highways England. A meeting was held on the 2nd May 2019 and was attended by the developers, Warrington Borough Council (WBC) and Highways England / WSP concerning the Omega West section of the entire development site, at Homes England in Warrington.

Subsequently, a scoping meeting relating to the proposed planning applications was held on the 15th May 2019 between the developers and the transport consultants (WSP Scotland), WSP representing Highways England, St. Helens Metropolitan Borough Council (SHMBC) and Warrington Borough Council (WBC).

The following parameters to be used within the Transport Assessment, were agreed to by all parties at the preceding scoping meetings:

- Scope of study area;
- The commission of new survey counts at the agreed junctions; and
- The assessment of M62 Junction 8 using TRANSYT modelling software and the subsequent assessment of the merge / diverges at the junction itself.

1.3 REVIEW OF TRANSPORT SCOPING NOTE

1.3.1 National, Regional & Local Policy

No reference has been made to any national, regional and local planning policy within the Scoping Note. With regards to national planning policy, the National Planning Policy Framework (NPPF) has not been referred to. From Highways England's perspective, the key documents to be noted within the forthcoming Transport Assessment are:

- *DfT Circular 02/2013: The Strategic Road Network and the Delivery of Sustainable Development;*
- *The Strategic Road Network – Planning for the Future – A Guide to Working with Highways England on Planning Matters (2015)*

It is suggested that the applicant review the guidance above to assist in the production of the forthcoming TA. From a local perspective, the following policies have also not been referred to:

- *St. Helens Local Plan 2018-2033 Preferred Options (2016);*
- *Warrington Draft Local Plan (2019) [Under Consultation] –Reviewed by Atkins; and*
- *St. Helens Supplementary Planning Document, Ensuring a Choice of Travel (June 2010)*

Key aspects of the above documents relating to the proposed development have not been referenced within the Scoping Note. WSP (Manchester), who will undertake a review on behalf of Highways England of the emerging St. Helens Local Plan document identified that Site Allocation EA1 is of a significant size, and considering its probable use for freight and logistics the site is likely to generate a significant number of trips that will predominantly impact on the SRN.

WSP understands that “Zone 8” of the Omega site currently lies within ‘Greenbelt’ land in the borough of St. Helens, located next to and bordering the Warrington borough. Zone 8 lies within and apparently beyond the current extent of the “EA1” site within the local plan preferred options, and is described as the “*Omega South Western Extension*”. The site has been identified as a Strategic Employment Site Allocation within Policy LAP04.1 of the St. Helens Local Plan Options Report (December 2016), and is set to be removed from greenbelt and designated as an allocated site (St. Helens Borough Draft Local Plan 2020-2035). **Figure 2** illustrates a plan of the allocated EA1 site.

It should be noted that this local plan is currently in draft and not anticipated for adoption until next year. As such, if the application comes forward in advance of the local plan being adopted the application site status will be an unallocated green belt site. Section 87 and 88 of *The Strategic Road Network – Planning for the Future* states “*If, however, the development proposed has not been subject to an appropriate level of assessment, or is not included or consistent with an approved local plan, then we would anticipate agreeing the scope of work required to make a full assessment.*”

The current Zone 8 proposals will need to rely on vehicular access from the existing Omega South sites, therefore the planning of the development and transport access requirements will require close cooperation with the developers of Omega and with WBC.

Figure 2: Site EA1 from St. Helens Local Plan



Key Points:

The forthcoming Transport Assessment will need to pay due cognisance to the appropriate national, regional and local plan policies, particularly as Zone 8 of the Omega development currently lies within greenbelt land.

The proposed Zone 8 site (Omega South Western Extension site) will rely on access from the existing Omega South sites and the planning of the development and transport access requirements will require close cooperation with the developers of Omega and with Warrington Borough Council.

1.3.2 Study Area

It is suggested that peak periods for both the AM and PM will be derived from surveys that will be undertaken on a neutral weekday in June between the hours of 05:30 – 10:00 and 16:00 – 19:00. Manual Classified Counts and queue length counts will be undertaken at the following locations:

- *Burtonwood Road / Lockheed Road roundabout;*
- *M62 Junction 8 signalised gyratory;*
- *Burtonwood Road / Charon Way signalised junction;*
- *Burtonwood Road / Kingswood Road signalised junction;*
- *Burtonwood Road / Westbrook Way roundabout;*
- *Skyline Drive / Fairchild Road priority junction; and*
- *Omega Boulevard / Catalina Way roundabout.*

Additionally, the scoping note states that the assessment of M62 Junction 8 will be supported by a demonstration that future development traffic can be suitably accommodated at the merges and diverges of the junction. Based on capacity assessments as specified within DMRB's TD 22/06 document (*Layout of Grade Separated Junctions*).

This extent of study network is considered appropriate for the assessment of the development impacts at the SRN.

1.3.3 Assessment Years

It is noted that proposed opening and future year assessments has not been set out within the Scoping Note.

In accordance with Highways England's key guidance document; *The Strategic Road Network: Planning for the Future (2015)*, the document requires the following scenarios to inform judgement:

- *at opening year, assuming full build-out and occupation; and*
- *either a date ten years after the date of registration of the associated planning or at the end of the Local Plan period (whichever is the greater).*

WSP recommend that the proposed opening year for the developments is realistic of when the developments would be built-out and occupied, and therefore request clarification to what the opening, and future years used for the assessment of M62 Junction 8 will be within the forthcoming TA and how this would be dealt with if the different elements of the applications have varying opening years.

Key Point:

WSP request clarification on the proposed opening year for the proposed development and future year of assessment at the key SRN junction of M62 Junction 8.

1.3.4 Development Traffic – Trip Generation

Residential Development

It is stated within the Scoping Note that trip generation forecasts for the residential development will be based on the agreed trip rates used within the "Omega Zone 3-6" TA. The approach to calculating the proposed increase in residential trips is deemed appropriate. Notwithstanding, WSP have undertaken a review of the agreed residential trip rates using trips rates extracted from the TRICS database.

Table 1-1: Trip Rate Comparison

Time	Trip Rates (Within Scoping Note)			Trip Rates (Obtained from TRICS V7.6.1)		
	Arrivals	Departures	Total	Arrivals	Departures	Total
08:00 – 09:00	0.148	0.419	0.567	0.179	0.398	0.577
17:00 – 18:00	0.372	0.224	0.596	0.389	0.181	0.570

Based upon the above comparison, the previously agreed trips rates used for the residential aspect of Zone 3-6 are considered appropriate for use.

Zone 8 (B2 / B8 Development)

With regards to the B2 & B8 development within Zone 8, it has been agreed that trip rates for the land uses for the proposed development will be derived through surveys of existing B2 and B8 uses on the Omega site. Classified vehicle arrival and departure surveys will be undertaken at the following sites:

- *B2 Development – surveys will be undertaken of the Dominos industrial unit located to the south of Skyline Drive, accessed from Fairchild Road; and*
- *B8 development – surveys will be undertaken of the Asda industrial unit located on Skyline Drive, together with a combined survey of Lockheed Road (serving numerous industrial units), to determine a blended B8 trip rate.*

The methodology of the trip rate generation set out within the Scoping Note regarding the B2 and B8 aspects of Zone 8 is deemed appropriate. However, it is suggested that an additional site survey of an existing development, similar in size for the development proposals for the B2 land use is used to supplement the proposed survey undertaken at the Dominos industrial unit, to derive a more robust and generic trip generation for the B2 land use quantum. Separate trip rates will be obtained for light and heavy vehicles, which is appropriate for the assessment of logistics type developments.

It is important to note that as residential, B2 and B8 land uses have varying peak vehicle generations throughout the day. Additionally, the SRN can experience notably different peak traffic periods to that of the local highway network. On this basis, it is therefore requested that the entire daily trip generations are presented in order for the full development traffic impacts to be understood by Highways England at the SRN.

Table 2 and 3 of the scoping note set out the agreed trip rates for Zone 1&2 of the existing Omega consent. Please could the applicant clarify the reason for the inclusion of these tables. Is it proposed that the Zone 1 and 2 reserved matters application will retain the use of these trip rates for any further assessment?

Key Point:

It is suggested that at least one additional site survey of an existing development, similar in size and use for the B2 aspect of Zone 8 is used to supplement the proposed survey undertaken at the Omega Dominos industrial unit, to derive a more robust trip generation for the B2 land use quantum.

The development traffic generation should be presented for the full daily period representative of the proposed land-use mix in order for Highways England to fully understand the development traffic impacts along the SRN.

Please could the applicant clarify the inclusion of the agreed Zone 1 and 2 trip rates and if they will be applied to the reserved matters application proposals.



1.3.5 Development Traffic – Trip Distribution

Residential Development

The methodology proposed to distribute the additional residential traffic is deemed appropriate. The 300 unit increase for the proposed development will use the agreed trip distribution pattern for the Omega south residential developments

Zone 8 (B2 / B8 Development)

The proposed methodology to distribute the B2 / B8 development traffic generated at Zone 8 is considered sensible. Where for the distribution of cars and light vehicles, a review of partial postcode data from existing employee travel plan surveys within the Omega site will be used. Whilst for HGVs it is proposed to route all HGV movements to / from M62 Junction 8, via Catalina Way to Skyline Drive and then distribute HGV movements in accordance with existing HGV turning proportions using the commissioned surveys at the SRN junction.

Key Point:

Full datasets used in deriving the trip distribution for both the residential and B2 / B8 aspects of the latest proposed developments at Omega should be provided within the forthcoming TA, for clarity and to provide an audit trail of the distribution assumptions.

1.3.6 Committed Developments

The Scoping Note does not state any committed developments that have been considered for the proposed developments. Both SHMBC and WBC should be consulted to confirm the status of the committed developments within the area to ensure that the correct background growth assumptions have been accounted for as part of the highways assessment.

Key Point:

The applicant should confirm with the local authority any committed development that should be included within the study.

1.3.7 Network Assessment

The network will be assessed using traditional junction modelling such as LinSig or TRANSYT. WSP would recommend that TRANSYT is adopted for the M62 J8 signal network because it is better suited to modelling this type of closely spaced network of junctions. TRANSYT can also model the effects of queue blocking between junctions.

WSP are aware that M62 J8 runs MOVA control and can vary timings dependant on traffic conditions it is therefore recommended that signal timings from the survey day are recorded for model calibration / validation. This will be particularly important because of the need for close co-ordination of signals in a junction of this type. The scoping note proposes this will be undertaken through the provision of MOVA logs from WBC.

Following correspondence between the consultant and the appropriate highway authorities, it had been discussed that the development impact assessments for the TA would be undertaken and presented in stages coinciding with the existing, currently committed and proposed Omega developments situated within the overall site:

1. *2019 Existing network flows;*
2. *Base (existing + currently committed Omega developments);*
3. *Base + Zone 1&2 B2/B8 development (existing + currently committed Omega developments – Omega B1 development);*
4. *Base + Zone 1&2 B2/B8 development + 300-unit residential development; and*
5. *Base + Zone 1&2 B2/B8 development + 300-unit residential development + Omega Zone 8 B2/B8 development.*

The above scenarios have been cross referenced with the proposed planning submissions to understand if these will provide suitable scenarios to understand the implications of each proposed application and cumulative impacts. Based on the scenarios they appear to match as follows:

- Scenario 3 would support the reserved matters application for Zone 1 and 2
- Scenario 5 would support the hybrid application on Zone 8 (with the assumption that reserved matters Z1&2 comes forward due to the legal linking of the applications).
- Scenario 4 would support the outline application for residential development (again with the assumption that Z1&2 reserved matters is implemented)
- Based on the above Scenario 5 would demonstrate the cumulative impact of all the proposed development for comparison with the base scenario (2).

For scenarios to be comparable it is suggested all assessments are undertaken with consistent assumptions around any wider committed developments (details to be confirmed by local planning authorities) and background traffic growth. It should be noted that if the applicants planning strategy is subject to change then differing or further scenario assessments may be considered necessary.

1.3.8 Sustainable Travel and Framework Travel Plan

WSP are aware, through the Omega Transport Steering Group, that the existing development benefits from sustainable travel infrastructure including a well-used bus service. It is anticipated that the TA will include details of how this provision will be maintained or enhanced into the reconfigured and new areas of the Omega site. This will also help to ensure that vehicle trip rates derived from the existing units remain representative of those proposed through providing genuine access by sustainable modes.

It is proposed that a Framework Travel Plan (FTP) will accompany the planning application for both the residential and Zone 8 (B2 / B8) aspects of the development to identify measures for reducing car dependency. It is acknowledged that the upcoming Framework Travel Plan would be updated to a Full Travel Plan prior to occupation of the developments and a full review of the forthcoming FTP will be undertaken with regards to the SRN. Given the wealth of Travel Plan information available from the existing Omega site it is suggested this could be used to inform initial targets for the proposed FTPs.

1.4 CONCLUSION

WSP (Manchester), on behalf of Highways England, have undertaken a review of the Scoping Transport Note, setting out the methodology for the Transport Assessment and Framework Travel Plan associated with the forthcoming planning applications at the Omega site in Warrington. The following key points have been raised.

- Reference should be made in the forthcoming Transport Assessment (TA) to the relevant local and national planning policy documents in the context of the proposed development and, from Highways England's perspective, reference should be made to its key document; The Strategic Road Network – Planning for the Future – A Guide to Working with Highways England on Planning Matters (2015).
- The forthcoming TA will need to pay due cognisance to the appropriate local plan policies, particularly as Zone 8 of the Omega site lies within greenbelt land within St. Helens, is bordering the Warrington borough and has been subsequently identified for allocation within the draft local plan.
- The proposed Zone 8 site (Omega South Western Extension site) will rely on access from the existing Omega South site and the planning of the development and transport access requirements will require close co-operation with the developers of Omega and with Warrington Borough Council.
- WSP suggest that an additional site survey of an existing development, similar in size and use for the B2 aspect of Zone 8 is used to supplement the proposed survey undertaken at the Dominos industrial unit, to derive a more robust trip generation for the B2 land use quantum.

- The development traffic generation should be presented for the full daily period representative of the proposed land-use mix in order for Highways England to fully understand the development traffic impacts along the SRN.
- Please could the applicant clarify the inclusion of the agreed Zone 1 and 2 trip rates and if they will be applied to the reserved matters application proposals.
- Full datasets used in deriving the trip distribution for both the residential and B2 / B8 aspects of the proposed developments at Omega should be provided within the forthcoming TA for clarity.
- The committed developments to be included in the assessment should be confirmed with both SHMBC and WBC.
- WSP recommend that the proposed opening year for the developments is realistic of when the developments would be built-out and occupied, therefore, WSP request clarification on the proposed opening year for the developments and future year of assessment at the key SRN junction of M62 Junction 8.

Appendix B

FIGURES

WSP

NOTES:
 Copyright Chetwicks (London) Limited. No implied licence exists.
 Contractors must verify all dimensions on site before commencing any work or shop drawings. This drawing is not to be scaled. Use figured dimensions only.
 Building areas are liable to adjustment over the course of the design process.
 Planning permission is required for the proposed development in order for it to proceed.
 Building areas are liable to adjustment over the course of the design process due to the ongoing construction defining developments.
 These notes are issued for the benefit of the contractor and should not be relied upon by third parties.
 The CDM Hazard management procedures for the Chetwicks aspects of the development can be found in the 'Chetwicks Construction Safety Plan' and 'Design Risk Assessment' and drawings. The full project design teams implementation of these procedures are available from the Principle Designer appointed for the project.



1:5000

0m 50m 100m 200m

Municipal Boundary
Landscape Boundary

Plots Area
Landscape
Structural Landscaping
Established Mature Landscape
Residential
SUDS/Basins & Swale
Mixed Use



SK1 Coloured area fixed 29/01/19 RC/SF

SK1 Issue for Information Rev: Revision Description Date Author Reviewer

13/03/19 RC/NH Date Author Reviewer

SKETCH

32 Frederick Street, Birmingham, B1 3H4
+44 (0)121 234 7500
www.chetwoods.com



Project

OMEGA WEST, WARRINGTON

Client

OMEGA WARRINGTON LIMITED

Drawing Title

MASTERPLAN

Scale Status Drawn Checked Date

1:5000 A1 RC NH 13/03/19

Project Omega Zone Level Type Ref. Number Rev.

4150 CA 00 00 DR A 05032 SK1

Date Modified: 27/06/2019

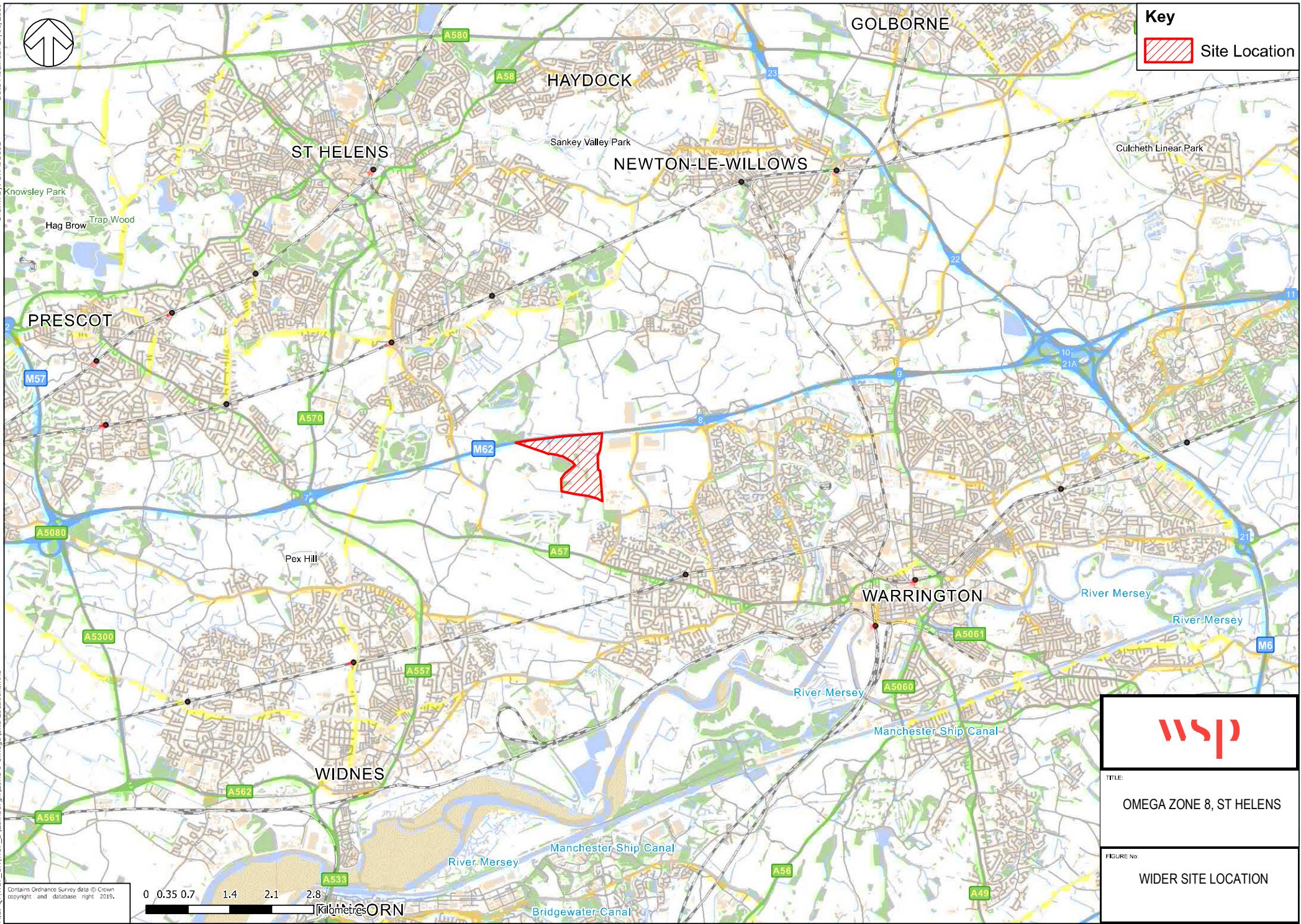
Drawn By: UKM10002

File: Q:\WSP\UK\WSP_D\E\Edinburgh\Zone 8 Omega\Site Location.mxd



Key

Site Location



WSP

TITLE:
OMEGA ZONE 8, ST HELENS

FIGURE No:
WIDER SITE LOCATION

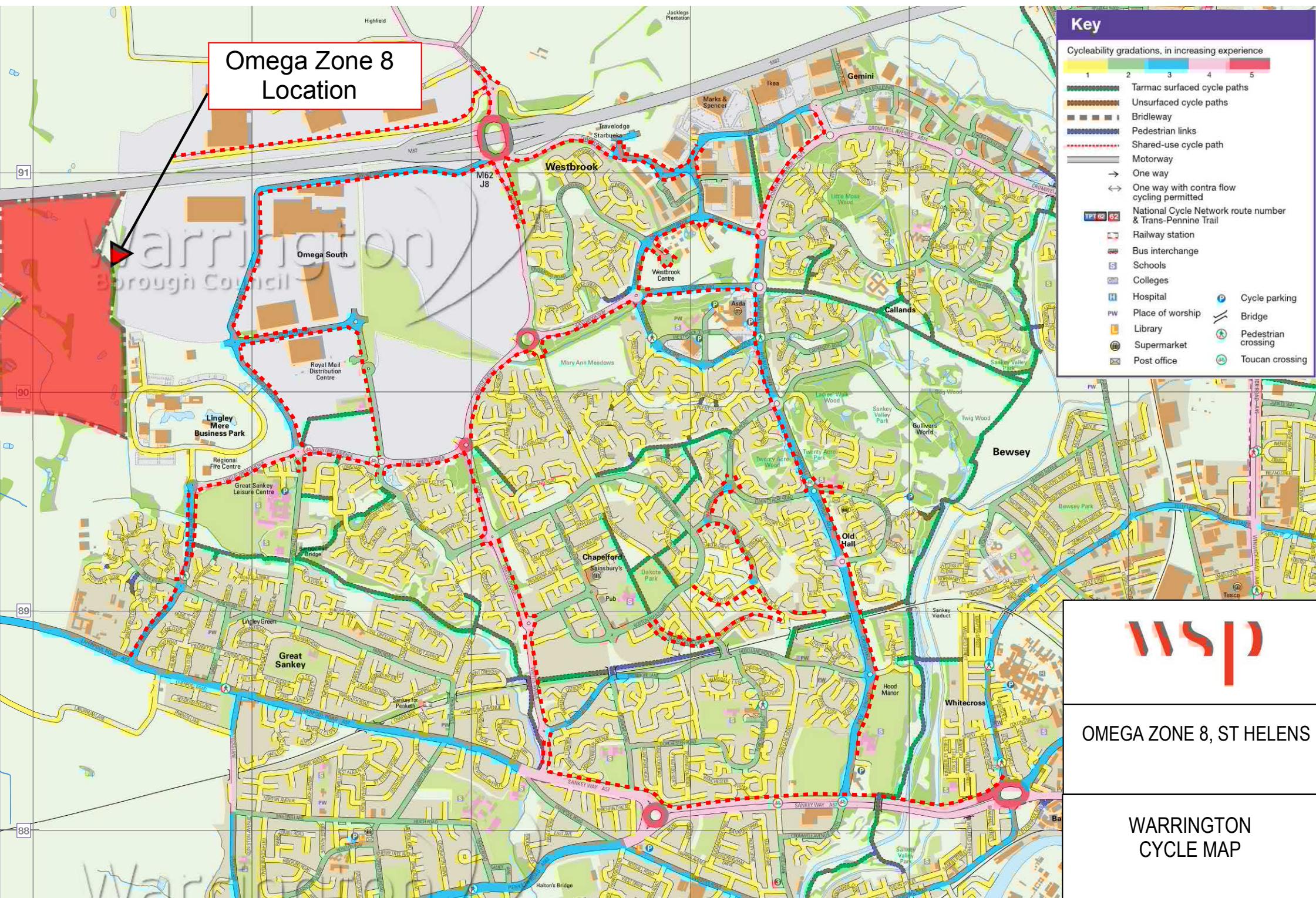
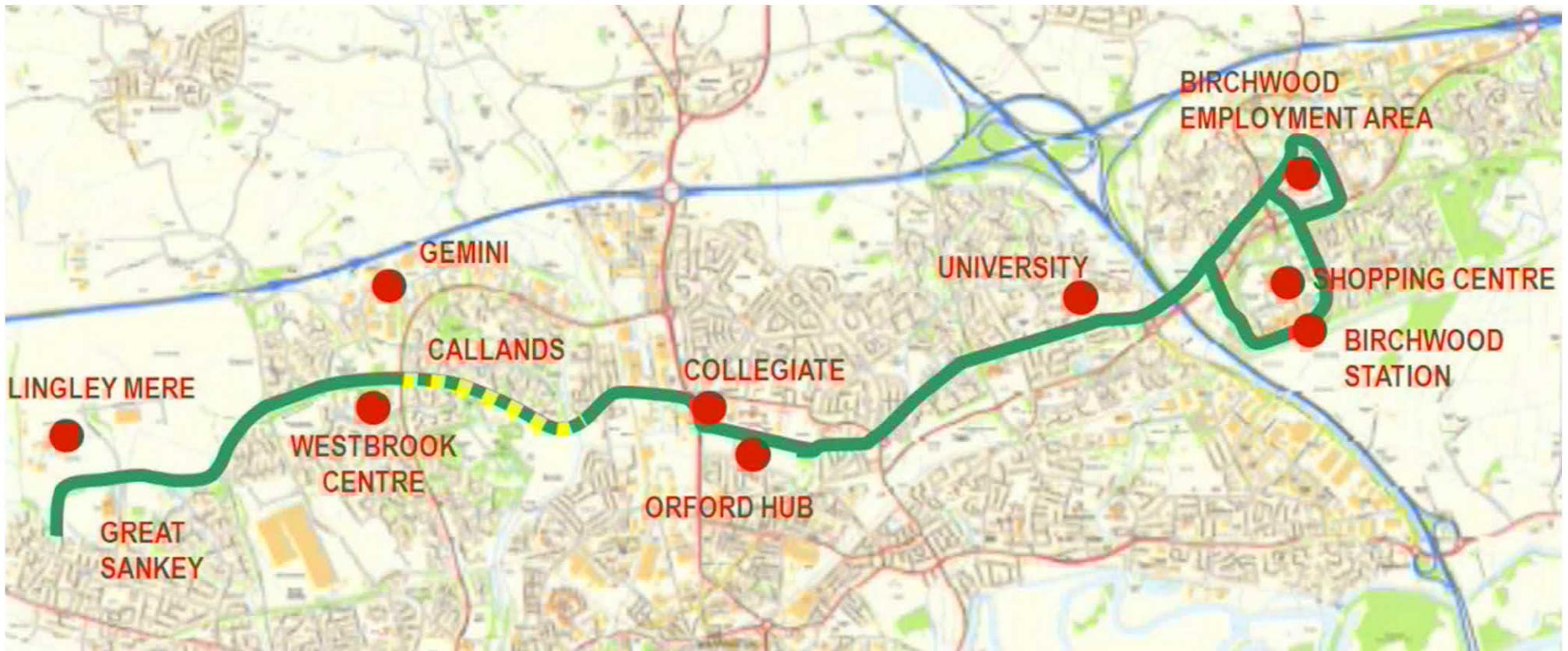


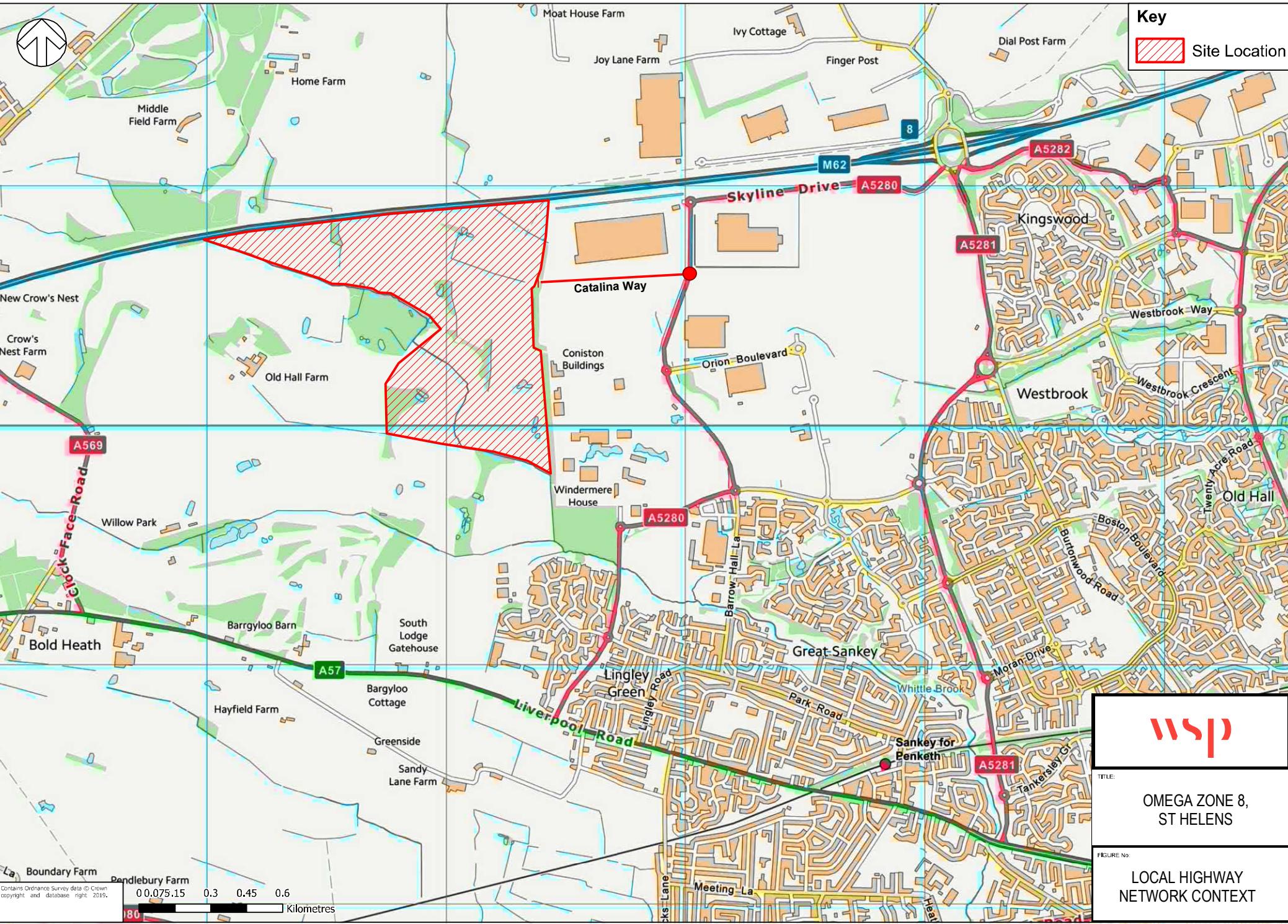
Figure 3-3 Warrington Borough Council Proposed Westbrook to Dallam Greenway Cycle Route



Date Modified: 27/06/2019

Drawn By: UKM0002

File: Q:\WSP\UK\WSP_D\E\Edinburgh\Zone 8 Omega\Site Location.mxd



WSP

OMEGA ZONE 8,
ST HELENS

FIGURE No:

LOCAL HIGHWAY
NETWORK CONTEXT

NOTES:
Copyright Chelwood (Lancashire) Ltd. No implied licence exists.
Construction is to start as soon as reasonable after completion of any work or
steps identified. This drawing is issued to Site 001, Site 002, Site 003 or by
Site 004. It is the responsibility of the Site Manager to ensure that the drawing
is available at the site.
Building areas are liable to adjustment over the course of the design process
due to the ongoing construction planning developments.
Where applicable, the drawing is to be used in conjunction with the relevant
Technical Drawings and Site Specific Instructions issued by third parties.
The CDM Lead manager is responsible for the Chelwood aspects of the
Project. A copy of the CDM Lead manager's Site Specific Instructions and
Work Risk Assessment are available on the Project website.
Where applicable, the drawing is to be used in conjunction with the relevant
Technical Drawings and Site Specific Instructions issued by third parties.
Principal Designer appointed for the project.



Notes:
Please note Title Plans have been
scaled using Ordnance Survey features
which may have altered over time.
Complete accuracy cannot be
guaranteed without further on-site
survey.

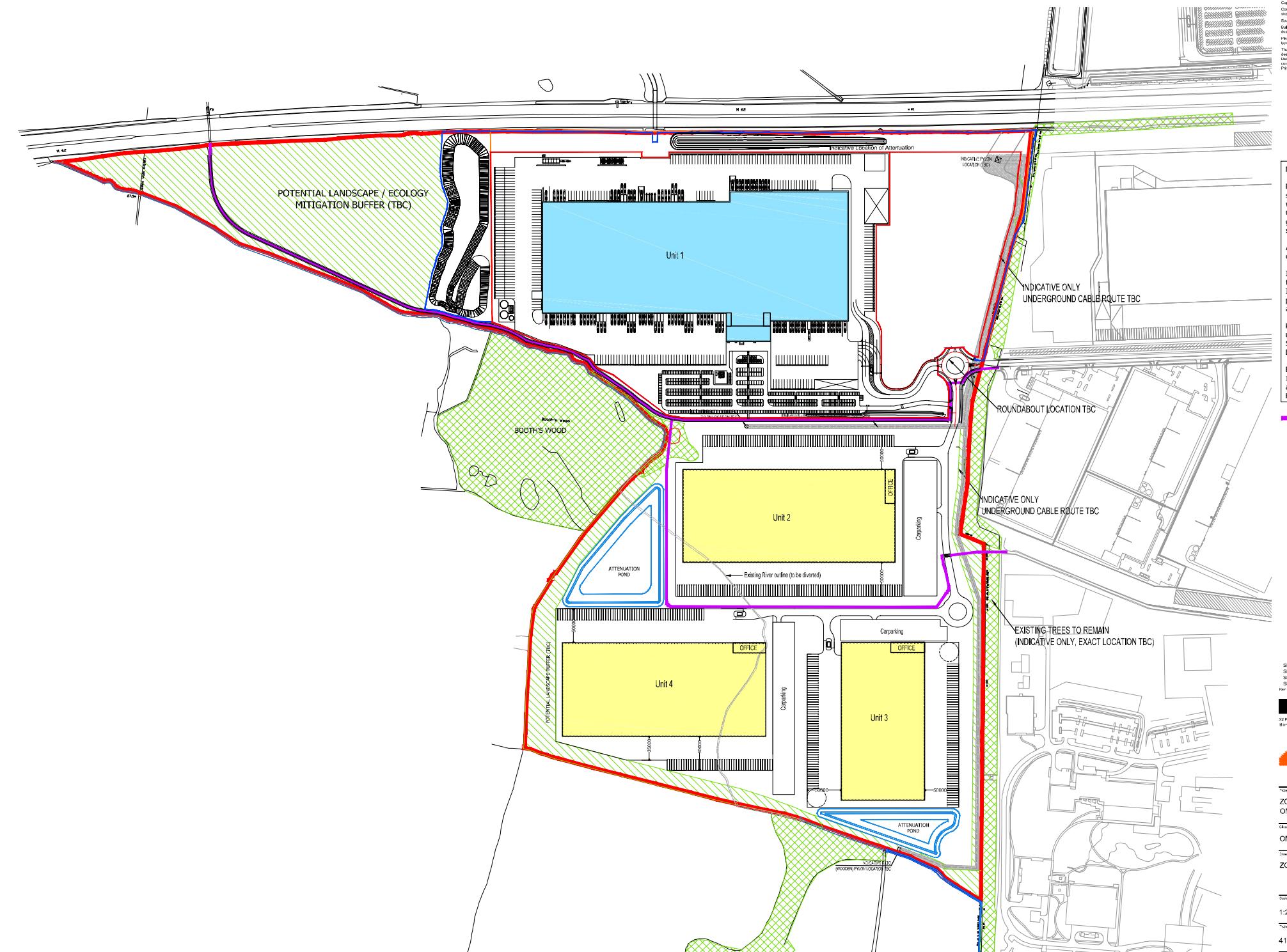
Any dimensions given are to be
confirmed with site measure.

Indicative location of Attenuation, refer
to engineer's drawing for details.
Indicative location of overhead electric
pylon, subject to site survey for
accuracy.

Parking space numbers calculated
using, St. Helens Council,
Supplementary Planning Document
Ensuring a Choice of Travel, June 2010

B8 Storage & Distribution :
1 space per 100sqm warehouse floor
area + office floor area as ancillary to
B8

PEDESTRIAN / CYCLE ROUTE



SK4 Unit number remains valid to SK2
SK2 Unit format & number updated
SK2 Unit road removed
SK1 Issued for information
Rev: Previous Letter Plan
Date: 23/10/10
RCN10
Drafter: [Signature]
DRAFTER SIGNATURE

SKETCH

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chelwoods

ZONE 8
OMEGA WEST, WARRINGTON

C:\disk\

OMEGA WARRINGTON LIMITED

Drawing F.C.

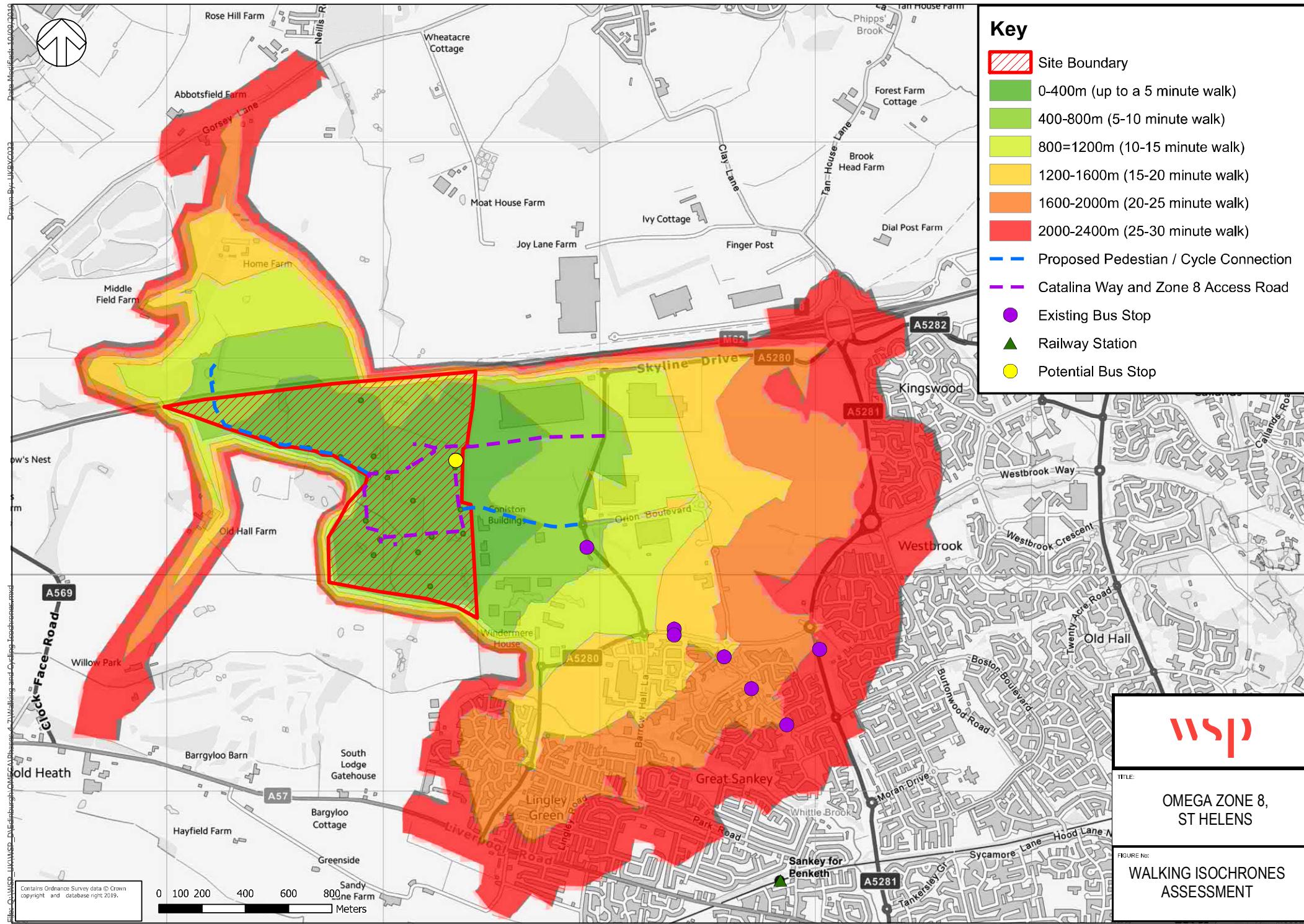
ZONE 8 MASTERPLAN

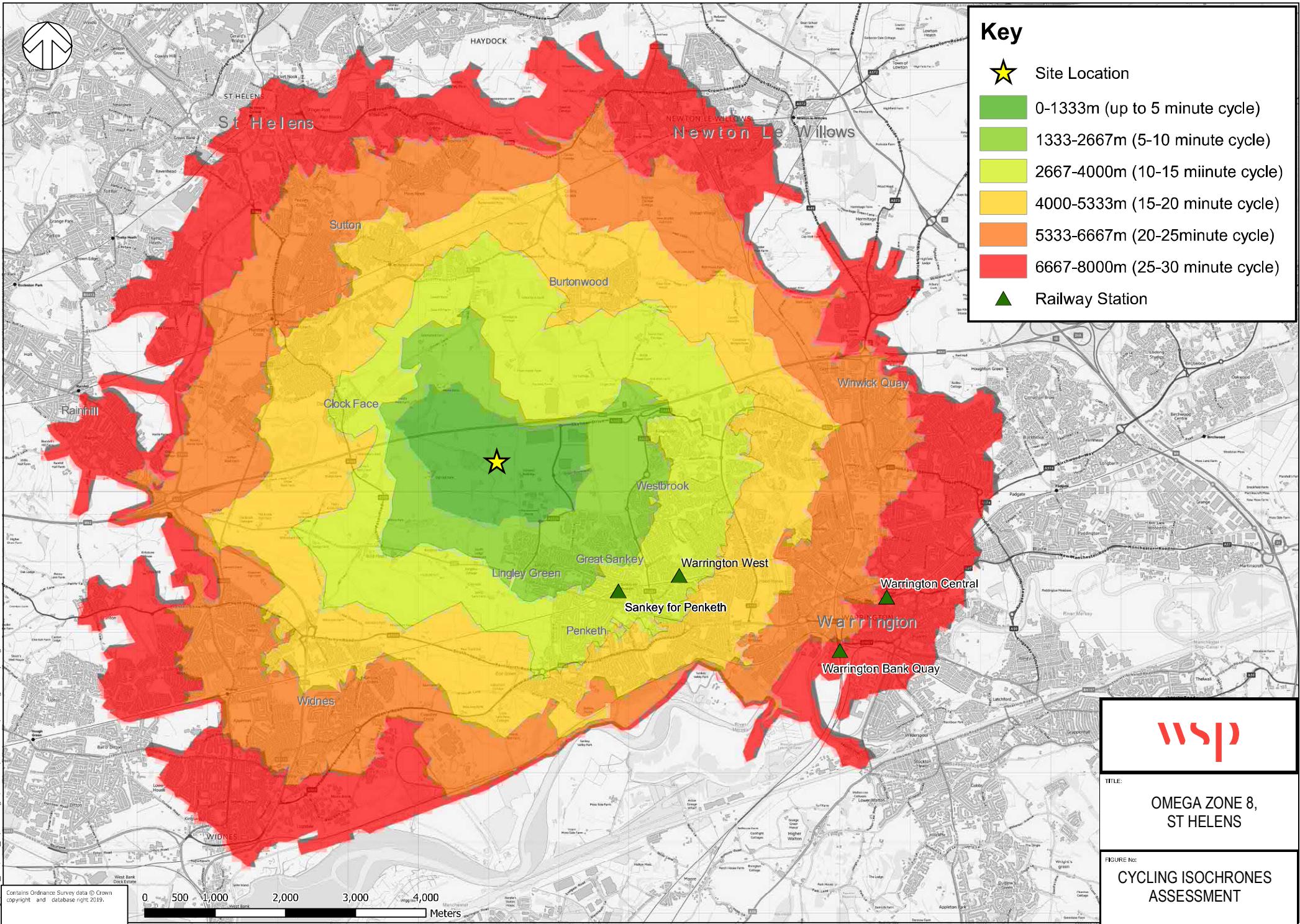
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Type Digitized Draw Level Type Title Number Rev.

4150 CA 00 00 DR A 05100 SK4





TITLE:
OMEGA ZONE 8,
ST HELENS

FIGURE NO:
CYCLING ISOCHRONES
ASSESSMENT

Appendix C

ANALYSIS OF TRIP DERIVATION FROM NEARBY DEVELOPMENT



Surveyed Trip Generation

Key

[B2 Land Use](#)
[B8 Land Use](#)

B2 Land Use

	sqm	sqft	Source
Dominoes GFA	10917	116,878	2016/27588
Plastic Omnium GFA	22262	239,626	2014/24677

Assumptions: 2019 surveyed flows used with GFA to get trip rates for Dominoes and Plastic Omnium sites. Weighted average used to obtain blended trip rate.
Weight based on GFA.

Total	Time Period																									Weight			
	05:00-06:00		06:00-07:00		07:00-08:00		07:45-08:45		09:00-10:00		10:00-11:00		11:00-12:00		12:00-13:00		13:00-14:00		14:00-15:00		15:00-16:00		16:00-17:00		16:45-17:45				
	In	Out																											
Dominoes Gen Vehicle Trips (PCU)	14	6	6	17	4	6	14	5	8	2	8	8	13	7	6	7	3	7	3	10	8	10	5	17	15	10	14	6	33%
Plastic Omnium Vehicle Trips (PCU)	60	9	59	98	46	4	48	8	38	14	12	10	14	26	20	17	60	25	58	97	13	24	18	34	21	53	3	27	67%
Dominoes HGV Trips (PCU)	2	3	12	0	2	5	2	8	16	5	8	4	5	9	7	5	8	6	5	4	4	6	0	2	6	2	0	3	33%
Plastic Omnium HGV Trips (PCU)	2	2	4	0	2	2	5	5	6	8	10	6	0	6	8	5	5	15	14	3	5	9	12	13	11	10	8	5	67%
Dominoes Gen Vehicle Trip Rates	0.129	0.059	0.055	0.158	0.037	0.055	0.129	0.046	0.074	0.018	0.074	0.074	0.116	0.068	0.059	0.064	0.029	0.064	0.028	0.094	0.074	0.092	0.046	0.153	0.138	0.092	0.129	0.055	33%
Plastic Omnium Vehicle Trip Rates	0.270	0.040	0.266	0.442	0.207	0.018	0.216	0.036	0.171	0.063	0.054	0.045	0.063	0.117	0.092	0.076	0.269	0.114	0.259	0.436	0.058	0.109	0.082	0.154	0.094	0.238	0.014	0.123	67%
Dominoes HGV Trip Rates	0.014	0.028	0.112	0.000	0.014	0.042	0.014	0.070	0.147	0.049	0.070	0.035	0.049	0.085	0.063	0.042	0.070	0.056	0.049	0.035	0.035	0.056	0.000	0.021	0.056	0.021	0.000	0.028	33%
Plastic Omnium HGV Trip Rates	0.010	0.010	0.017	0.000	0.010	0.010	0.024	0.021	0.027	0.034	0.044	0.027	0.000	0.027	0.037	0.024	0.024	0.065	0.062	0.013	0.021	0.041	0.054	0.058	0.048	0.044	0.034	0.024	67%
Weighted Average B2 Vehicle Trip Rates	0.224	0.047	0.197	0.349	0.151	0.030	0.187	0.039	0.139	0.048	0.060	0.054	0.080	0.101	0.081	0.072	0.190	0.098	0.183	0.323	0.063	0.103	0.070	0.153	0.109	0.190	0.052	0.101	
Weighted Average B2 HGV Trip Rates	0.011	0.016	0.048	0.000	0.011	0.021	0.021	0.037	0.067	0.039	0.053	0.030	0.016	0.046	0.046	0.030	0.039	0.062	0.058	0.021	0.025	0.046	0.036	0.050	0.037	0.023	0.025		

B8 Land Use

	sqm	sqft	Source
Omega North	101,025	1,087,424	Multiple
Asda	57,454	618,429	2013/22143

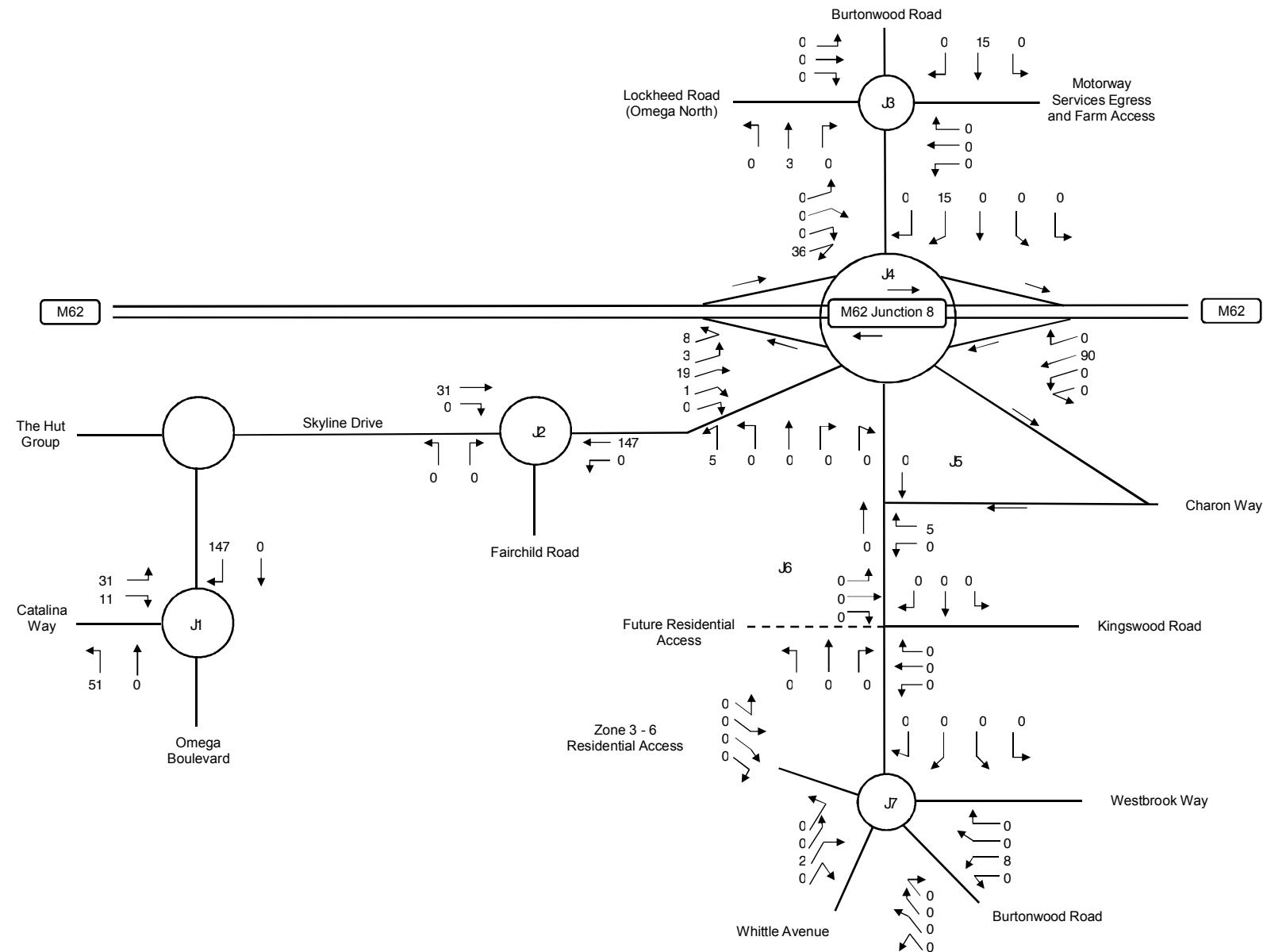
Assumptions: 2019 surveyed flows used with GFA to get trip rates for Omega North and Asda sites. Weighted average used to obtain blended trip rate. Weight based on GFA.

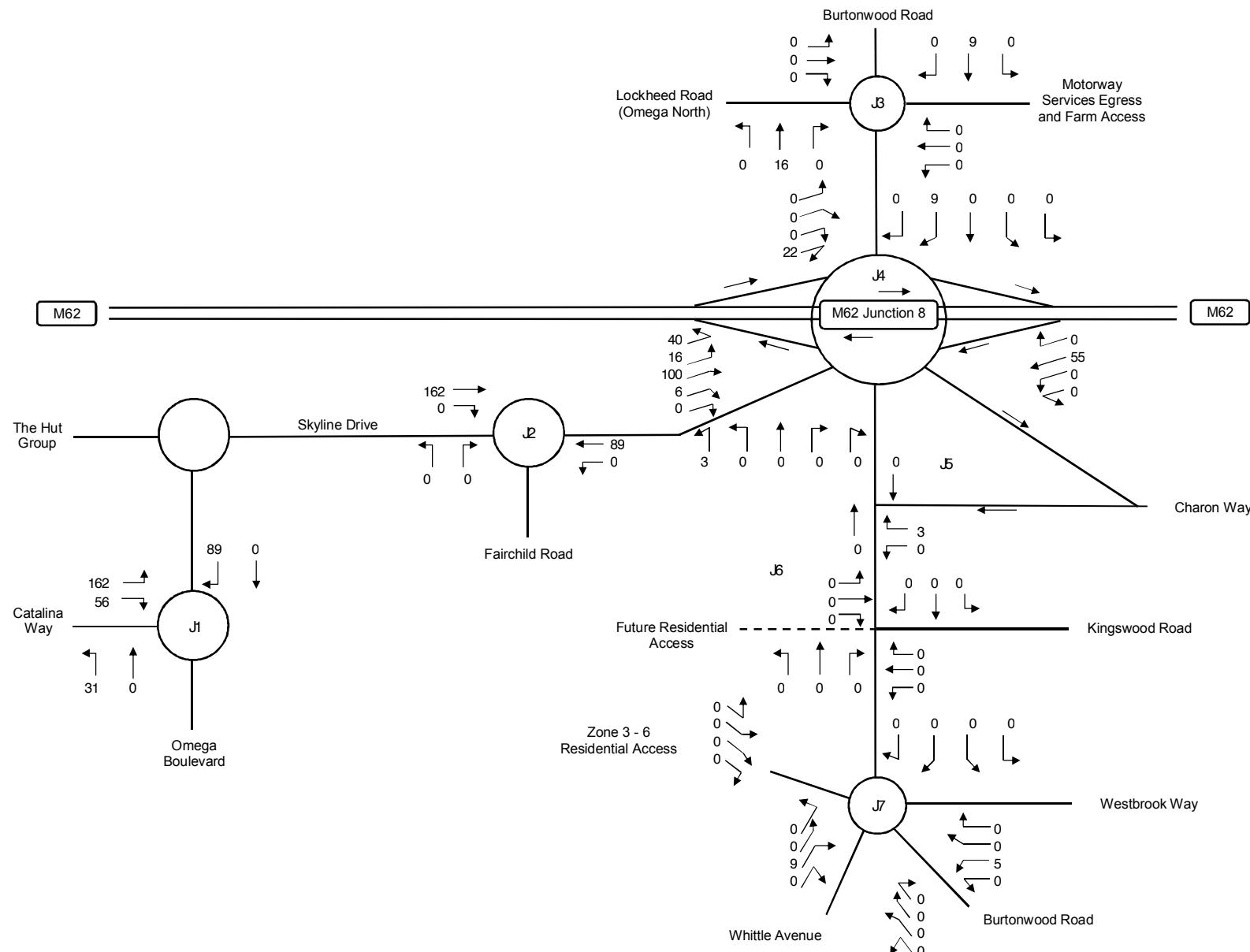
Total	Time Period																									Weight			
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	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out																	
Omega North Gen Vehicle Trips (PCU)	318	140	82	99	108	29	108	28	77	36	65	41	54	36	61	54	186	117	68	255	43	144	38	129	56	121	65	94	64%
Asda Vehicle Trips (PCU)	81	14	18	60	28	7	19	3	13	7	15	8	13	11	21	6	55	12	10	71	2	14	2	20	16	27	2	17	36%
Omega North HGV Trips (PCU)	69	104	54	169	76	60	77	49	70	88	72	94	57	74	75	63	133	70	104	85	93	47	76	67	65	54	73	38	64%
Asda HGV Trips (PCU)	13	8	36	32	25	25	26	46	43	25	26	46	34	43	34	61	41	46	36	35	36	41	39	38	37	23	32	37	36%
Omega North Gen Vehicle Trip Rates	0.315	0.138	0.081	0.098	0.107	0.029	0.107	0.028	0.076	0.036	0.064	0.041	0.053	0.036	0.061	0.053	0												

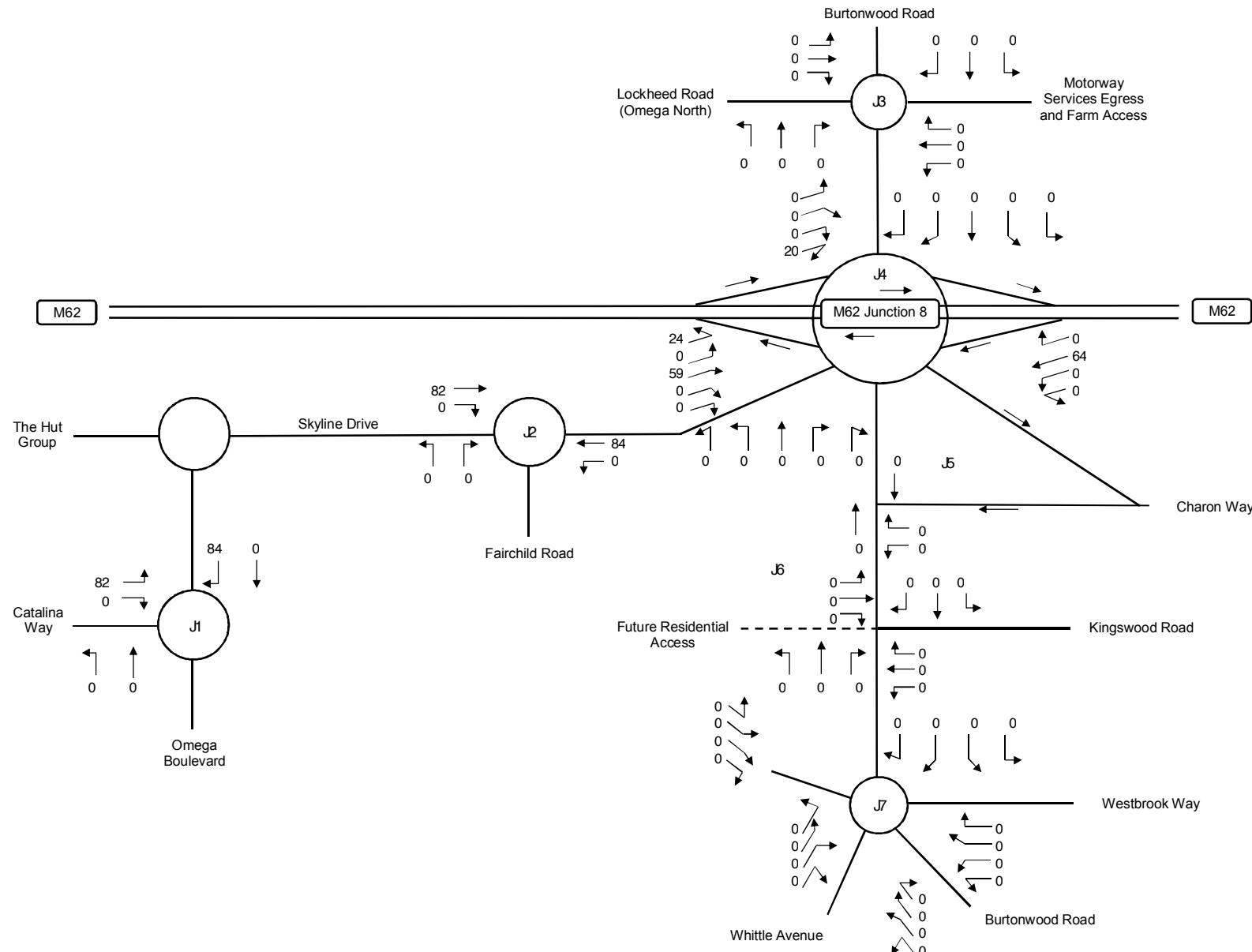
Appendix D

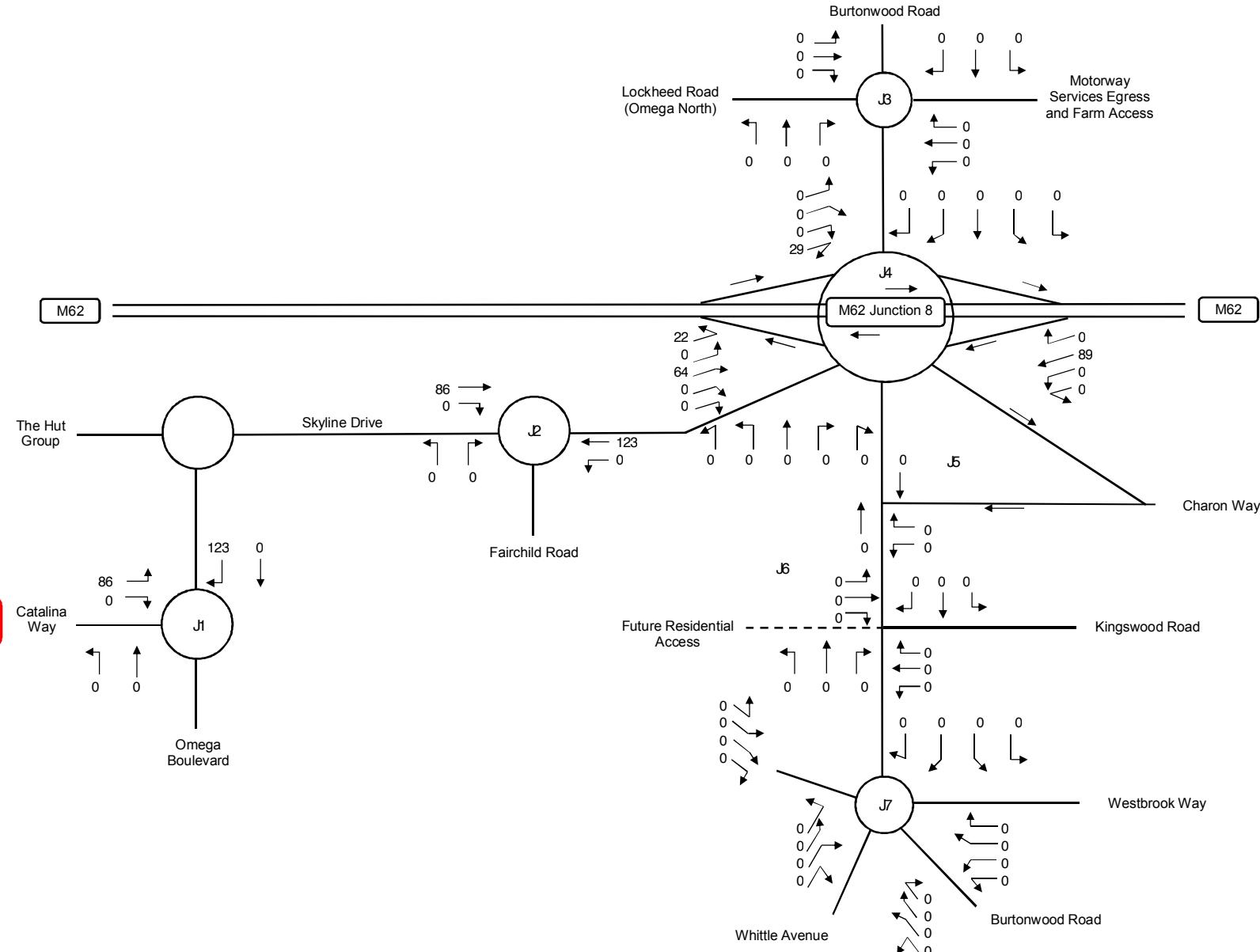
NETWORK DIAGRAMS

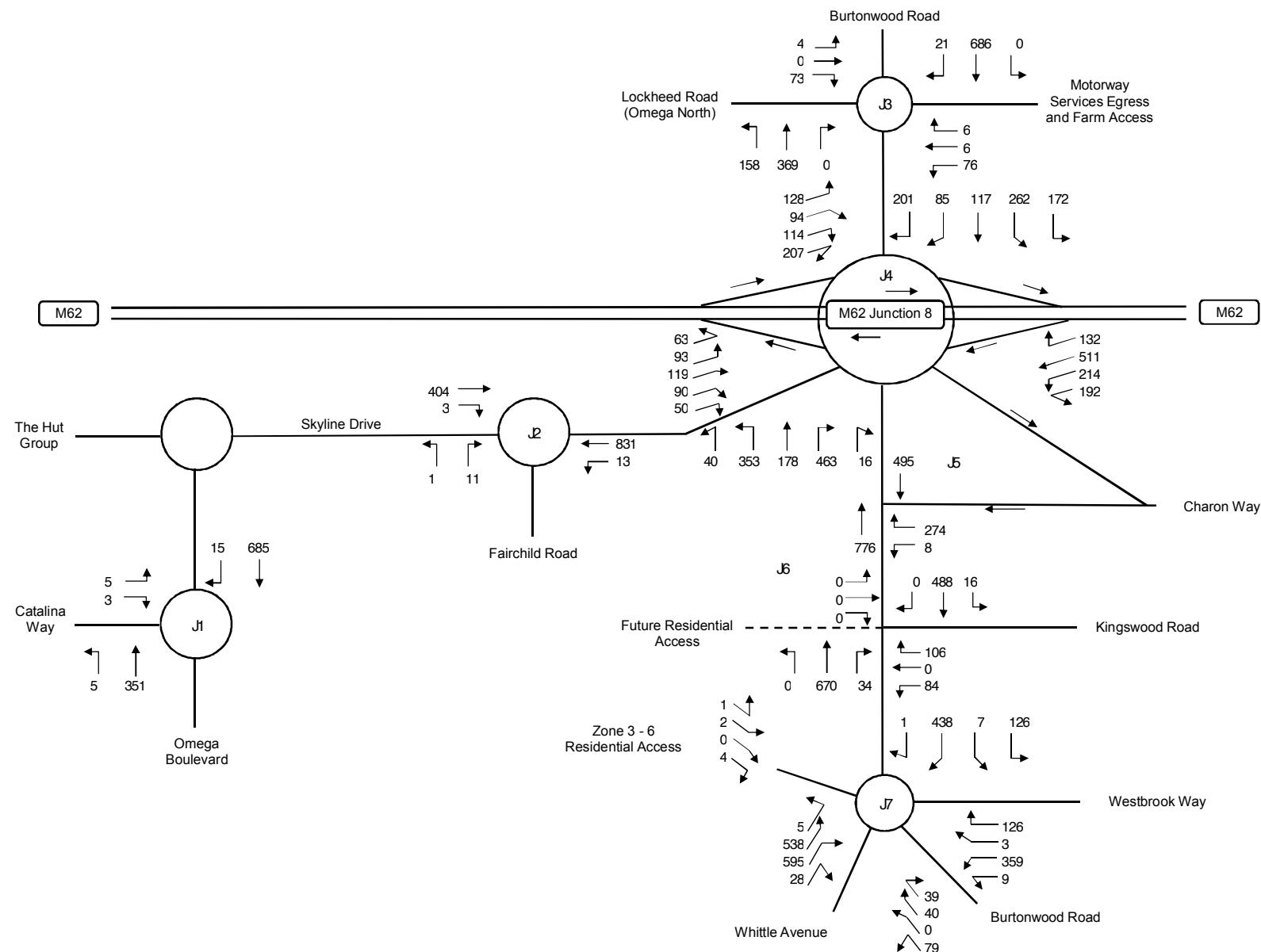
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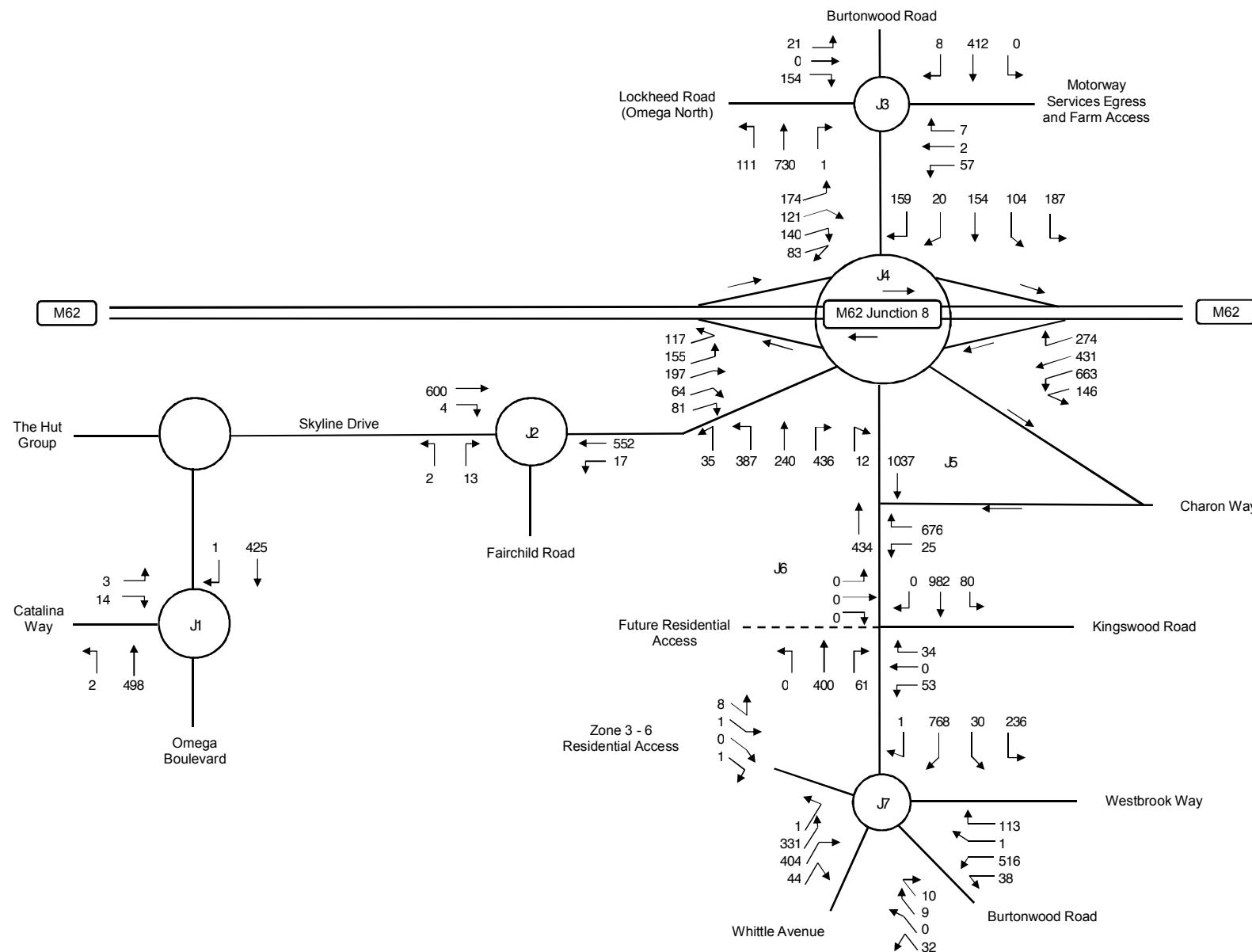


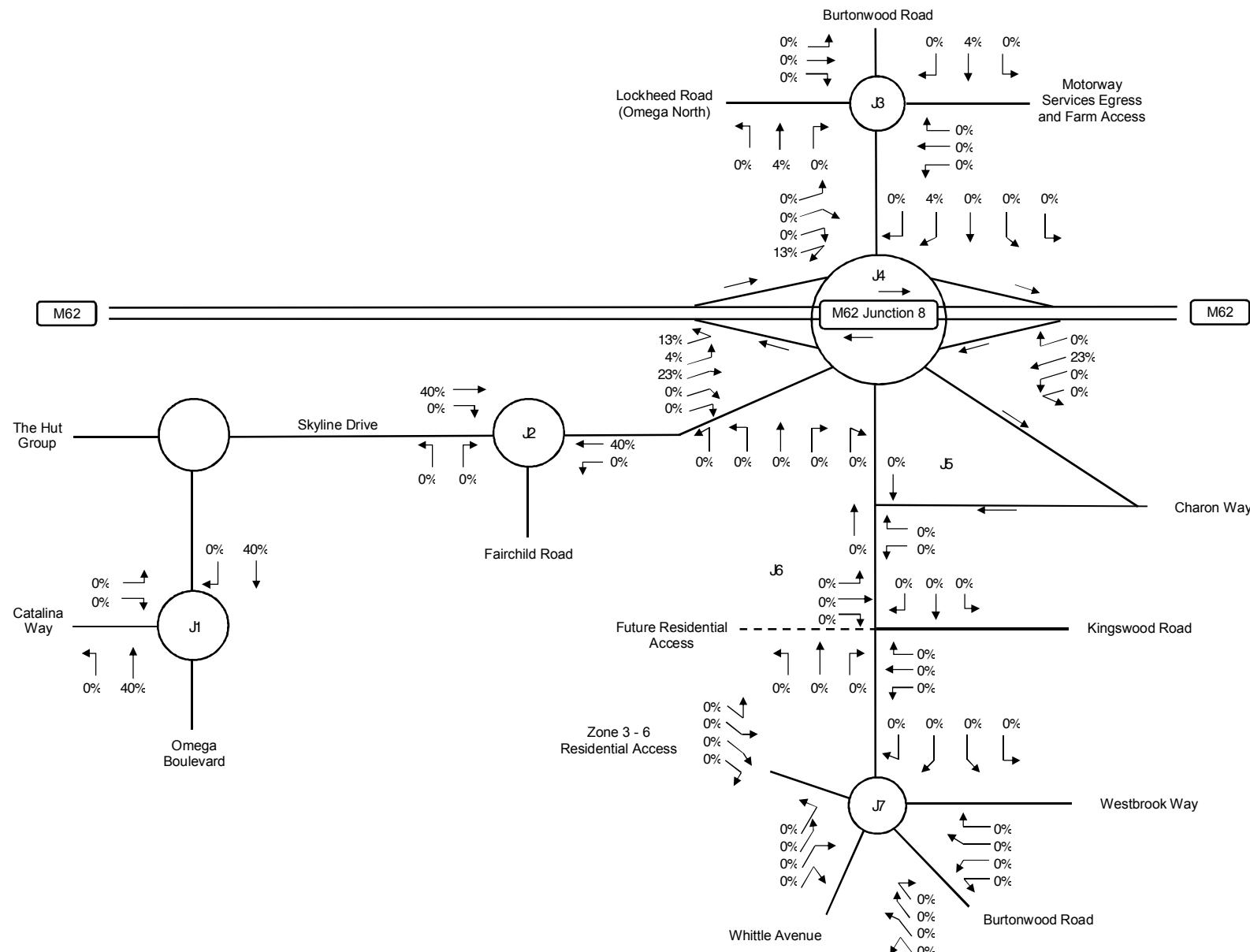


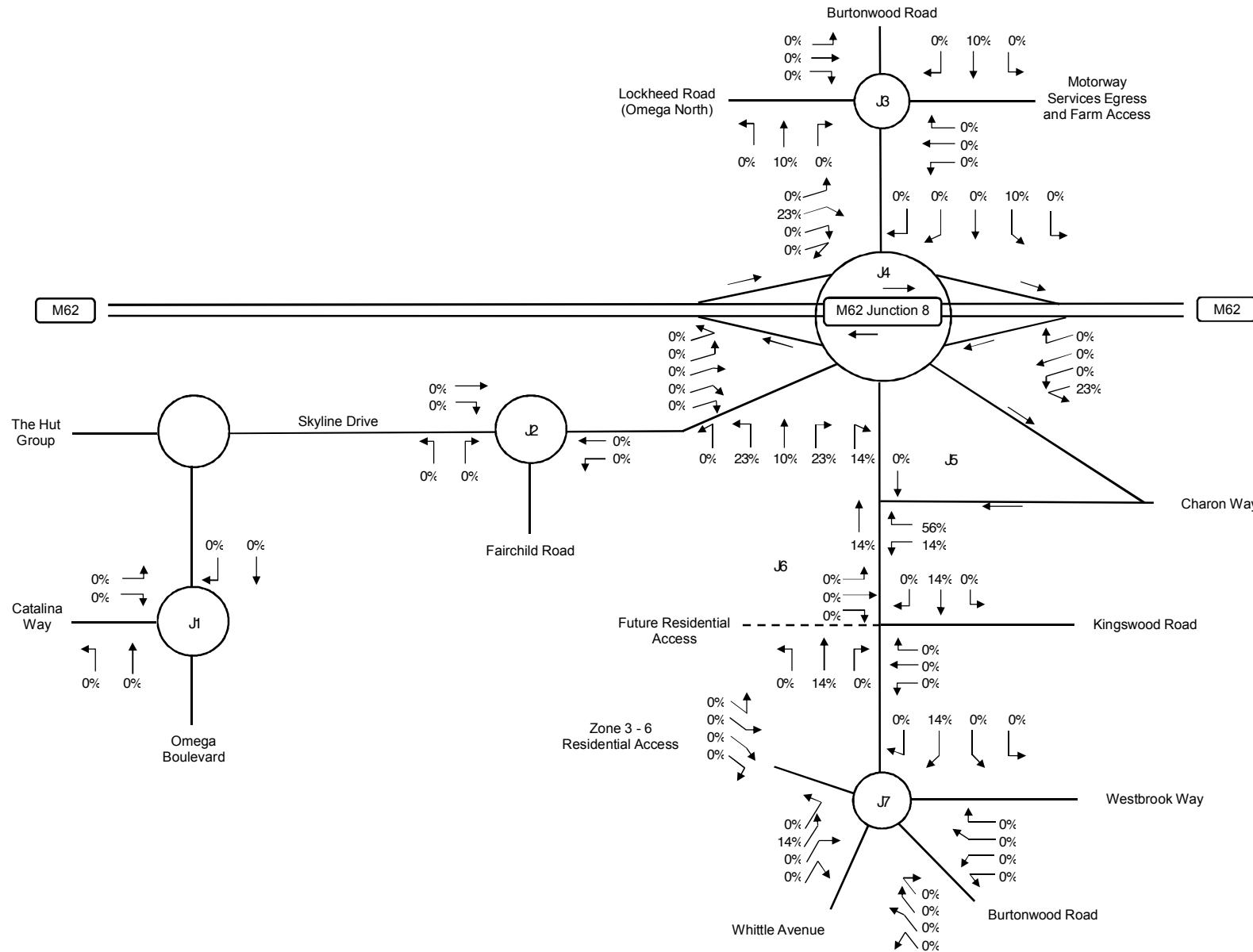


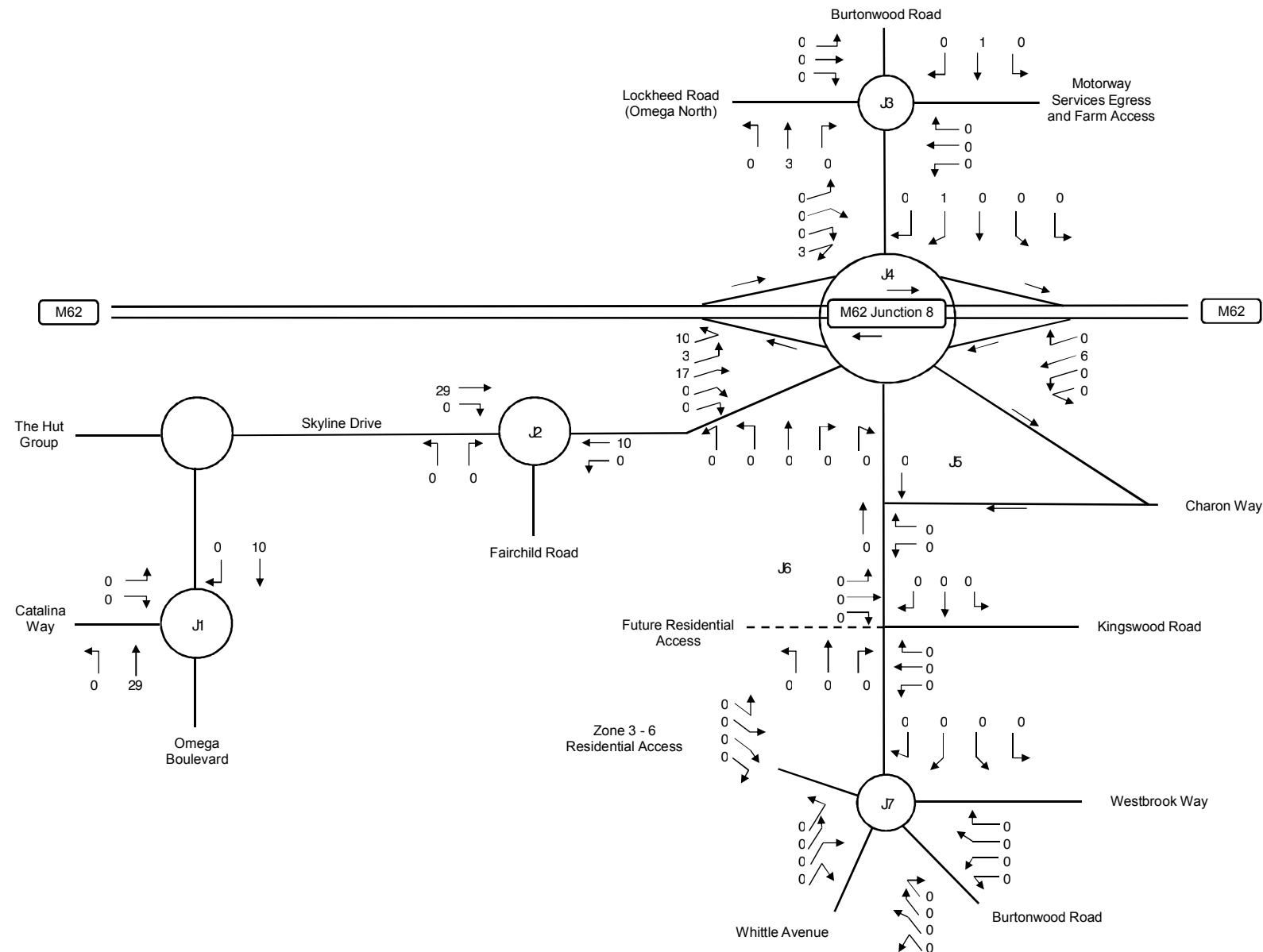


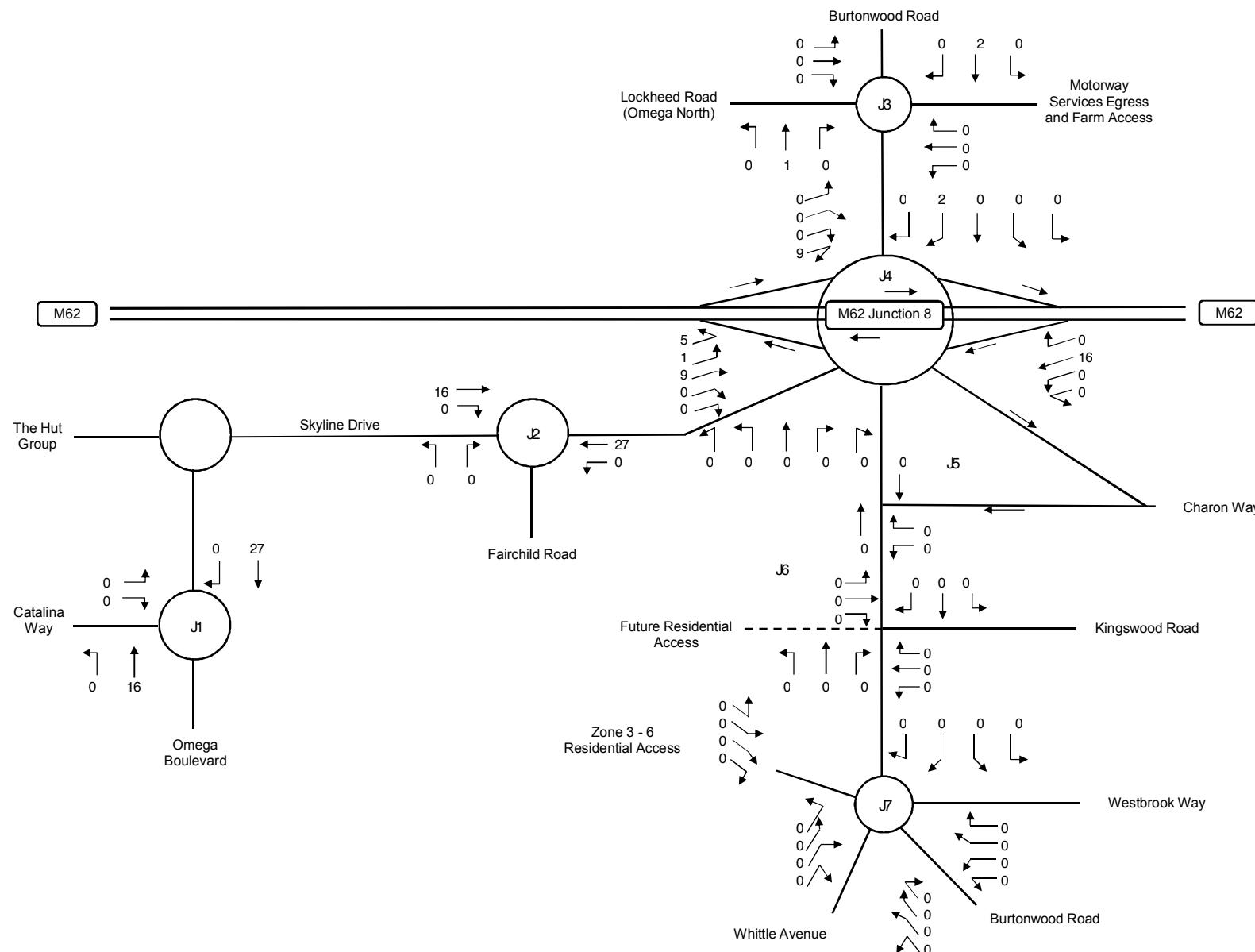


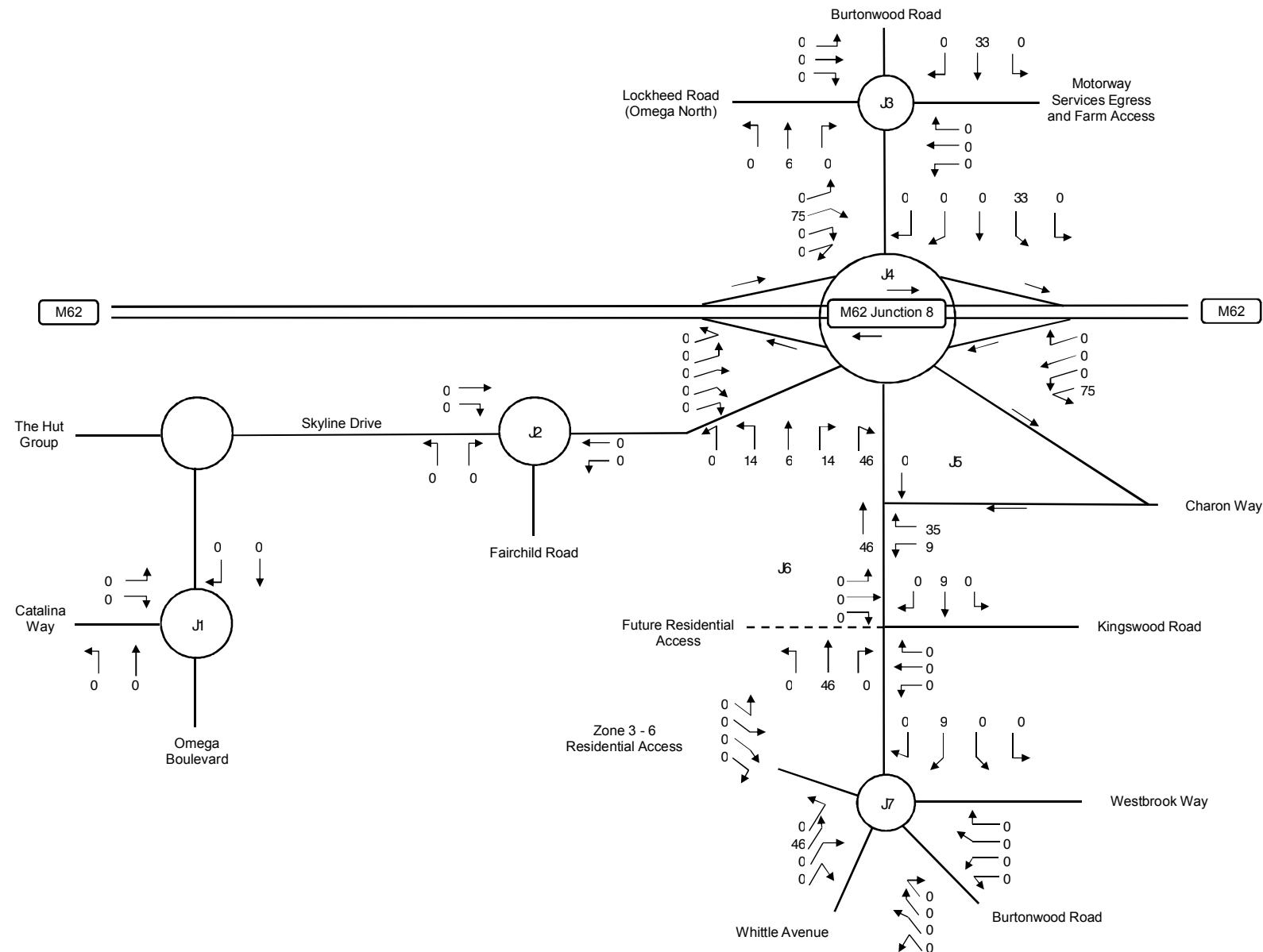


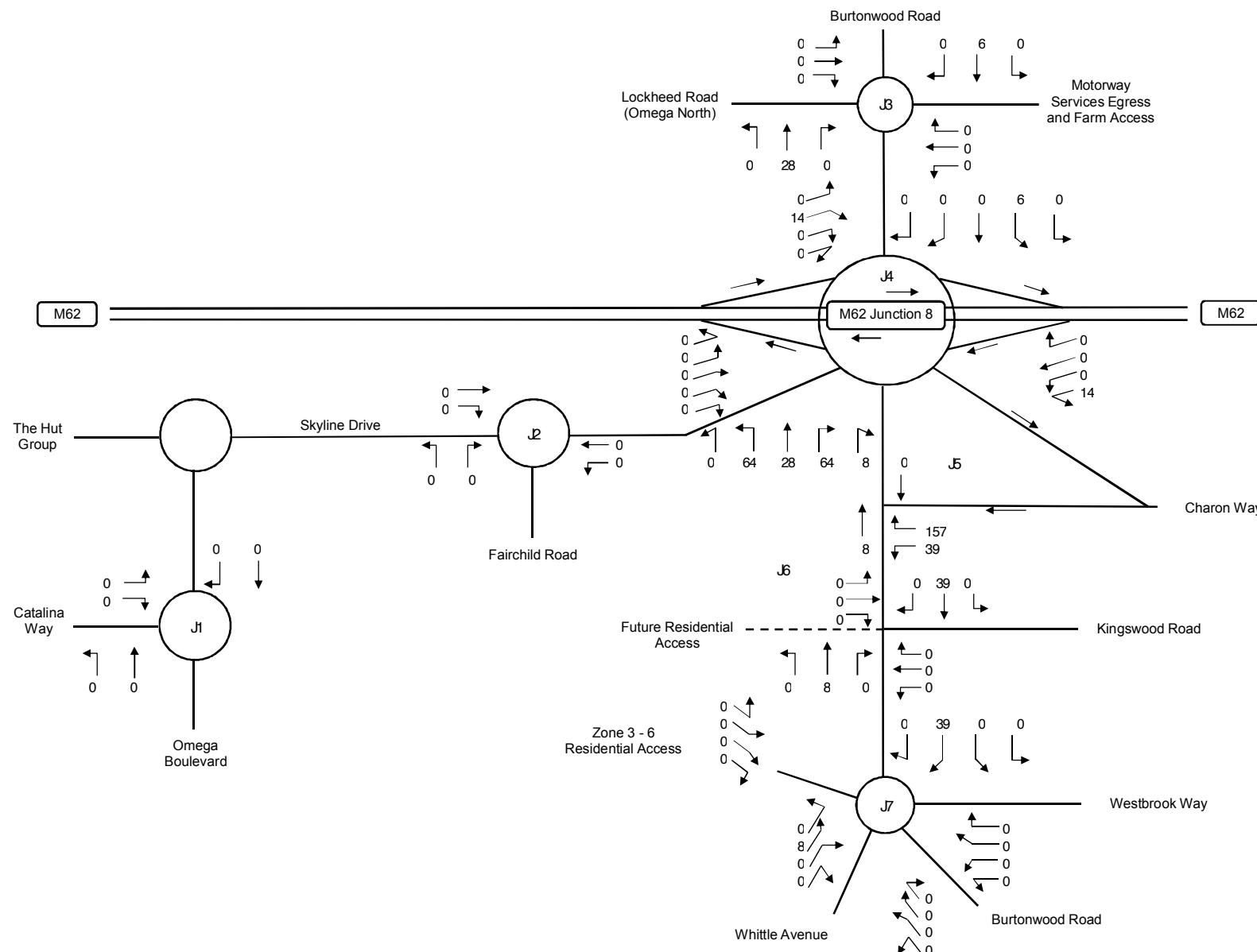


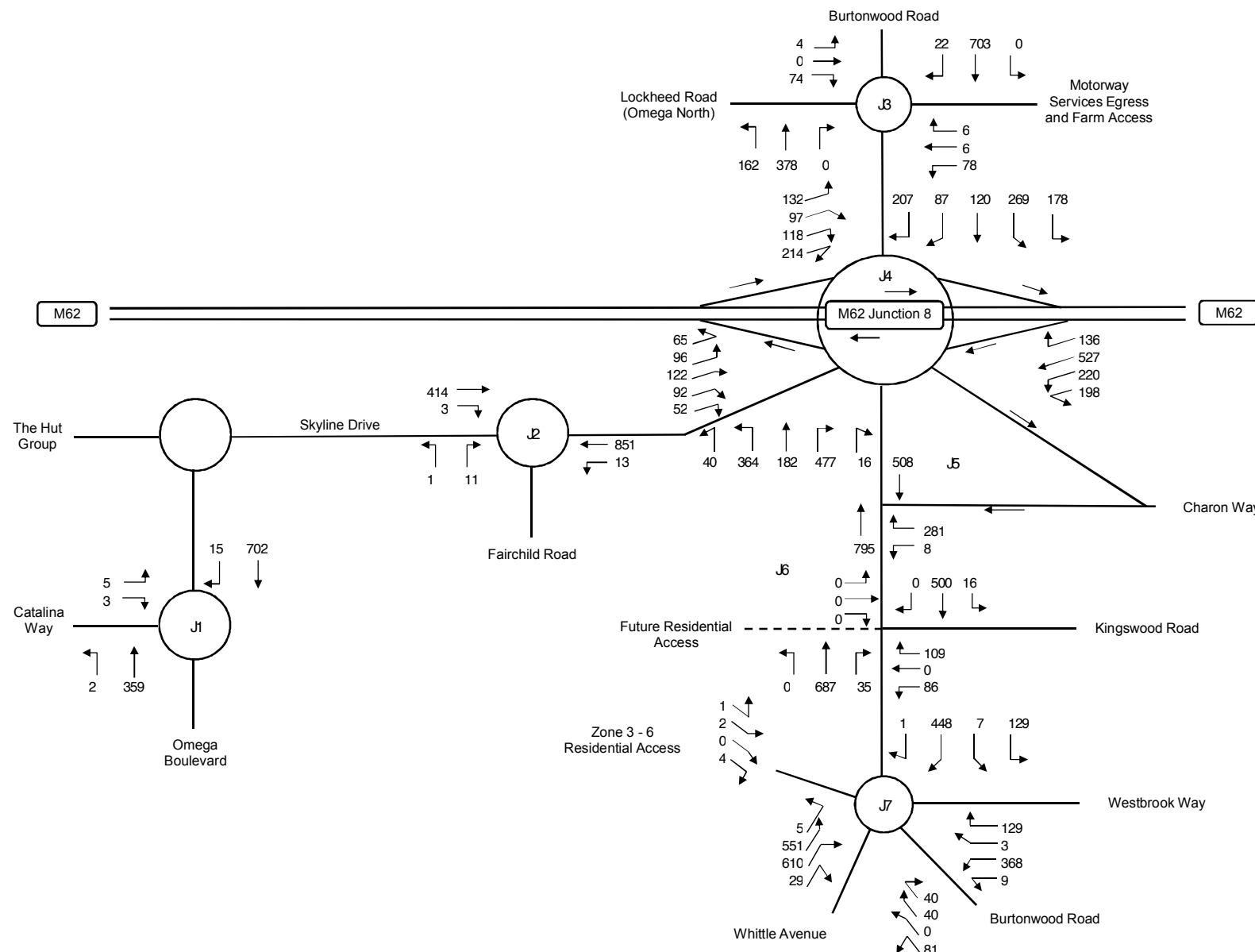


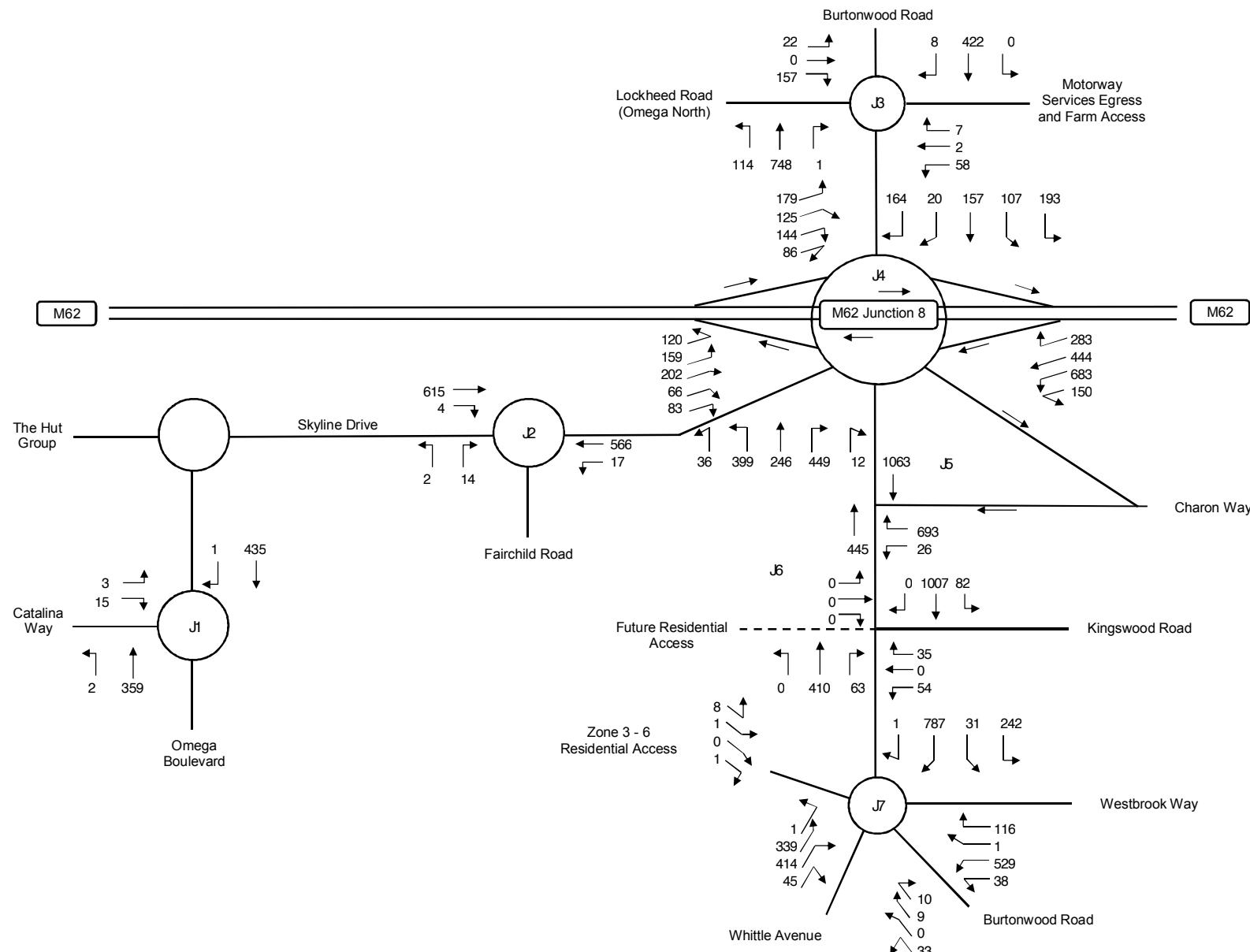


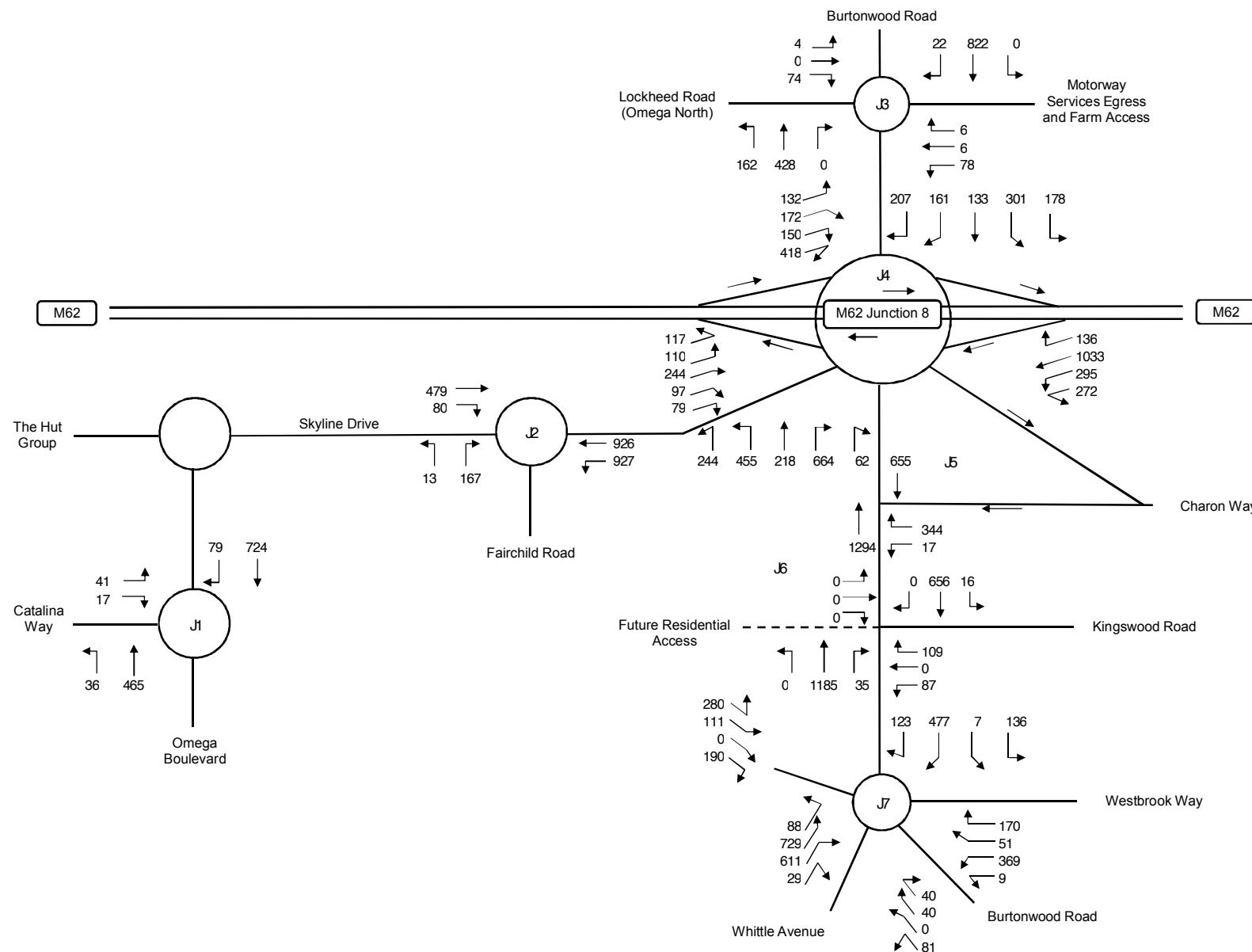


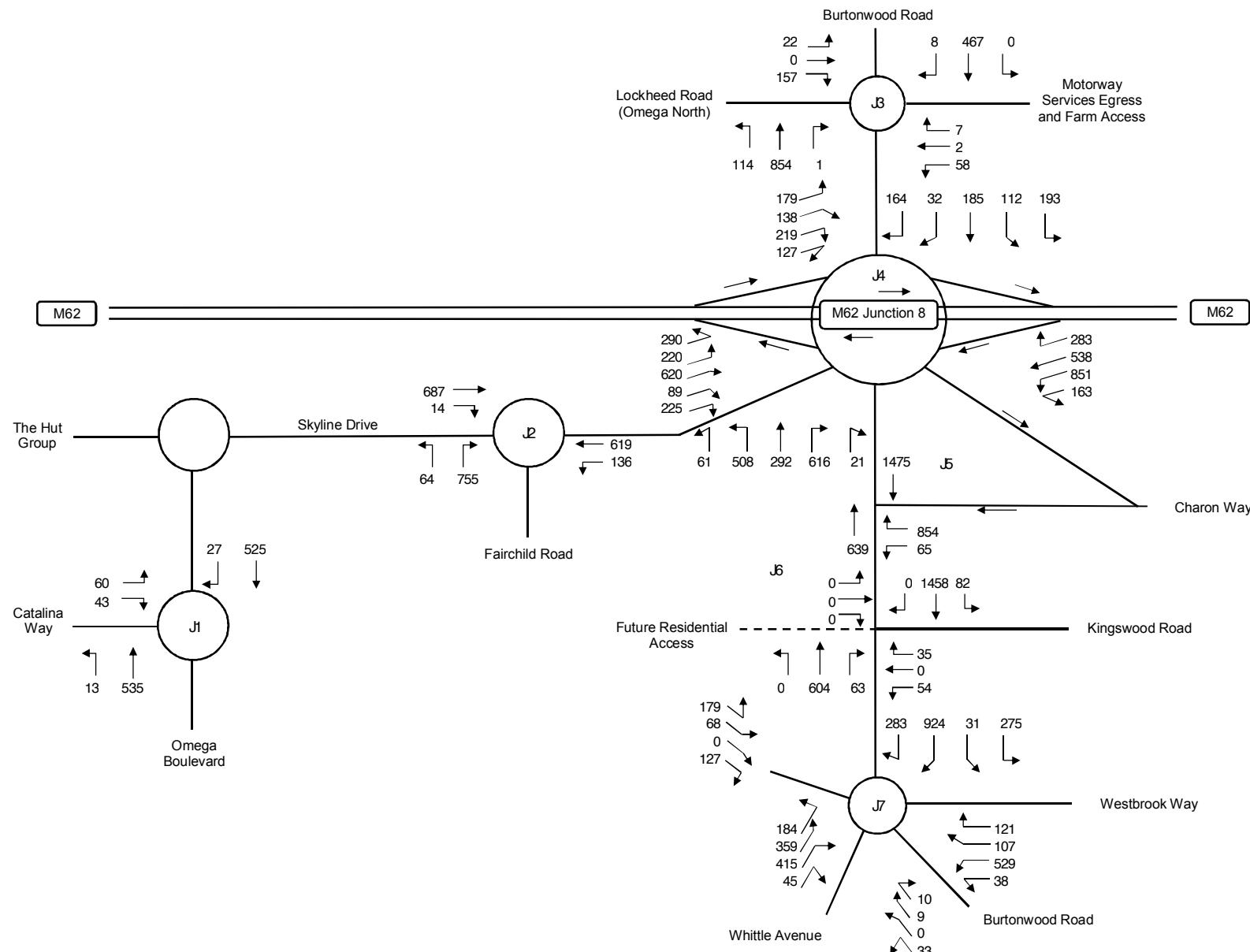


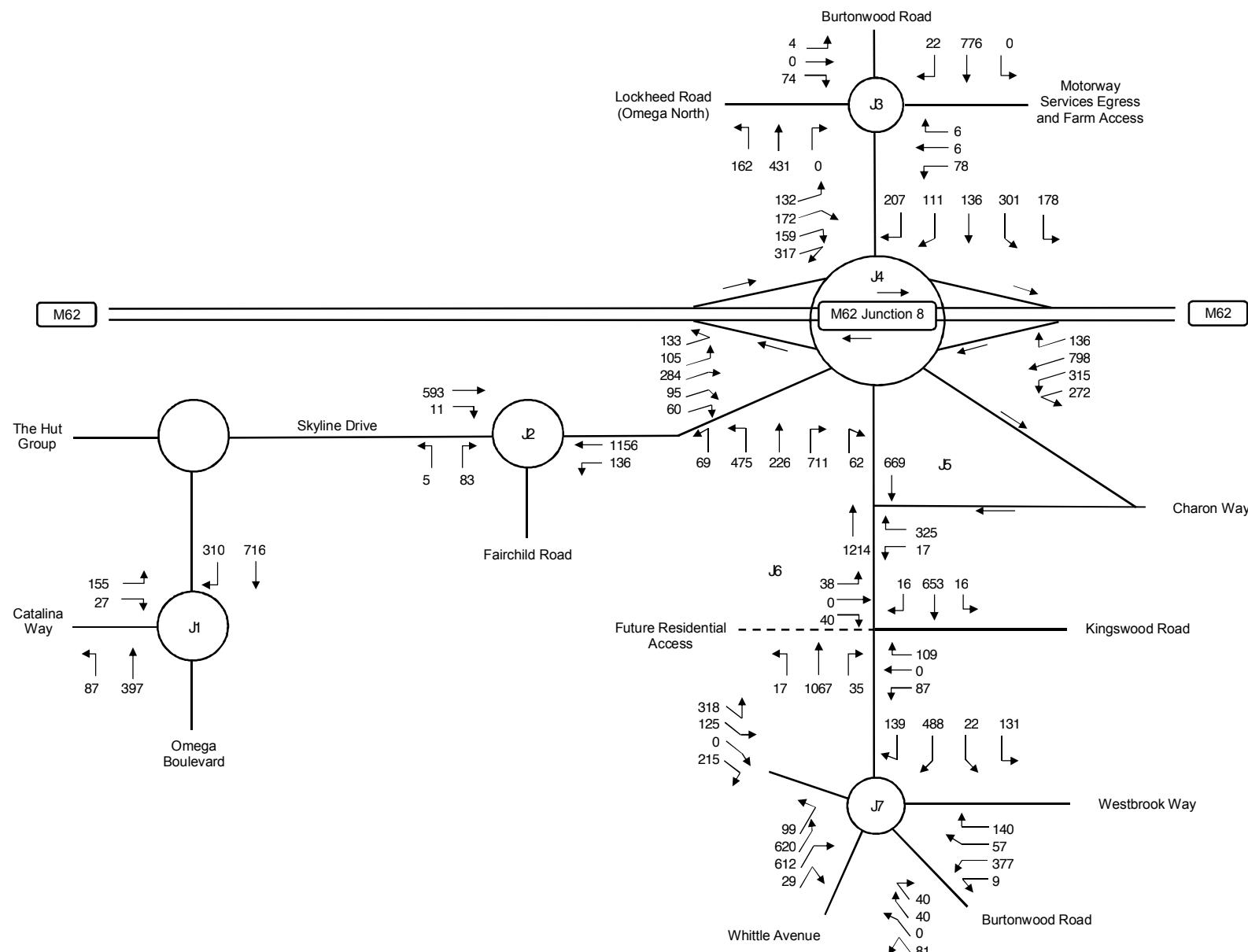


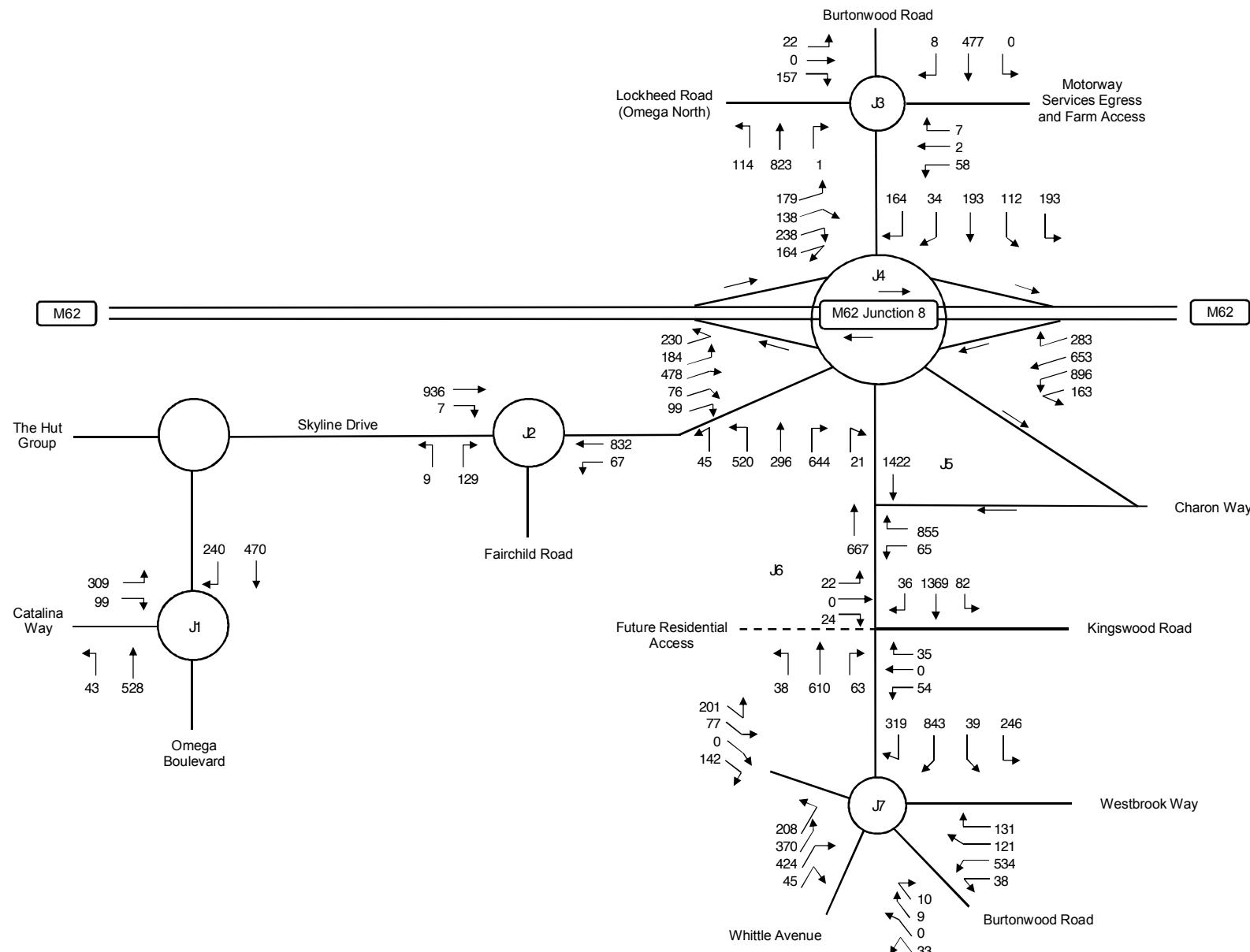












Appendix E

M62 J8 EXISTING LAYOUT TRANSYT MODELLING RESULTS



TRANSYT 15

Version: 15.5.2.7994
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Filename: Junction 8 M62_OWestTA_FOR ISSUE.t15

Path: M:\50400134 - Omega, Warrington\Omegamega, Warrington\ANALYSIS\Zone 8 Directory\TRANSYT

Report generation date: 25/11/2019 15:44:36

»A3 - 2021 AM Scenario 2 : D3 - 2021 AM Scenario 2* :

»A4 - 2021 PM Scenario 2 : D4 - 2021 PM Scenario 2* :

»A7 - 2021 AM Scenario 5 : D7 - 2021 AM Scenario 5* :

»A8 - 2021 PM Scenario 5 : D8 - 2021 PM Scenario 5* :

Network Diagrams



A3 - 2021 AM Scenario 2

D3 - 2021 AM Scenario 2*

Signal Timings

Network Default: 70s cycle time; 70 steps

Intergreen Matrix for Controller Stream 1

	To					
	A	B	C	D	E	F
A		6		0		
B		5	5			
C	6	6				6
D		11				
E	8					
F		5				

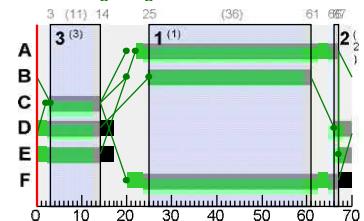
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1		1	B,F,A	25	61	36	1	7
	2		2	A,D,F	66	67	1	1	1
	3		3	C,D,E	3	14	11	1	7

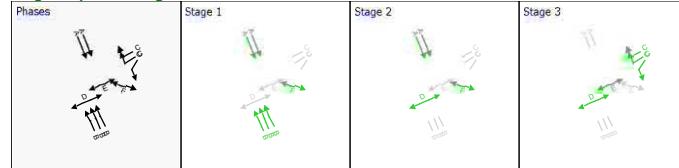
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1	1	1	B	25	61	36
3	2	1	1	B	25	61	36
4	1	1	1	B	25	61	36
5	1	1	1	C	3	14	11
6	1	1	1	C	3	14	11
7	1	1	1	C	3	14	11
54	1	1	1	A	22	67	45
54	2	1	1	A	22	67	45

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Intergreen Matrix for Controller Stream 2

From	To									
	C	D	E	F	G	H	I	J		
C	5									
D	5									
E			5	5						
F		5			5					
G		5			5					
H			13	13						
I								6		
J									9	

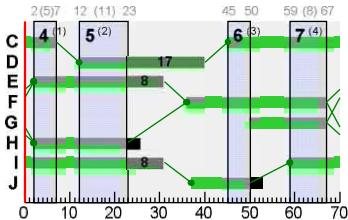
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
2	1		4	C,E,H,I	2	7	5	1	1
	2		5	D,E,H,I	12	23	11	1	1
	3		6	C,F,J	45	50	5	1	1
	4		7	C,F,G,I	59	67	8	1	1

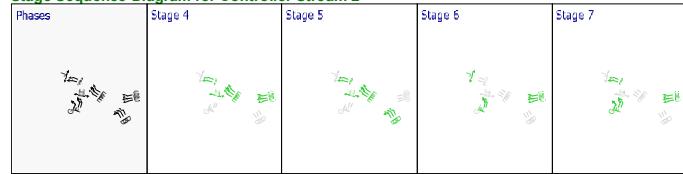
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
16	1	2	2	D	12	40	28
16	2	2	2	D	12	40	28
16	3	2	2	D	12	40	28
17	1	2	2	C	45	7	32
19	1	2	2	C	45	7	32
19	2	2	2	C	45	7	32
20	1	3	2	E	2	31	29
20	2	3	2	E	2	31	29
20	3	3	2	E	2	31	29
23	1	3	2	F	36	67	31
24	1	3	2	G	50	67	17
25	1	3	2	F	36	67	31
28	1	3	2	I	59	31	42
28	2	3	2	I	59	31	42

Phase Timings Diagram for Controller Stream 2



Stage Sequence Diagram for Controller Stream 2



Intergreen Matrix for Controller Stream 3

To			
		K	L
From	K	6	
	L	8	

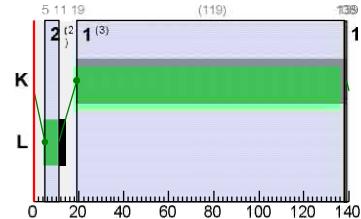
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1		1	K	138	139	1	1	1
	2		2	L	5	11	6	1	6
	3		1	K	19	138	119	1	1

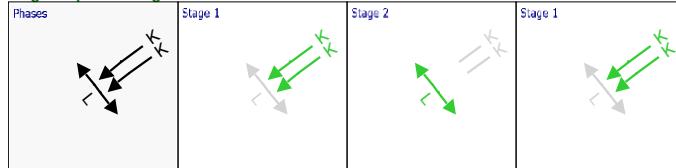
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
21	1	4	3	K	19	139	120
21	2	4	3	K	19	139	120

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Intergreen Matrix for Controller Stream 4

From	To		
	A	B	E
A	5		
B	5	5	
E		12	

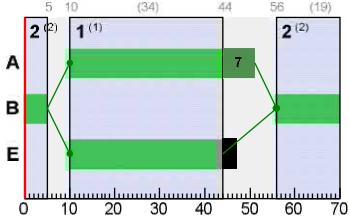
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1		1	A,E	10	44	34	1	7
	2		2	B	56	5	19	1	7

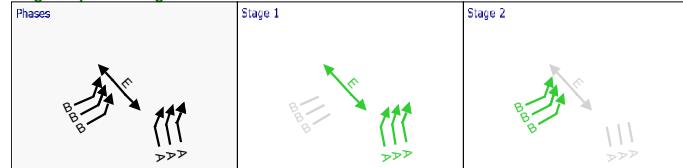
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
30	1	5	4	A	10	51	41
30	2	5	4	A	10	51	41
30	3	5	4	A	10	51	41
31	1	5	4	B	56	5	19
32	1	5	4	B	56	5	19
34	1	5	4	B	56	5	19

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Intergreen Matrix for Controller Stream 5

From	To	
	C	D
C	5	
D	5	

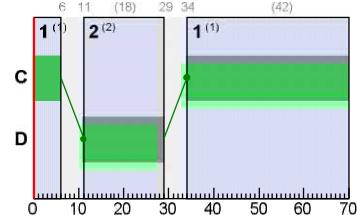
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
5	1		1	C	34	6	42	1	7
	2		2	D	11	29	18	1	7

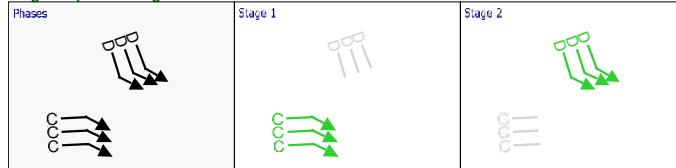
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
36	1	6	5	C	34	6	42
36	2	6	5	C	34	6	42
36	3	6	5	C	34	6	42
37	1	6	5	D	11	29	18
38	1	6	5	D	11	29	18
39	1	6	5	D	11	29	18

Phase Timings Diagram for Controller Stream 5



Stage Sequence Diagram for Controller Stream 5



Intergreen Matrix for Controller Stream 6

From	To	
	A	B
A	6	
B	5	

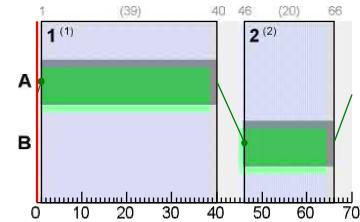
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
6	1		1	A	1	40	39	1	7
	2		2	B	46	66	20	1	7

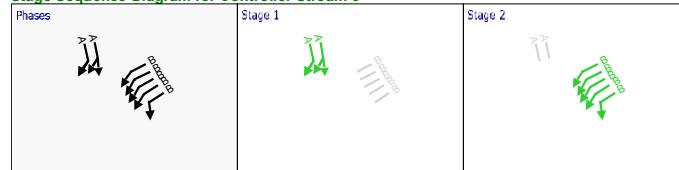
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
44	1	7	6	A	1	40	39
45	2	7	6	A	1	40	39
48	1	7	6	B	46	66	20
49	1	7	6	B	46	66	20
49	2	7	6	B	46	66	20
51	1	7	6	B	46	66	20
51	2	7	6	B	46	66	20

Phase Timings Diagram for Controller Stream 6



Stage Sequence Diagram for Controller Stream 6



Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE					PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)			
RA	1		R3			492	2299	70	18.00	21	321	12.21	0.21	0.00	0.03	100	100	0.00	0.41		
RAc	1		R3			34	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RAx	1					974	1800	70	0.00	54	66	13.18	1.18	0.00	0.32	100	100	0.00	4.52		
RB	1		R4			78	1439	70	0.00	5	1561	12.07	0.07	0.00	0.00	100	100	0.00	0.02		
RBC	1		R4			363	Unrestricted	70	18.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RBx	1					163	Unrestricted	70	18.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RC	1		R1			844	1677	70	0.00	50	79	13.09	1.09	0.00	0.25	100	100	0.00	3.61		
RCc	1		R1			74	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RCx	1					367	Unrestricted	70	18.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RD	1		R2			90	724	70	0.00	12	624	12.35	0.35	0.00	0.01	100	100	0.00	0.13		
RDc	1		R2			918	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RDx	1					0	Unrestricted	70	70.00	0	Unrestricted	0.00	0.00	0.00	0.00	100	100	0.00	0.00		
1	1	Burtonwood Road South	1	1	B	422	1980	36	0.91	41	118	19.85	11.40	57.36	4.77	100	100	0.00	22.02		
2	1	Burtonwood Road South	1			1295	1980	70	0.00	65	38	5.76	1.71	0.00	0.62	100	100	0.00	8.75		
3	2	Burtonwood Road South	1	1	B	452	2120	36	1.66	42	113	17.60	11.62	59.35	5.34	100	100	0.00	24.07		
4	1	Burtonwood Road South	1	1	B	421	1975	36	0.89	41	118	17.55	11.40	57.48	4.71	100	100	0.00	21.96		
5	1	Charon Way Left	1	1	C	17	1995	11	11.00	5	1711	26.74	24.72	81.56	0.28	100	100	0.00	1.83		
6	1	Charon Way Right	1	1	C	173 <	1842	11	0.14	55	62	35.68	33.63	95.13	3.21 +	100	100	0.00	25.01		

7	1	Charon Way Right	1	1	C	170	1819	11	0.00	55	65	46.36	33.34	96.57	3.27	100	100	0.00	24.42
8	1	Charon Way	1			190	1653	70	2.86	12	651	11.38	0.20	2.82	1.46	100	100	0.00	0.22
10	1	Charon Way	1			360	1962	70	0.00	18	391	5.29	0.21	0.00	0.02	100	100	0.00	0.29
11	1	Burtonwood Road South	1			873	2120	70	0.00	41	119	3.16	0.59	0.00	0.14	100	100	0.00	2.05
12	1	Burtonwood Road South	1			328	1980	70	32.00	17	442	4.91	0.18	0.00	0.02	100	100	0.00	0.23
13	1		1			328	Unrestricted	70	32.00	0	Unrestricted	10.75	0.00	0.00	0.00	100	100	0.00	0.00
14	1					345	Unrestricted	70	31.00	0	Unrestricted	7.24	0.00	0.00	0.00	100	100	0.00	0.00
15	1	Omega Road North	1			330	1934	70	12.00	17	428	15.52	0.19	0.00	0.02	100	100	0.00	0.25
	2	Burtonwood Road North	1			330	1937	70	12.00	17	429	15.88	0.19	0.00	0.02	100	100	0.00	0.25
16	1		2	2	D	658 <	1900	28	0.00	84	8	36.51	29.90	83.23	10.73 +	100	100	0.00	84.47
	2		2	2	D	657 <	1900	28	1.21	87	3	40.59	33.92	88.33	11.43 +	100	100	0.00	95.17
	3		2	2	D	328	1900	28	0.47	42	112	23.12	16.39	66.84	4.51	100	100	0.00	23.95
17	1		2	2	C	37	1900	32	27.00	4	2106	11.32	0.09	0.00	0.00	100	100	0.00	0.01
18	1		2			1064 <	1900	70	27.79	78	15	21.16	12.99	64.53	12.87 +	100	100	142.72	205.83
19	1		2	2	C	583	1900	32	0.00	65	38	16.11	12.26	36.19	4.11	100	100	0.00	30.86
	2		2	2	C	480	1900	32	10.00	54	68	16.80	13.19	42.32	3.96	100	100	0.00	27.55
20	1		3	2	E	621 <	1900	29	1.01	79	14	31.40	25.35	75.62	9.08 +	100	100	109.02	177.01
	2		3	2	E	694 <	1900	29	3.00	85	6	36.01	29.99	65.66	8.81 +	100	100	172.43	260.19
	3		3	2	E	328	1900	29	13.11	40	123	14.90	8.77	23.56	1.59	100	100	0.00	12.31
21	1		4	3	K	706	1900	120	11.51	48	89	10.67	4.99	19.75	6.02	100	100	11.52	27.16
	2		4	3	K	395	1900	120	7.37	26	251	8.74	2.70	15.28	2.35	100	100	0.00	4.96
22	1					1101	Unrestricted	140	19.00	0	Unrestricted	7.28	0.00	0.00	0.00	100	100	0.00	0.00
23	1		3	2	F	177	1900	31	0.21	21	339	20.85	11.99	57.91	1.99	100	100	0.00	9.65
24	1		3	2	G	118	1900	17	0.00	24	273	27.55	21.79	78.81	1.81	100	100	0.00	11.31
25	1		3	2	F	354	1900	31	0.00	41	121	20.66	14.17	64.71	4.47	100	100	0.00	22.65
26	1		3			472	1900	70	0.00	25	262	2.65	0.31	0.00	0.04	100	100	0.00	0.58
27	1		3			649	1900	70	0.00	34	163	5.38	0.49	0.00	0.09	100	100	0.00	1.26
28	1		3	2	I	680	1900	42	13.98	64	40	10.90	6.55	28.34	5.01	100	100	0.00	19.98
	2		3	2	I	100	1900	42	19.11	9	899	9.23	4.54	54.69	1.45	100	100	0.00	2.48
29	1					780	Unrestricted	70	31.00	0	Unrestricted	10.40	0.00	0.00	0.00	100	100	0.00	0.00
30	1		5	4	A	365	1900	41	8.11	32	181	17.89	5.02	22.05	1.57	100	100	0.00	8.22
	2		5	4	A	642	1900	41	8.53	57	58	20.98	8.21	31.87	4.80	100	100	0.00	23.35
	3		5	4	A	505	1900	41	18.11	44	103	16.32	3.62	16.48	1.65	100	100	0.00	8.26
31	1		5	4	B	418	1900	19	0.79	80	12	50.35	36.61	102.05	8.37	100	100	0.00	65.70
32	1		5	4	B	322 <	1900	19	0.37	60	49	25.00	22.50	57.27	3.46 +	100	100	0.00	30.89
33	1		5			454	1900	70	25.00	35	154	16.46	5.40	38.26	3.40	100	100	0.00	11.85
34	1		5	4	B	132	1900	19	2.11	24	268	19.99	17.60	49.40	1.27	100	100	0.00	9.98
35	1		6			497	1900	70	18.00	26	244	20.89	0.34	0.00	0.05	100	100	0.00	0.66
36	1		6	5	C	642	1900	42	17.05	56	60	22.12	8.58	64.15	9.12	100	100	0.00	26.90
	2		6	5	C	827	1900	42	9.00	73	24	23.42	10.48	45.30	11.16	100	100	0.00	38.88
	3		6	5	C	418	1900	42	26.37	36	149	25.23	12.80	46.05	3.74	100	100	0.00	23.52
37	1		6	5	D	368	1900	18	0.68	74	22	43.65	33.40	98.53	7.13	100	100	0.00	53.03
38	1		6	5	D	434 <	1900	18	0.79	88	3	55.06	47.82	120.73	10.41 +	100	100	0.00	88.43
39	1		6	5	D	178	1900	18	1.26	35	157	29.71	22.53	81.27	2.81	100	100	0.00	17.64
40	1		6			612	1900	70	2.27	33	170	3.37	0.51	1.93	1.53	100	100	0.00	1.38
41	1					820	Unrestricted	70	25.00	0	Unrestricted	18.23	0.00	0.00	0.00	100	100	0.00	0.00
	2		7			1261	1900	70	16.09	66	35	9.87	1.87	2.74	2.10	100	100	0.00	9.75
43	1					266	Unrestricted	70	54.00	0	Unrestricted	10.74	0.00	0.00	0.00	100	100	0.00	0.00
44	1		7	6	A	995 <	1900	39	1.00	92	-2	35.08	25.20	73.51	16.54 +	100	100	22.59	130.68
45	2		7	6	A	786	1900	39	9.42	73	23	28.28	10.77	36.60	6.79	100	100	0.00	36.99
46	1		7			314 <	1900	70	58.43	372	-76	4931.74	4923.91	820.25	431.94 +	100	100	0.00	6133.81
47	1		7			568	1900	70	0.00	30	201	4.34	0.40	0.00	0.06	100	100	0.00	0.90

48	1		7	6	B	148	1900	20	0.21	26	243	43.06	19.84	74.47	2.14	100	100	0.00	12.96
49	1		7	6	B	272	1900	20	0.42	49	85	30.40	23.25	80.02	4.23	100	100	0.00	27.68
	2		7	6	B	148	1900	20	0.21	26	243	27.07	19.84	74.47	2.14	100	100	0.00	12.96
50	1		7			420	1900	70	0.00	22	307	16.16	0.27	0.00	0.03	100	100	0.00	0.45
51	1		7	6	B	278 <	1900	20	10.77	100	-10	423.28	403.94	501.66	35.40 +	100	100	0.00	459.77
	2		7	6	B	37	1900	20	15.05	6	1300	27.59	8.10	71.43	1.45	100	100	0.00	1.50
52	1					904	Unrestricted	70	10.00	0	Unrestricted	19.45	0.00	0.00	0.00	100	100	0.00	0.00
53	1		1			595	1900	70	21.00	31	187	1.43	0.43	0.00	0.07	100	100	0.00	1.01
	2		1			537	1900	70	21.00	28	218	1.37	0.37	0.00	0.06	100	100	0.00	0.79
	3		1			506	1900	70	21.00	27	238	1.34	0.34	0.00	0.05	100	100	0.00	0.69
54	1		1	1	A	328 <	1980	45	8.18	25	255	3.43	2.43	16.82	1.25 +	100	100	0.00	3.64
	2		1	1	A	328 <	1980	45	8.18	25	255	3.43	2.43	16.82	1.25 +	100	100	0.00	3.64

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	2775.03	639.55	4.34	546.94	7766.61	178.39	458.29	8403.30
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	2775.03	639.55	4.34	546.94	7766.61	178.39	458.29	8403.30

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

A4 - 2021 PM Scenario 2 D4 - 2021 PM Scenario 2*

Signal Timings

Network Default: 70s cycle time; 70 steps

Intergreen Matrix for Controller Stream 1

	To					
	A	B	C	D	E	F
From		6		0		
A						
B			5	5		
C	6	6				6
D		11				
E	8					
F		5				

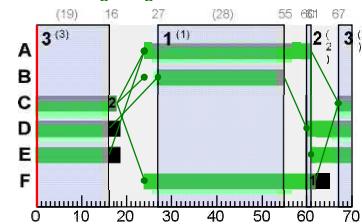
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1		1	B,F,A	27	55	28	1	7
	2		2	A,D,F	60	61	1	1	1
	3		3	C,D,E	67	16	19	1	5

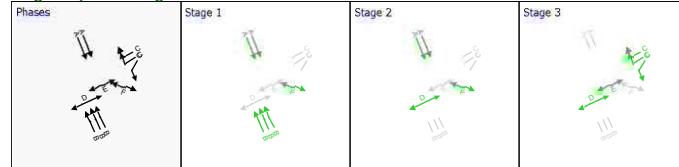
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1	1	1	B	27	55	28
3	2	1	1	B	27	55	28
4	1	1	1	B	27	55	28
5	1	1	1	C	67	18	21
6	1	1	1	C	67	18	21
7	1	1	1	C	67	18	21
54	1	1	1	A	24	61	37
54	2	1	1	A	24	61	37

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Intergreen Matrix for Controller Stream 2

From	To							
	C	D	E	F	G	H	I	J
C	5							
D	5							
E			5	5				
F		5			5			
G			5		5			
H				13	13			
I						6		
J							9	

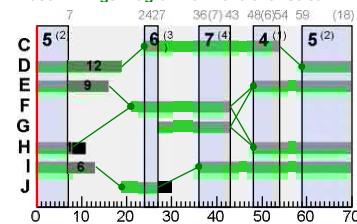
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
2	1			C,E,H,I	48	54	6	1	1
	2			D,E,H,I	59	7	18	1	1
	3			C,F,J	24	27	3	1	1
	4			C,F,G,I	36	43	7	1	1

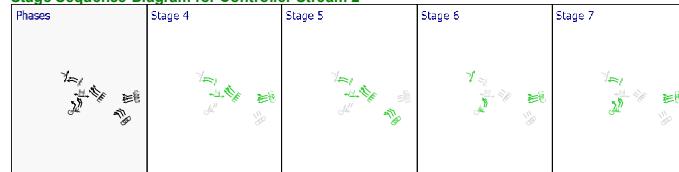
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
16	1	2	2	D	59	19	30
16	2	2	2	D	59	19	30
16	3	2	2	D	59	19	30
17	1	2	2	C	24	54	30
19	1	2	2	C	24	54	30
19	2	2	2	C	24	54	30
20	1	3	2	E	48	16	38
20	2	3	2	E	48	16	38
20	3	3	2	E	48	16	38
23	1	3	2	F	21	43	22
24	1	3	2	G	27	43	16
25	1	3	2	F	21	43	22
28	1	3	2	I	36	13	47
28	2	3	2	I	36	13	47

Phase Timings Diagram for Controller Stream 2



Stage Sequence Diagram for Controller Stream 2



Intergreen Matrix for Controller Stream 3

From	To	K		L	
		K	L	K	L
	K	6			
	L		8		

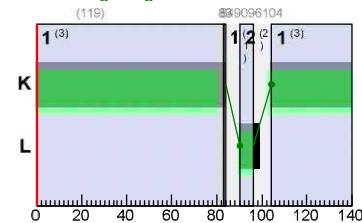
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1			K	83	84	1	1	1
	2			L	90	96	6	1	6
	3			K	104	83	119	1	1

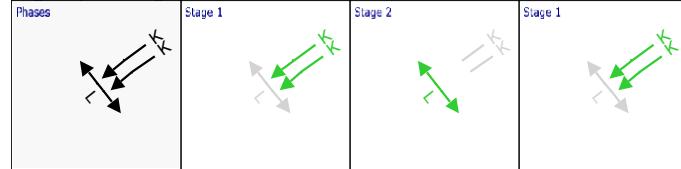
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
21	1	4		K	104	84	120
21	2	4		K	104	84	120

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Intergreen Matrix for Controller Stream 4

		To			
		A	B	E	
From	A	5			
	B	5	5		
	E		12		

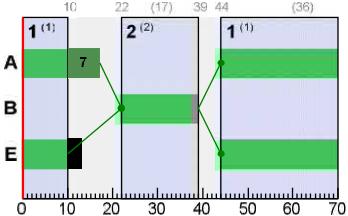
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1		1	A,E	44	10	36	1	7
	2		2	B	22	39	17	1	7

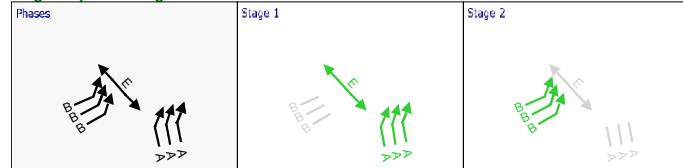
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
30	1	5	4	A	44	17	43
30	2	5	4	A	44	17	43
30	3	5	4	A	44	17	43
31	1	5	4	B	22	39	17
32	1	5	4	B	22	39	17
34	1	5	4	B	22	39	17

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Intergreen Matrix for Controller Stream 5

From	To	
	C	D
C	5	
D	5	

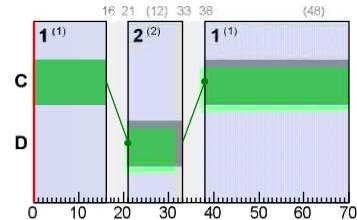
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
5	1		1	C	38	16	48	1	7
	2		2	D	21	33	12	1	7

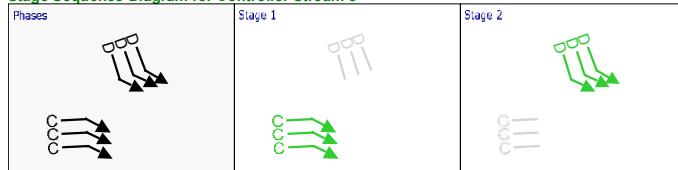
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
36	1	6	5	C	38	16	48
36	2	6	5	C	38	16	48
36	3	6	5	C	38	16	48
37	1	6	5	D	21	33	12
38	1	6	5	D	21	33	12
39	1	6	5	D	21	33	12

Phase Timings Diagram for Controller Stream 5



Stage Sequence Diagram for Controller Stream 5



Intergreen Matrix for Controller Stream 6

From	To	
	A	B
A	6	
B	5	

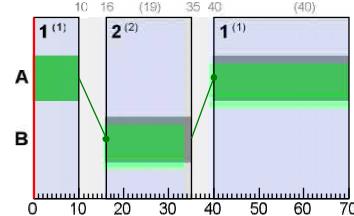
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
6	1		1	A	40	10	40	1	7
	2		2	B	16	35	19	1	7

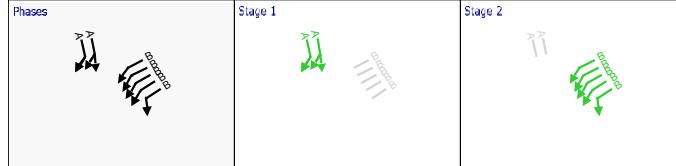
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
44	1	7	6	A	40	10	40
45	2	7	6	A	40	10	40
48	1	7	6	B	16	35	19
49	1	7	6	B	16	35	19
49	2	7	6	B	16	35	19
51	1	7	6	B	16	35	19
51	2	7	6	B	16	35	19

Phase Timings Diagram for Controller Stream 6



Stage Sequence Diagram for Controller Stream 6



Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE					PER PCU			QUEUES		WEIGHTS		Penalties (£ per hr)	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)				
RA	1		R3			944	2312	70	14.00	41	120	12.54	0.54	0.00	0.14	100	100	0.00	2.00		
RAc	1		R3			17	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RAx	1					682	1800	70	0.00	38	138	12.61	0.61	0.00	0.12	100	100	0.00	1.64		
RB	1		R4			179	1140	70	0.00	16	473	12.29	0.29	0.00	0.01	100	100	0.00	0.21		
RBC	1		R4			840	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RBx	1					121	Unrestricted	70	17.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RC	1		R1			475	1623	70	0.00	29	207	12.46	0.46	0.00	0.06	100	100	0.00	0.86		
RCc	1		R1			158	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RCx	1					861	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RD	1		R2			67	878	70	0.00	8	1080	12.17	0.17	0.00	0.00	100	100	0.00	0.04		
RDc	1		R2			632	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RDx	1					1	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
1	1	Burtonwood Road South	1	1	B	208	1980	28	0.45	26	249	22.81	14.36	62.53	2.53	100	100	0.00	13.41		
2	1	Burtonwood Road South	1			639	1980	70	0.00	32	179	4.48	0.43	0.00	0.08	100	100	0.00	1.09		
3	2	Burtonwood Road South	1	1	B	223	2120	28	0.75	26	245	20.44	14.45	65.32	2.83	100	100	0.00	14.54		
4	1	Burtonwood Road South	1	1	B	208	1975	28	0.44	26	249	20.52	14.37	65.27	2.65	100	100	0.00	13.49		
5	1	Charon Way Left	1	1	C	65	1995	21	4.00	10	768	15.14	13.12	35.97	0.45	100	100	0.00	3.66		
6	1	Charon Way Right	1	1	C	430 <	1842	21	0.18	75	20	24.69	22.63	47.28	3.99 +	100	100	0.00	40.94		

7	1	Charon Way Right	1	1	C	424	1819	21	0.00	74	21	43.33	30.31	93.22	7.72	100	100	0.00	55.65
8	1	Charon Way	1			495	1653	70	29.69	52	73	21.67	10.49	52.31	5.09	100	100	0.00	23.73
10	1	Charon Way	1			919	1962	70	0.00	47	92	5.89	0.81	0.00	0.21	100	100	0.00	2.93
11	1	Burtonwood Road South	1			431	2120	70	0.00	20	343	2.79	0.22	0.00	0.03	100	100	0.00	0.37
12	1	Burtonwood Road South	1			733	1980	70	36.00	37	143	5.26	0.53	0.00	0.11	100	100	0.00	1.54
13	1		1			733	Unrestricted	70	36.00	0	Unrestricted	10.75	0.00	0.00	0.00	100	100	0.00	0.00
14	1					798	Unrestricted	70	18.00	0	Unrestricted	7.24	0.00	0.00	0.00	100	100	0.00	0.00
15	1	Omega Road North	1			735	1934	70	27.69	57	57	20.87	5.54	33.45	13.43	100	100	0.00	19.15
	2	Burtonwood Road North	1			735	1937	70	27.70	57	57	21.23	5.53	33.44	13.43	100	100	0.00	19.13
16	1		2	2	D	570	1900	30	0.00	68	33	26.81	20.19	78.13	8.70	100	100	0.00	50.98
	2		2	2	D	692 <	1900	30	1.26	86	5	37.00	30.33	81.90	11.13 +	100	100	0.00	89.89
	3		2	2	D	237	1900	30	0.26	28	217	20.10	13.37	59.79	2.76	100	100	0.00	14.28
17	1		2	2	C	270	1900	30	16.09	32	179	12.26	1.02	1.84	1.53	100	100	0.00	1.15
18	1		2			838	1900	70	24.28	44	103	8.99	0.83	3.14	10.33	100	100	20.45	23.52
19	1		2	2	C	337	1900	30	3.00	40	125	11.12	7.27	23.27	1.53	100	100	0.00	10.65
	2		2	2	C	501	1900	30	3.00	60	51	17.24	13.63	36.98	3.61	100	100	0.00	29.26
20	1		3	2	E	672	1900	38	7.26	64	41	14.14	8.09	26.94	3.64	100	100	0.00	23.71
	2		3	2	E	962 <	1900	38	1.00	91	-1	30.84	24.82	62.37	11.88 +	100	100	213.42	315.17
	3		3	2	E	237	1900	38	15.05	22	301	10.12	3.98	13.56	1.48	100	100	0.00	4.13
21	1		4	3	K	368	1900	120	6.84	24	279	8.23	2.54	15.25	2.18	100	100	0.00	4.40
	2		4	3	K	368	1900	120	6.84	24	279	8.58	2.54	15.25	2.18	100	100	0.00	4.40
22	1					736	Unrestricted	140	19.00	0	Unrestricted	7.28	0.00	0.00	0.00	100	100	0.00	0.00
23	1		3	2	F	531	1900	22	1.00	89	1	59.87	51.01	120.44	12.66	100	100	0.00	114.77
24	1		3	2	G	273	1900	16	0.00	59	52	38.49	32.73	80.00	4.26	100	100	0.00	38.02
25	1		3	2	F	558 <	1900	22	0.00	89	1	54.25	47.76	102.60	11.37 +	100	100	0.00	112.28
26	1		3			831 <	1900	70	22.93	65	38	8.62	6.28	21.62	3.50 +	100	100	0.00	22.86
27	1		3			1362 <	1900	70	17.37	101	-11	226.26	221.38	93.36	89.94 +	100	100	0.00	1205.10
28	1		3	2	I	809	1900	47	13.77	71	28	12.51	8.16	29.93	4.72	100	100	0.00	29.07
	2		3	2	I	137	1900	47	41.26	12	664	9.24	4.55	63.45	1.88	100	100	0.00	3.54
29	1					945	Unrestricted	70	30.00	0	Unrestricted	10.40	0.00	0.00	0.00	100	100	0.00	0.00
30	1		5	4	A	770	1900	43	4.63	65	38	21.68	8.81	42.77	6.62	100	100	0.00	30.89
	2		5	4	A	751	1900	43	11.16	65	39	27.30	14.53	76.14	11.21	100	100	0.00	50.17
	3		5	4	A	768	1900	43	10.57	70	29	26.88	14.18	91.71	15.30	100	100	1.65	53.42
31	1		5	4	B	128	1900	17	0.16	26	241	35.87	22.13	79.04	1.97	100	100	0.00	12.44
32	1		5	4	B	358 <	1900	17	0.32	75	21	30.63	28.13	59.42	4.06 +	100	100	0.00	42.39
33	1		5			537	1900	70	37.00	48	88	20.46	9.39	51.38	5.37	100	100	0.00	23.36
34	1		5	4	B	179	1900	17	2.11	37	144	21.28	18.88	46.06	1.60	100	100	0.00	14.36
35	1		6			949	1900	70	14.00	50	80	21.50	0.94	0.00	0.25	100	100	0.00	3.53
36	1		6	5	C	751	1900	48	19.32	57	58	18.74	5.20	24.82	3.63	100	100	0.00	17.75
	2		6	5	C	1126 <	1900	48	7.44	89	1	30.74	17.80	72.73	19.75 +	100	100	105.18	194.48
	3		6	5	C	128	1900	48	35.21	10	831	15.91	3.48	80.63	2.10	100	100	0.00	3.05
37	1		6	5	D	196	1900	12	0.32	57	58	43.12	32.87	96.65	3.69	100	100	0.00	27.79
38	1		6	5	D	297 <	1900	12	0.58	88	2	68.49	61.25	135.63	8.30 +	100	100	0.00	76.80
39	1		6	5	D	193	1900	12	0.32	56	61	39.76	32.59	97.28	3.74	100	100	0.00	27.17
40	1		6			490	1900	70	0.00	26	249	3.19	0.33	0.00	0.04	100	100	0.00	0.64
41	1					944	Unrestricted	70	27.00	0	Unrestricted	18.23	0.00	0.00	0.00	100	100	0.00	0.00
42	1		7			1423	1900	70	13.63	76	19	11.00	3.00	5.17	9.89	100	100	19.02	36.79
43	1					450	Unrestricted	70	39.00	0	Unrestricted	10.74	0.00	0.00	0.00	100	100	0.00	0.00
44	1		7	6	A	973 <	1900	40	0.00	87	3	30.22	20.34	71.49	14.53 +	100	100	17.93	104.70
45	2		7	6	A	324	1900	40	16.37	29	206	19.32	1.81	37.70	4.47	100	100	0.00	3.84
46	1		7			785 <	1900	70	39.96	101	-11	105.99	98.16	146.35	26.90 +	100	100	0.00	318.21
47	1		7			1015	1900	70	0.00	53	68	5.02	1.08	0.00	0.31	100	100	0.00	4.34

48	1		7	6	B	426	1900	19	0.79	82	10	61.25	38.03	104.16	9.01	100	100	0.00	69.47
49	1		7	6	B	163	1900	19	0.21	30	197	28.24	21.09	76.36	2.42	100	100	0.00	15.12
	2		7	6	B	426	1900	19	0.79	82	10	45.26	38.03	104.16	9.01	100	100	0.00	69.47
50	1		7			589	1900	70	0.00	31	190	16.31	0.43	0.00	0.07	100	100	0.00	0.99
51	1		7	6	B	514 <	1900	19	1.06	100	-10	231.26	211.91	355.69	38.40 +	100	100	0.00	452.73
	2		7	6	B	270	1900	19	5.47	51	76	31.63	12.14	79.05	4.63	100	100	0.00	15.63
52	1					518	Unrestricted	70	9.00	0	Unrestricted	19.45	0.00	0.00	0.00	100	100	0.00	0.00
53	1		1			638	1900	70	19.00	34	168	1.48	0.48	0.00	0.08	100	100	0.00	1.20
	2		1			435	1900	70	19.00	23	293	1.28	0.28	0.00	0.03	100	100	0.00	0.48
	3		1			420	1900	70	19.00	22	307	1.27	0.27	0.00	0.03	100	100	0.00	0.45
54	1		1	1	A	733 <	1980	37	5.09	70	28	7.54	6.54	14.13	2.02 +	100	100	0.00	19.81
	2		1	1	A	733 <	1980	37	5.09	70	28	7.54	6.54	14.13	2.02 +	100	100	0.00	19.81

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	3350.03	353.69	9.47	241.89	3434.86	210.32	377.66	4022.84
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	3350.03	353.69	9.47	241.89	3434.86	210.32	377.66	4022.84

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

A7 - 2021 AM Scenario 5 D7 - 2021 AM Scenario 5*

Signal Timings

Network Default: 70s cycle time; 70 steps

Intergreen Matrix for Controller Stream 1

	To					
	A	B	C	D	E	F
From	A		6		0	
	B		5	5		
	C	6	6			6
	D		11			
	E	8				
	F		5			

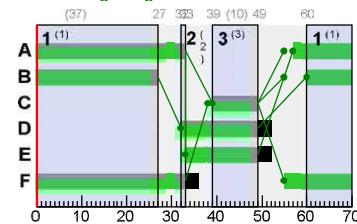
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1		1	B,F,A	60	27	37	1	7
	2		2	A,D,F	32	33	1	1	1
	3		3	C,D,E	39	49	10	1	7

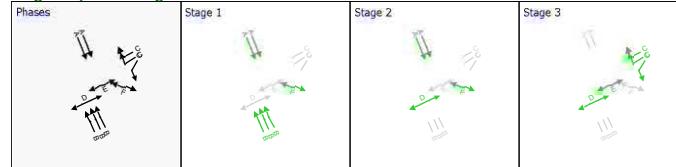
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1	1	1	B	60	27	37
3	2	1	1	B	60	27	37
4	1	1	1	B	60	27	37
5	1	1	1	C	39	49	10
6	1	1	1	C	39	49	10
7	1	1	1	C	39	49	10
54	1	1	1	A	57	33	46
54	2	1	1	A	57	33	46

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Intergreen Matrix for Controller Stream 2

From	To									
	C	D	E	F	G	H	I	J		
C		5								
D	5									
E			5	5						
F		5			5					
G			5		5					
H				13	13					
I							6			
J								9		

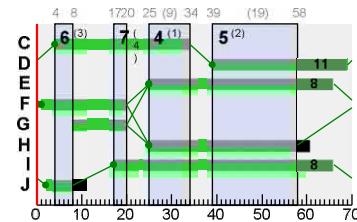
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
2	1			C,E,H,I	25	34	9	1	1
	2			D,E,H,I	39	58	19	1	1
	3			C,F,J	4	8	4	1	4
	4			C,F,G,I	17	20	3	1	1

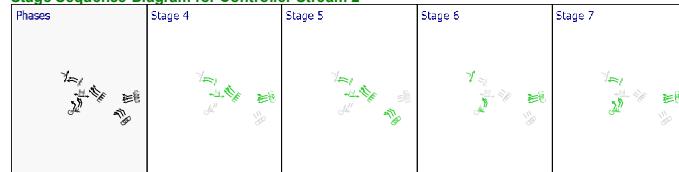
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
16	1	2	2	D	39	69	30
16	2	2	2	D	39	69	30
16	3	2	2	D	39	69	30
17	1	2	2	C	4	34	30
19	1	2	2	C	4	34	30
19	2	2	2	C	4	34	30
20	1	3	2	E	25	66	41
20	2	3	2	E	25	66	41
20	3	3	2	E	25	66	41
23	1	3	2	F	1	20	19
24	1	3	2	G	8	20	12
25	1	3	2	F	1	20	19
28	1	3	2	I	17	66	49
28	2	3	2	I	17	66	49

Phase Timings Diagram for Controller Stream 2



Stage Sequence Diagram for Controller Stream 2



Intergreen Matrix for Controller Stream 3

From	To		
	K	L	
K	6		
L	8		

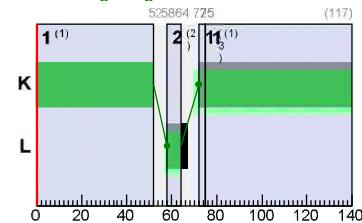
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1			K	75	52	117	1	1
	2			L	58	64	6	1	6
	3			K	72	75	3	1	1

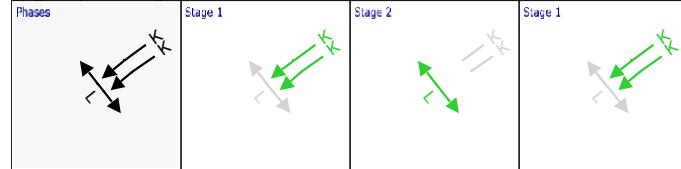
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
21	1	4	3	K	72	52	120
21	2	4	3	K	72	52	120

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Intergreen Matrix for Controller Stream 4

		To			
		A	B	E	
From	A	5			
	B	5	5		
E		12			

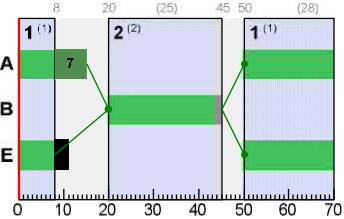
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1		1	A,E	50	8	28	1	7
	2		2	B	20	45	25	1	7

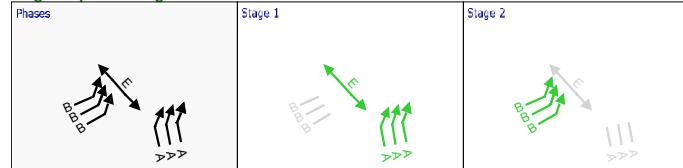
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
30	1	5	4	A	50	15	35
30	2	5	4	A	50	15	35
30	3	5	4	A	50	15	35
31	1	5	4	B	20	45	25
32	1	5	4	B	20	45	25
34	1	5	4	B	20	45	25

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Intergreen Matrix for Controller Stream 5

From	To	
	C	D
C	5	
D	5	

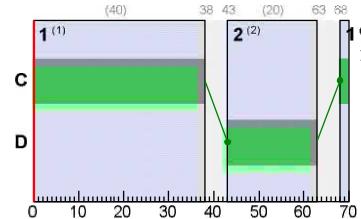
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
5	1		1	C	68	38	40	1	7
	2		2	D	43	63	20	1	7

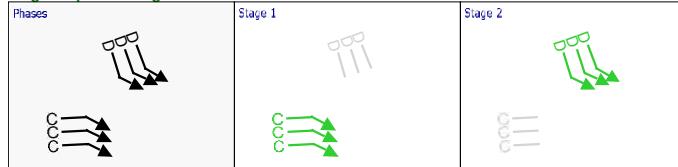
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
36	1	6	5	C	68	38	40
36	2	6	5	C	68	38	40
36	3	6	5	C	68	38	40
37	1	6	5	D	43	63	20
38	1	6	5	D	43	63	20
39	1	6	5	D	43	63	20

Phase Timings Diagram for Controller Stream 5



Stage Sequence Diagram for Controller Stream 5



Intergreen Matrix for Controller Stream 6

From	To	
	A	B
A	6	
B	5	

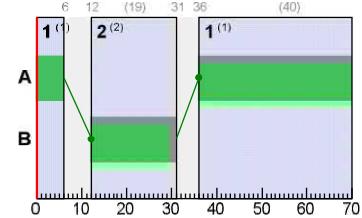
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
6	1		1	A	36	6	40	1	7
	2		2	B	12	31	19	1	7

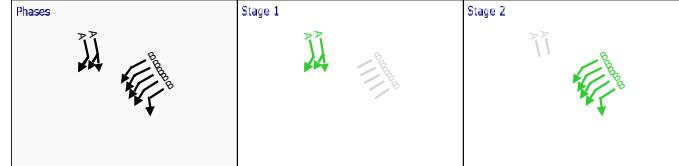
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
44	1	7	6	A	36	6	40
45	2	7	6	A	36	6	40
48	1	7	6	B	12	31	19
49	1	7	6	B	12	31	19
49	2	7	6	B	12	31	19
51	1	7	6	B	12	31	19
51	2	7	6	B	12	31	19

Phase Timings Diagram for Controller Stream 6



Stage Sequence Diagram for Controller Stream 6



Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE					PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)			
RA	1		R3			521	2299	70	14.00	23	297	12.23	0.23	0.00	0.03	100	100	0.00	0.47		
RAc	1		R3			34	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RAx	1					928	1800	70	0.00	52	75	13.06	1.06	0.00	0.27	100	100	0.00	3.89		
RB	1		R4			78	1425	70	0.00	5	1545	12.07	0.07	0.00	0.00	100	100	0.00	0.02		
RBC	1		R4			385	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RBx	1					170	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RC	1		R1			798	1677	70	0.00	48	89	12.97	0.97	0.00	0.22	100	100	0.00	3.06		
RCc	1		R1			74	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RCx	1					389	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RD	1		R2			90	749	70	0.00	12	649	12.33	0.33	0.00	0.01	100	100	0.00	0.12		
RDc	1		R2			872	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RDx	1					0	Unrestricted	70	70.00	0	Unrestricted	0.00	0.00	0.00	0.00	100	100	0.00	0.00		
1	1	Burtonwood Road South	1	1	B	393	1980	37	0.73	37	141	18.82	10.37	52.87	4.04	100	100	0.00	18.68		
2	1	Burtonwood Road South	1			1206	1980	70	0.00	61	48	5.46	1.41	0.00	0.47	100	100	0.00	6.72		
3	2	Burtonwood Road South	1	1	B	421	2120	37	1.36	38	137	16.52	10.54	55.69	4.56	100	100	0.00	20.45		
4	1	Burtonwood Road South	1	1	B	392	1975	37	0.71	37	142	16.52	10.37	55.71	4.25	100	100	0.00	18.77		
5	1	Charon Way Left	1	1	C	17	1995	10	10.00	5	1560	27.63	25.61	83.07	0.28	100	100	0.00	1.89		
6	1	Charon Way Right	1	1	C	164 <	1842	10	0.11	57	57	37.71	35.65	98.64	3.16 +	100	100	0.00	25.09		

7	1	Charon Way Right	1	1	C	162	1819	10	0.00	57	59	48.44	35.42	98.41	3.11	100	100	0.00	24.63
8	1	Charon Way	1			181	1653	70	0.91	11	711	11.32	0.14	0.40	1.46	100	100	0.00	0.11
10	1	Charon Way	1			343	1962	70	0.00	17	415	5.28	0.19	0.00	0.02	100	100	0.00	0.26
11	1	Burtonwood Road South	1			813	2120	70	0.00	38	135	3.10	0.53	0.00	0.12	100	100	0.00	1.69
12	1	Burtonwood Road South	1			331	1980	70	31.00	17	438	4.91	0.18	0.00	0.02	100	100	0.00	0.24
13	1		1			331	Unrestricted	70	31.00	0	Unrestricted	10.75	0.00	0.00	0.00	100	100	0.00	0.00
14	1					348	Unrestricted	70	30.00	0	Unrestricted	7.24	0.00	0.00	0.00	100	100	0.00	0.00
15	1	Omega Road North	1			332	1934	70	12.00	17	425	15.52	0.19	0.00	0.02	100	100	0.00	0.25
	2	Burtonwood Road North	1			332	1937	70	12.00	17	426	15.88	0.19	0.00	0.02	100	100	0.00	0.25
16	1		2	2	D	543	1900	30	0.00	65	39	25.88	19.27	76.42	8.19	100	100	0.00	46.48
	2		2	2	D	719 <	1900	30	1.32	89	1	41.63	34.96	84.89	12.06 +	100	100	0.00	106.80
	3		2	2	D	274	1900	30	0.37	33	173	20.61	13.88	62.88	3.35	100	100	0.00	17.16
17	1		2	2	C	64	1900	30	21.00	8	1085	12.28	1.04	2.61	0.03	100	100	0.00	0.28
18	1		2			1011 <	1900	70	30.11	75	21	20.79	12.62	67.64	12.23 +	100	100	145.86	204.76
19	1		2	2	C	402	1900	30	0.00	48	88	20.75	16.91	47.65	3.73	100	100	0.00	29.20
	2		2	2	C	609 <	1900	30	0.00	72	24	19.67	16.06	39.31	4.67 +	100	100	3.10	44.67
20	1		3	2	E	680	1900	41	9.53	60	49	11.79	5.73	31.64	5.03	100	100	3.31	21.38
	2		3	2	E	783	1900	41	7.00	69	31	14.96	8.94	28.55	5.10	100	100	1.17	31.60
	3		3	2	E	274	1900	41	18.05	24	274	9.75	3.62	13.57	1.49	100	100	0.00	4.38
21	1		4	3	K	436	1900	120	8.95	29	214	8.66	2.98	15.34	2.60	100	100	0.00	5.96
	2		4	3	K	436	1900	120	8.95	29	214	9.02	2.98	15.34	2.60	100	100	0.00	5.96
22	1					872	Unrestricted	140	19.00	0	Unrestricted	7.28	0.00	0.00	0.00	100	100	0.00	0.00
23	1		3	2	F	272	1900	19	0.42	51	76	33.43	24.57	82.12	4.35	100	100	0.00	29.16
24	1		3	2	G	134	1900	12	0.00	38	137	33.87	28.11	88.68	2.31	100	100	0.00	16.35
25	1		3	2	F	272	1900	19	0.00	50	80	30.73	24.23	84.44	4.48	100	100	0.00	28.88
26	1		3			406	1900	70	0.00	21	321	2.59	0.26	0.00	0.03	100	100	0.00	0.41
27	1		3			678	1900	70	0.00	36	152	5.41	0.53	0.00	0.10	100	100	0.00	1.40
28	1		3	2	I	747	1900	49	15.71	58	55	7.57	3.22	14.38	2.13	100	100	0.00	10.83
	2		3	2	I	67	1900	49	44.11	5	1646	9.43	4.74	88.68	1.45	100	100	0.00	2.00
29	1					814	Unrestricted	70	33.00	0	Unrestricted	10.40	0.00	0.00	0.00	100	100	0.00	0.00
30	1		5	4	A	394	1900	35	4.37	41	121	23.44	10.57	49.09	3.75	100	100	0.00	18.85
	2		5	4	A	661	1900	35	4.63	69	31	25.24	12.46	41.81	5.26	100	100	0.00	35.95
	3		5	4	A	546	1900	35	4.84	57	57	28.96	16.26	61.00	9.14	100	100	0.00	39.18
31	1		5	4	B	318	1900	25	0.47	46	96	32.74	19.00	73.23	4.64	100	100	0.00	26.75
32	1		5	4	B	330 <	1900	25	0.37	47	90	19.18	16.68	52.24	3.21 +	100	100	0.00	23.87
33	1		5			462	1900	70	17.00	32	180	14.38	3.32	27.94	2.51	100	100	0.00	7.67
34	1		5	4	B	132	1900	25	2.11	19	379	16.48	14.08	47.55	1.22	100	100	0.00	8.12
35	1		6			526	1900	70	14.00	28	225	20.92	0.36	0.00	0.05	100	100	0.00	0.75
36	1		6	5	C	661	1900	40	15.21	61	47	19.60	6.07	57.54	9.56	100	100	0.00	20.59
	2		6	5	C	876	1900	40	7.26	81	11	30.34	17.41	78.86	16.21	100	100	4.61	73.41
	3		6	5	C	318	1900	40	28.26	29	213	24.05	11.63	44.71	2.74	100	100	0.00	16.37
37	1		6	5	D	318	1900	20	0.53	57	57	35.39	25.14	84.83	5.25	100	100	0.00	34.91
38	1		6	5	D	436 <	1900	20	0.79	79	13	42.09	34.85	103.85	8.87 +	100	100	0.00	65.62
39	1		6	5	D	178	1900	20	0.26	32	185	27.70	20.52	77.81	2.69	100	100	0.00	16.15
40	1		6			614	1900	70	0.00	32	179	3.31	0.45	0.00	0.08	100	100	0.00	1.09
41	1					839	Unrestricted	70	22.00	0	Unrestricted	18.23	0.00	0.00	0.00	100	100	0.00	0.00
42	1		7			1312	1900	70	14.00	69	30	10.10	2.10	0.00	0.77	100	100	0.00	10.89
43	1					329	Unrestricted	70	47.00	0	Unrestricted	10.74	0.00	0.00	0.00	100	100	0.00	0.00
44	1		7	6	A	983 <	1900	40	1.00	88	2	29.53	19.65	64.25	14.85 +	100	100	4.57	88.69
45	2		7	6	A	636	1900	40	10.32	58	56	25.21	7.69	29.38	3.64	100	100	0.00	21.64
46	1		7			439 <	1900	70	53.84	213	-58	2072.24	2064.41	512.34	254.69 +	100	100	0.00	3600.98
47	1		7			582	1900	70	0.00	31	194	4.35	0.42	0.00	0.07	100	100	0.00	0.96

48	1		7	6	B	155	1900	19	0.21	29	212	44.13	20.91	76.21	2.30	100	100	0.00	14.27
49	1		7	6	B	272	1900	19	0.42	51	76	31.71	24.57	82.12	4.35	100	100	0.00	29.16
	2		7	6	B	155	1900	19	0.21	29	212	28.14	20.91	76.21	2.30	100	100	0.00	14.27
50	1		7			427	1900	70	0.00	22	300	16.16	0.27	0.00	0.03	100	100	0.00	0.46
51	1		7	6	B	375 <	1900	19	6.19	100	-10	317.11	297.77	415.50	36.74 +	100	100	0.00	459.83
	2		7	6	B	64	1900	19	11.05	12	663	26.72	7.23	69.08	1.46	100	100	0.00	2.38
52	1					902	Unrestricted	70	10.00	0	Unrestricted	19.45	0.00	0.00	0.00	100	100	0.00	0.00
53	1		1			557	1900	70	21.00	29	207	1.39	0.39	0.00	0.06	100	100	0.00	0.86
	2		1			502	1900	70	21.00	26	241	1.34	0.34	0.00	0.05	100	100	0.00	0.67
	3		1			473	1900	70	21.00	25	262	1.31	0.31	0.00	0.04	100	100	0.00	0.59
54	1		1	1	A	331 <	1980	46	8.18	25	260	3.37	2.37	18.03	1.25 +	100	100	0.00	3.62
	2		1	1	A	331 <	1980	46	8.18	25	260	3.37	2.37	18.03	1.25 +	100	100	0.00	3.62

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	2753.42	447.26	6.16	355.39	5046.49	167.33	162.61	5376.43
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	2753.42	447.26	6.16	355.39	5046.49	167.33	162.61	5376.43

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

A8 - 2021 PM Scenario 5 D8 - 2021 PM Scenario 5*

Signal Timings

Network Default: 70s cycle time; 70 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A		6		0		
	B			5	5		
	C	6	6				6
	D		11				
	E	8					
	F		5				

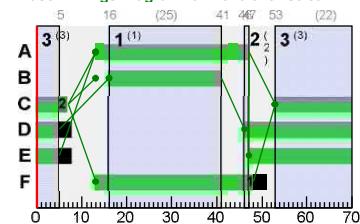
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1		1	B,F,A	16	41	25	1	7
	2		2	A,D,F	46	47	1	1	1
	3		3	C,D,E	53	5	22	1	5

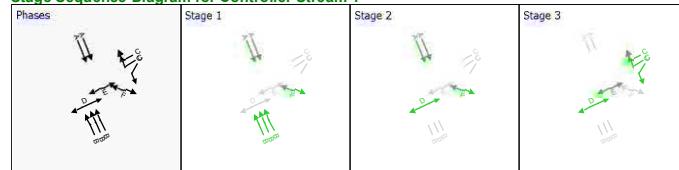
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1	1	1	B	16	41	25
3	2	1	1	B	16	41	25
4	1	1	1	B	16	41	25
5	1	1	1	C	53	7	24
6	1	1	1	C	53	7	24
7	1	1	1	C	53	7	24
54	1	1	1	A	13	47	34
54	2	1	1	A	13	47	34

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Intergreen Matrix for Controller Stream 2

From	To								
	C	D	E	F	G	H	I	J	
C	5								
D	5								
E			5	5					
F		5			5				
G			5		5				
H				13	13				
I							6		
J								9	

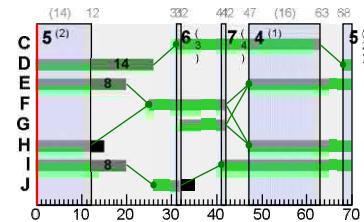
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
2	1			C,E,H,I	47	63	16	1	1
	2			D,E,H,I	68	12	14	1	1
	3			C,F,J	31	32	1	1	1
	4			C,F,G,I	41	42	1	1	1

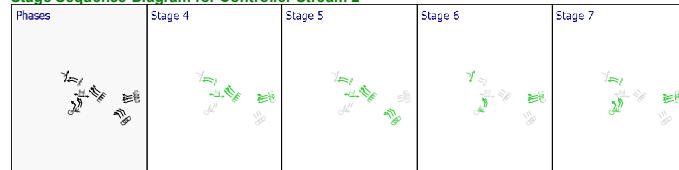
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
16	1	2	2	D	68	26	28
16	2	2	2	D	68	26	28
16	3	2	2	D	68	26	28
17	1	2	2	C	31	63	32
19	1	2	2	C	31	63	32
19	2	2	2	C	31	63	32
20	1	3	2	E	47	20	43
20	2	3	2	E	47	20	43
20	3	3	2	E	47	20	43
23	1	3	2	F	25	42	17
24	1	3	2	G	32	42	10
25	1	3	2	F	25	42	17
28	1	3	2	I	41	20	49
28	2	3	2	I	41	20	49

Phase Timings Diagram for Controller Stream 2



Stage Sequence Diagram for Controller Stream 2



Intergreen Matrix for Controller Stream 3

From	To	K		L	
	K	L	K	L	
K	6				
L	8				

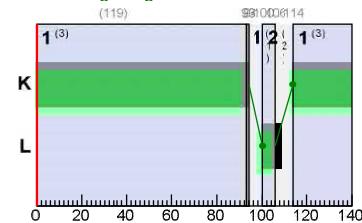
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1			K	93	94	1	1	1
	2			L	100	106	6	1	6
	3			K	114	93	119	1	1

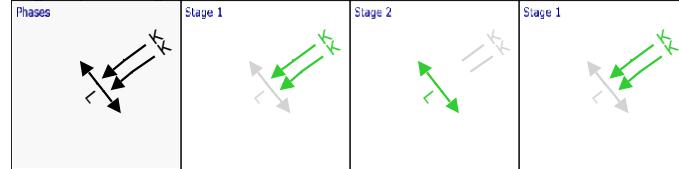
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
21	1	4	3	K	114	94	120
21	2	4	3	K	114	94	120

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Intergreen Matrix for Controller Stream 4

		To			
		A	B	E	
From	A	5			
	B	5	5		
	E		12		

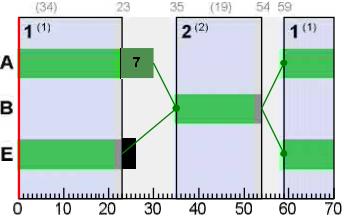
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1		1	A,E	59	23	34	1	7
	2		2	B	35	54	19	1	7

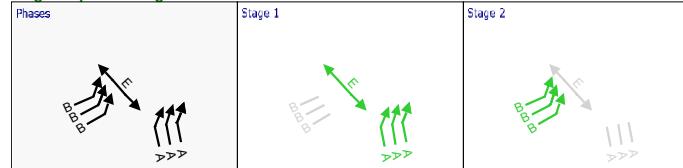
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
30	1	5	4	A	59	30	41
30	2	5	4	A	59	30	41
30	3	5	4	A	59	30	41
31	1	5	4	B	35	54	19
32	1	5	4	B	35	54	19
34	1	5	4	B	35	54	19

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Intergreen Matrix for Controller Stream 5

From	To	
	C	D
C	5	
D	5	

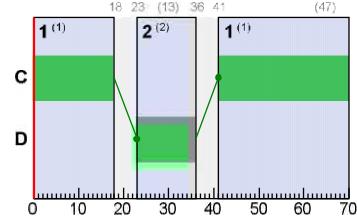
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
5	1		1	C	41	18	47	1	7
	2		2	D	23	36	13	1	7

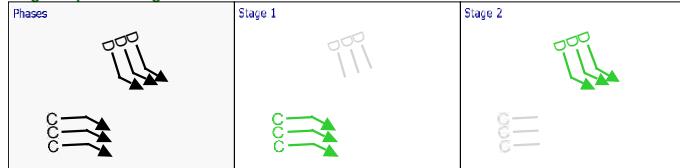
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
36	1	6	5	C	41	18	47
36	2	6	5	C	41	18	47
36	3	6	5	C	41	18	47
37	1	6	5	D	23	36	13
38	1	6	5	D	23	36	13
39	1	6	5	D	23	36	13

Phase Timings Diagram for Controller Stream 5



Stage Sequence Diagram for Controller Stream 5



Intergreen Matrix for Controller Stream 6

	To	
	A	B
From	A	6
	B	5

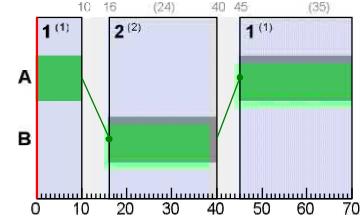
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
6	1		1	A	45	10	35	1	7
	2		2	B	16	40	24	1	7

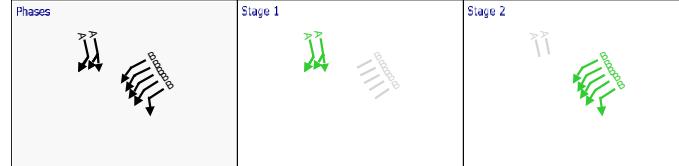
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
44	1	7	6	A	45	10	35
45	2	7	6	A	45	10	35
48	1	7	6	B	16	40	24
49	1	7	6	B	16	40	24
49	2	7	6	B	16	40	24
51	1	7	6	B	16	40	24
51	2	7	6	B	16	40	24

Phase Timings Diagram for Controller Stream 6



Stage Sequence Diagram for Controller Stream 6



Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE					PER PCU			QUEUES		WEIGHTS		P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.	
RA	1	R3				938	2312	70	14.00	41	122	12.53	0.53	0.00	0.14	100	100	0.00	1.96	
RAc	1	R3				17	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RAx	1					692	1800	70	0.00	38	134	12.62	0.62	0.00	0.12	100	100	0.00	1.70	
RB	1	R4				179	1145	70	0.00	16	476	12.29	0.29	0.00	0.01	100	100	0.00	0.21	
RBc	1	R4				831	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RBx	1					124	Unrestricted	70	18.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RC	1	R1				485	1623	70	0.00	30	201	12.47	0.47	0.00	0.06	100	100	0.00	0.90	
RCc	1	R1				158	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RCx	1					852	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RD	1	R2				67	873	70	0.00	8	1072	12.17	0.17	0.00	0.00	100	100	0.00	0.05	
RDc	1	R2				642	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RDx	1					1	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
1	1	Burtonwood Road South	1	1	B	215	1980	25	0.45	30	202	25.21	16.76	67.49	2.97	100	100	0.00	16.03	
2	1	Burtonwood Road South	1			659	1980	70	0.00	33	170	4.50	0.45	0.00	0.08	100	100	0.00	1.18	
3	2	Burtonwood Road South	1	1	B	230	2120	25	0.91	30	197	22.88	16.89	70.03	3.13	100	100	0.00	17.35	
4	1	Burtonwood Road South	1	1	B	214	1975	25	0.44	30	203	22.90	16.75	70.07	2.92	100	100	0.00	16.02	
5	1	Charon Way Left	1	1	C	65	1995	24	4.00	9	887	13.99	11.97	35.84	0.45	100	100	0.00	3.36	
6	1	Charon Way Right	1	1	C	430 <	1842	24	0.18	66	37	19.78	17.72	42.03	3.53 +	100	100	0.00	32.33	

7	1	Charon Way Right	1	1	C	424	1819	24	0.00	65	38	37.05	24.03	83.78	6.93	100	100	0.00	44.65
8	1	Charon Way	1			495	1653	70	26.69	48	86	19.60	8.42	45.25	4.65	100	100	0.00	19.26
10	1	Charon Way	1			919	1962	70	0.00	47	92	5.89	0.81	0.00	0.21	100	100	0.00	2.93
11	1	Burtonwood Road South	1			444	2120	70	0.00	21	330	2.79	0.22	0.00	0.03	100	100	0.00	0.39
12	1	Burtonwood Road South	1			706	1980	70	40.00	36	152	5.23	0.50	0.00	0.10	100	100	0.00	1.40
13	1		1			706	Unrestricted	70	40.00	0	Unrestricted	10.75	0.00	0.00	0.00	100	100	0.00	0.00
14	1					771	Unrestricted	70	19.00	0	Unrestricted	7.24	0.00	0.00	0.00	100	100	0.00	0.00
15	1	Omega Road North	1			709	1934	70	28.69	51	77	19.14	3.81	23.31	3.38	100	100	0.00	12.72
	2	Burtonwood Road North	1			709	1937	70	28.70	51	77	19.50	3.81	23.30	3.38	100	100	0.00	12.71
16	1		2	2	D	564	1900	28	0.00	72	26	29.64	23.02	82.87	9.12	100	100	0.00	57.08
	2		2	2	D	653 <	1900	28	1.21	87	4	39.92	33.24	87.96	11.30 +	100	100	0.00	92.83
	3		2	2	D	302	1900	28	0.42	39	131	22.64	15.91	66.38	3.90	100	100	0.00	21.47
17	1		2	2	C	283	1900	32	21.87	69	31	26.37	15.13	100.21	5.37	100	100	0.00	20.45
18	1		2			1004	1900	70	18.31	55	65	10.26	2.10	22.45	10.58	100	100	24.55	35.68
19	1		2	2	C	420	1900	32	2.00	47	92	11.23	7.38	44.79	3.66	100	100	0.00	14.60
	2		2	2	C	584	1900	32	2.00	65	38	11.56	7.95	36.15	4.10	100	100	0.00	20.96
20	1		3	2	E	682	1900	43	14.27	57	57	11.94	5.89	19.58	2.60	100	100	0.00	17.51
	2		3	2	E	936 <	1900	43	7.00	78	15	21.74	15.73	55.43	10.09 +	100	100	142.39	206.96
	3		3	2	E	302	1900	43	25.11	25	255	10.25	4.11	17.87	1.49	100	100	0.00	5.58
21	1		4	3	K	443	1900	120	9.47	29	207	8.72	3.03	15.51	2.99	100	100	0.00	6.16
	2		4	3	K	443	1900	120	9.47	29	207	9.07	3.03	15.51	2.99	100	100	0.00	6.16
22	1					886	Unrestricted	140	19.00	0	Unrestricted	7.28	0.00	0.00	0.00	100	100	0.00	0.00
23	1		3	2	F	420	1900	17	0.79	90	0	63.11	54.25	125.93	10.78	100	100	0.00	96.50
24	1		3	2	G	230	1900	10	0.00	77	17	53.26	47.50	118.30	5.37	100	100	0.00	46.51
25	1		3	2	F	419 <	1900	17	0.00	86	5	51.83	45.34	116.47	9.66 +	100	100	0.00	81.05
26	1		3			649	1900	70	0.00	34	163	2.83	0.49	0.00	0.09	100	100	0.00	1.26
27	1		3			1069	1900	70	0.00	56	60	6.10	1.22	0.00	0.36	100	100	0.00	5.13
28	1		3	2	I	797	1900	49	16.13	65	38	11.64	7.30	36.55	5.36	100	100	0.00	26.59
	2		3	2	I	115	1900	49	45.21	9	873	9.93	5.24	77.93	1.94	100	100	0.00	3.50
29	1					912	Unrestricted	70	31.00	0	Unrestricted	10.40	0.00	0.00	0.00	100	100	0.00	0.00
30	1		5	4	A	762	1900	41	5.16	69	31	23.83	10.96	64.74	13.83	100	100	1.39	40.51
	2		5	4	A	593	1900	41	12.74	53	70	25.37	12.59	66.58	7.77	100	100	0.00	34.41
	3		5	4	A	722	1900	41	8.95	65	39	30.15	17.45	73.99	10.75	100	100	0.00	56.41
31	1		5	4	B	164	1900	19	0.26	31	194	34.87	21.13	76.39	2.44	100	100	0.00	15.24
32	1		5	4	B	374 <	1900	19	0.37	70	28	26.27	23.77	53.72	3.81 +	100	100	0.00	37.58
33	1		5			553	1900	70	33.00	47	90	19.82	8.75	49.60	5.35	100	100	0.00	22.53
34	1		5	4	B	179	1900	19	2.11	33	172	19.32	16.93	43.54	1.52	100	100	0.00	12.93
35	1		6			941	1900	70	14.00	50	82	21.48	0.93	0.00	0.24	100	100	0.00	3.45
36	1		6	5	C	593	1900	47	24.42	46	96	17.79	4.26	37.42	4.56	100	100	0.00	12.74
	2		6	5	C	1096	1900	47	5.26	86	4	25.95	13.02	50.04	13.06	100	100	0.00	63.15
	3		6	5	C	164	1900	47	28.00	13	615	12.62	0.20	0.00	0.01	100	100	0.00	0.13
37	1		6	5	D	198	1900	13	0.32	53	69	40.90	30.65	93.38	3.60	100	100	0.00	26.26
38	1		6	5	D	303	1900	13	0.58	83	8	56.62	49.38	121.70	7.45	100	100	0.00	63.64
39	1		6	5	D	193	1900	13	0.32	52	73	37.47	30.30	93.00	3.50	100	100	0.00	25.32
40	1		6			496	1900	70	0.00	26	245	3.19	0.33	0.00	0.05	100	100	0.00	0.65
41	1					786	Unrestricted	70	32.00	0	Unrestricted	18.23	0.00	0.00	0.00	100	100	0.00	0.00
42	1		7			1399	1900	70	12.00	74	22	10.63	2.63	0.00	1.02	100	100	0.00	14.50
43	1					525	Unrestricted	70	41.00	0	Unrestricted	10.74	0.00	0.00	0.00	100	100	0.00	0.00
44	1		7	6	A	874 <	1900	35	0.00	89	1	34.33	24.45	78.01	15.10 +	100	100	5.30	98.14
45	2		7	6	A	362	1900	35	10.37	37	140	21.97	4.46	53.58	4.55	100	100	0.00	8.80
46	1		7			937	1900	70	9.54	57	58	10.16	2.33	12.30	3.30	100	100	0.00	10.05
47	1		7			1053	1900	70	0.00	55	62	5.11	1.18	0.00	0.34	100	100	0.00	4.88

48	1		7	6	B	445	1900	24	0.74	68	33	48.06	24.84	84.68	7.34	100	100	0.00	48.33
49	1		7	6	B	163	1900	24	0.21	24	272	23.92	16.78	68.36	2.17	100	100	0.00	12.18
	2		7	6	B	445	1900	24	0.74	68	33	32.07	24.84	84.68	7.34	100	100	0.00	48.33
50	1		7			608	1900	70	0.00	32	181	16.33	0.45	0.00	0.08	100	100	0.00	1.07
51	1		7	6	B	654 <	1900	24	1.33	102	-12	189.97	170.62	314.18	42.94 +	100	100	0.00	465.46
	2		7	6	B	283	1900	24	0.42	42	112	37.89	18.40	72.81	4.01	100	100	0.00	23.12
52	1					510	Unrestricted	70	9.00	0	Unrestricted	19.45	0.00	0.00	0.00	100	100	0.00	0.00
53	1		1			645	1900	70	19.00	34	165	1.49	0.49	0.00	0.09	100	100	0.00	1.24
	2		1			442	1900	70	19.00	23	287	1.29	0.29	0.00	0.04	100	100	0.00	0.50
	3		1			426	1900	70	19.00	22	301	1.27	0.27	0.00	0.03	100	100	0.00	0.46
54	1		1	1	A	706 <	1980	34	6.00	73	23	8.87	7.87	15.96	2.21 +	100	100	0.00	22.93
	2		1	1	A	706 <	1980	34	6.00	73	23	8.87	7.87	15.96	2.21 +	100	100	0.00	22.93

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	3327.42	237.72	14.00	126.68	1798.82	176.52	173.63	2148.97
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	3327.42	237.72	14.00	126.68	1798.82	176.52	173.63	2148.97

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

Appendix E

M62 J8 PROPOSED LAYOUT TRANSYT MODELLING RESULTS



TRANSYT 15

Version: 15.5.2.7994
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Filename: Junction 8 M62 _ Proposed Mitigation_OWestTA_FOR ISSUE.t15

Path: M:\50400134 - Omega, Warrington\Omegamega, Warrington\ANALYSIS\Zone 8 Directory\TRANSYT

Report generation date: 25/11/2019 15:27:30

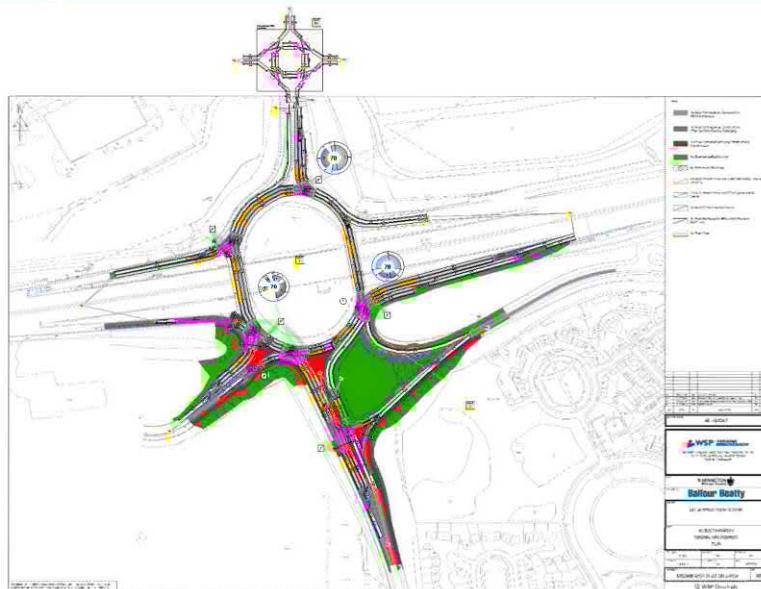
»A3 - 2021 AM Scenario 2 : D3 - 2021 AM Scenario 2* :

»A4 - 2021 PM Scenario 2 : D4 - 2021 PM Scenario 2* :

»A7 - 2021 AM Scenario 5 : D7 - 2021 AM Scenario 5* :

»A8 - 2021 PM Scenario 5 : D8 - 2021 PM Scenario 5* :

Network Diagrams



A3 - 2021 AM Scenario 2

D3 - 2021 AM Scenario 2*

Signal Timings

Network Default: 70s cycle time; 70 steps

Intergreen Matrix for Controller Stream 1

	To					
	A	B	C	D	E	F
A		6		0		
B		5	5			
C	6	6				6
D		11				
E	8					
F		5				

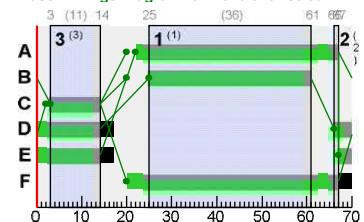
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1		1	B,F,A	25	61	36	1	7
	2		2	A,D,F	66	67	1	1	1
	3		3	C,D,E	3	14	11	1	7

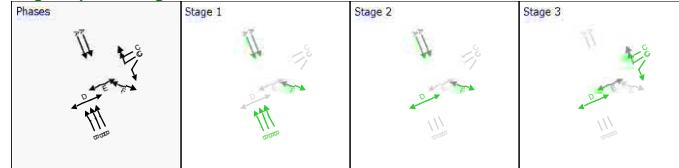
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1	1	1	B	25	61	36
3	2	1	1	B	25	61	36
4	1	1	1	B	25	61	36
5	1	1	1	C	3	14	11
6	1	1	1	C	3	14	11
7	1	1	1	C	3	14	11
54	1	1	1	A	22	67	45
54	2	1	1	A	22	67	45

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Intergreen Matrix for Controller Stream 2

From	To									
	C	D	E	F	G	H	I	J		
C	5									
D	5									
E			5	5						
F		5			5					
G		5			5					
H			13	13						
I								6		
J									9	

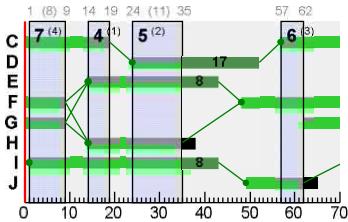
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
2	1		4	C,E,H,I	14	19	5	1	1
	2		5	D,E,H,I	24	35	11	1	1
	3		6	C,F,J	57	62	5	1	1
	4		7	C,F,G,I	1	9	8	1	1

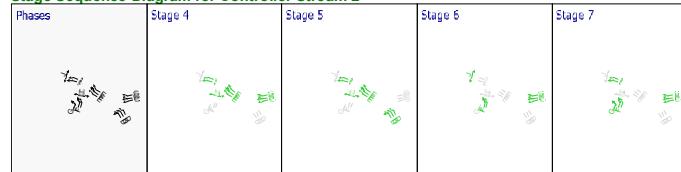
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
16	1	2	2	D	24	52	28
16	2	2	2	D	24	52	28
16	3	2	2	D	24	52	28
17	1	2	2	C	57	19	32
19	1	2	2	C	57	19	32
19	2	2	2	C	57	19	32
20	1	3	2	E	14	43	29
20	2	3	2	E	14	43	29
20	3	3	2	E	14	43	29
23	1	3	2	F	48	9	31
24	1	3	2	G	62	9	17
25	1	3	2	F	48	9	31
28	1	3	2	I	1	43	42
28	2	3	2	I	1	43	42

Phase Timings Diagram for Controller Stream 2



Stage Sequence Diagram for Controller Stream 2



Intergreen Matrix for Controller Stream 3

From	To	
	K	L
K	6	
L	8	

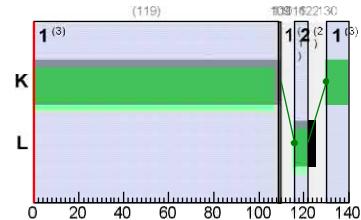
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1		1	K	109	110	1	1	1
	2		2	L	116	122	6	1	6
	3		1	K	130	109	119	1	1

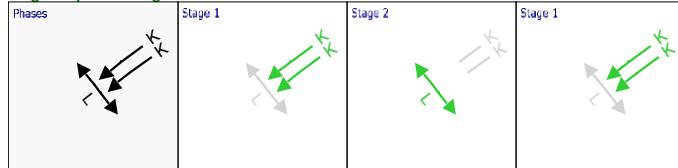
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
21	1	4	3	K	130	110	120
21	2	4	3	K	130	110	120

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Intergreen Matrix for Controller Stream 4

	To	A	B	E
From	A	5		
	B	5	5	
	E		12	

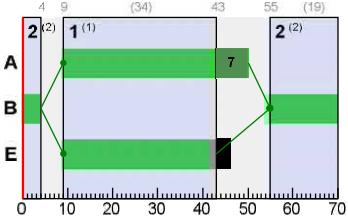
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1		1	A,E	9	43	34	1	7
	2		2	B	55	4	19	1	7

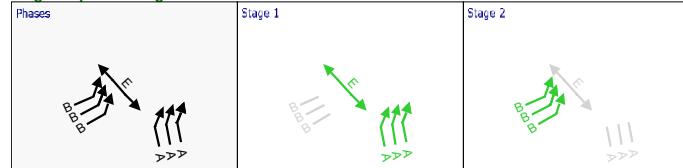
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
30	1	5	4	A	9	50	41
30	2	5	4	A	9	50	41
30	3	5	4	A	9	50	41
31	1	5	4	B	55	4	19
32	1	5	4	B	55	4	19
34	1	5	4	B	55	4	19

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Intergreen Matrix for Controller Stream 5

From	To	
	C	D
C	5	
D	5	

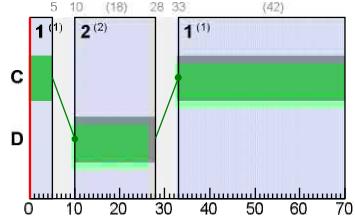
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
5	1		1	C	33	5	42	1	7
	2		2	D	10	28	18	1	7

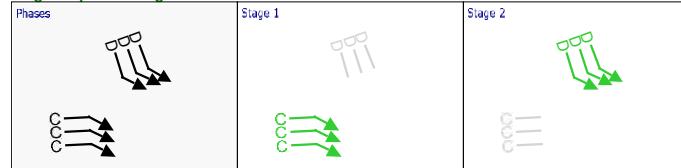
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
36	1	6	5	C	33	5	42
36	2	6	5	C	33	5	42
36	3	6	5	C	33	5	42
37	1	6	5	D	10	28	18
38	1	6	5	D	10	28	18
39	1	6	5	D	10	28	18

Phase Timings Diagram for Controller Stream 5



Stage Sequence Diagram for Controller Stream 5



Intergreen Matrix for Controller Stream 6

From	To	
	A	B
A	6	
B	5	

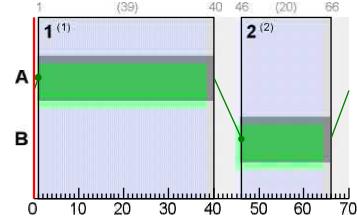
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
6	1		1	A	1	40	39	1	7
	2		2	B	46	66	20	1	7

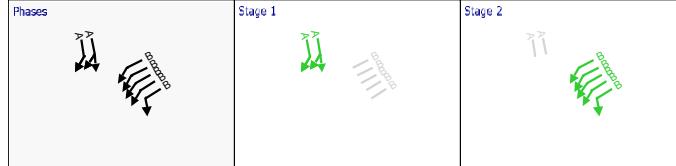
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
44	1	7	6	A	1	40	39
45	2	7	6	A	1	40	39
48	1	7	6	B	46	66	20
49	1	7	6	B	46	66	20
49	2	7	6	B	46	66	20
51	1	7	6	B	46	66	20
51	2	7	6	B	46	66	20

Phase Timings Diagram for Controller Stream 6



Stage Sequence Diagram for Controller Stream 6



Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)		
RA	1	R3				469	2299	70	16.00	20	341	12.20	0.20	0.92	0.03	100	100	0.00	0.42	
RAc	1	R3				34	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RAx	1					974	1800	70	0.00	54	66	13.18	1.18	0.00	0.32	100	100	0.00	4.52	
RB	1	R4				78	1455	70	0.00	5	1579	12.07	0.07	0.00	0.00	100	100	0.00	0.02	
RBc	1	R4				340	Unrestricted	70	16.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RBx	1					155	Unrestricted	70	23.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RC	1	R1				844	1677	70	0.00	50	79	13.09	1.09	0.00	0.25	100	100	0.00	3.61	
RCc	1	R1				74	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RCx	1					344	Unrestricted	70	16.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RD	1	R2				90	724	70	0.00	12	624	12.35	0.35	0.00	0.01	100	100	0.00	0.13	
RDc	1	R2				918	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RDx	1					0	Unrestricted	70	70.00	0	Unrestricted	0.00	0.00	0.00	0.00	100	100	0.00	0.00	
1	1	Burtonwood Road South	1	1	B	422	1980	36	0.91	41	118	19.85	11.40	57.36	4.77	100	100	0.00	22.02	
2	1	Burtonwood Road South	1			1295	1980	70	0.00	65	38	5.76	1.71	0.00	0.62	100	100	0.00	8.75	
3	2	Burtonwood Road South	1	1	B	452	2120	36	1.66	42	113	17.60	11.62	59.35	5.34	100	100	0.00	24.07	
4	1	Burtonwood Road South	1	1	B	421	1975	36	0.89	41	118	17.55	11.40	57.48	4.71	100	100	0.00	21.96	
5	1	Charon Way Left	1	1	C	17	1995	11	11.00	5	1711	26.74	24.72	81.56	0.28	100	100	0.00	1.83	
6	1	Charon Way Right	1	1	C	173 <	1842	11	0.14	55	62	35.68	33.63	95.13	3.21 +	100	100	0.00	25.01	

7	1	Charon Way Right	1	1	C	170	1819	11	0.00	55	65	46.36	33.34	96.57	3.27	100	100	0.00	24.42
8	1	Charon Way	1			190	1653	70	2.86	12	651	11.38	0.20	2.82	1.46	100	100	0.00	0.22
10	1	Charon Way	1			360	1962	70	0.00	18	391	5.29	0.21	0.00	0.02	100	100	0.00	0.29
11	1	Burtonwood Road South	1			873	2120	70	0.00	41	119	3.16	0.59	0.00	0.14	100	100	0.00	2.05
12	1	Burtonwood Road South	1			328	1980	70	31.00	17	442	4.91	0.18	0.00	0.02	100	100	0.00	0.23
13	1		1				Unrestricted	70	31.00	0	Unrestricted	10.75	0.00	0.00	0.00	100	100	0.00	0.00
14	1							70	30.00	0	Unrestricted	7.24	0.00	0.00	0.00	100	100	0.00	0.00
15	1	Omega Road North	1			330	1934	70	11.00	17	428	15.52	0.19	0.00	0.02	100	100	0.00	0.25
	2	Burtonwood Road North	1			330	1937	70	11.00	17	429	15.91	0.19	0.00	0.02	100	100	0.00	0.25
16	1		2	2	D	658 <	1900	28	0.00	84	8	36.51	29.90	83.23	10.73 +	100	100	0.00	84.47
	2		2	2	D	657 <	1900	28	2.43	91	-1	48.69	42.01	97.24	12.73 +	100	100	0.00	116.88
	3		2	2	D	328	1900	28	0.47	42	112	23.12	16.39	66.84	4.51	100	100	0.00	23.95
17	1		2	2	C	190 <	1900	32	28.58	158	-43	752.86	749.06	521.37	39.99 +	100	100	1742.40	2310.12
18	1		2			360	1900	70	36.16	24	279	9.14	1.63	16.04	1.50	100	100	0.00	3.04
	2		2			751	1900	70	36.99	67	33	25.38	17.85	178.38	10.83	100	100	90.11	150.39
19	1		2	2	C	360	1900	32	13.00	40	124	20.49	16.07	60.00	4.20	100	100	0.00	25.62
	2		2	2	C	546	1900	32	1.00	61	48	14.80	10.67	33.04	3.05	100	100	0.00	25.17
20	1		3	2	E	551	1900	29	4.62	69	30	25.50	19.44	65.96	6.29	100	100	29.51	76.05
	2		3	2	E	777 <	1900	29	0.00	95	-6	60.28	54.26	99.92	15.67 +	100	100	641.18	817.19
	3		3	2	E	328	1900	29	13.11	40	123	14.90	8.77	23.56	1.59	100	100	0.00	12.31
21	1		4	3	K	613	1900	120	12.98	42	115	10.20	4.51	18.19	4.67	100	100	2.08	14.39
	2		4	3	K	465	1900	120	10.53	31	190	9.25	3.21	16.22	3.12	100	100	0.00	6.83
22	1					1078	Unrestricted	140	19.00	0	Unrestricted	7.28	0.00	0.00	0.00	100	100	0.00	0.00
23	1		3	2	F	177	1900	31	0.21	21	339	20.85	11.99	57.91	1.99	100	100	0.00	9.65
24	1		3	2	G	118	1900	17	0.00	24	273	27.55	21.79	78.81	1.81	100	100	0.00	11.31
25	1		3	2	F	354	1900	31	0.00	41	121	20.66	14.17	64.71	4.47	100	100	0.00	22.65
26	1		3			472	1900	70	0.00	25	262	2.65	0.31	0.00	0.04	100	100	0.00	0.58
27	1		3			649	1900	70	0.00	34	163	5.38	0.49	0.00	0.09	100	100	0.00	1.26
28	1		3	2	I	580	1900	42	17.99	56	60	10.63	6.28	33.65	4.77	100	100	0.00	16.81
	2		3	2	I	206	1900	42	14.63	19	378	7.22	2.53	29.89	1.47	100	100	0.00	2.83
29	1					786	Unrestricted	70	31.00	0	Unrestricted	10.40	0.00	0.00	0.00	100	100	0.00	0.00
30	1		5	4	A	342	1900	41	5.26	30	198	21.18	8.30	40.59	2.70	100	100	0.00	12.94
	2		5	4	A	642	1900	41	7.63	57	57	24.66	11.89	51.33	6.33	100	100	0.00	34.23
	3		5	4	A	505	1900	41	17.37	45	101	20.69	7.99	39.05	3.69	100	100	0.00	18.39
31	1		5	4	B	418	1900	19	0.79	80	12	50.35	36.61	102.05	8.37	100	100	0.00	65.70
32	1		5	4	B	322 <	1900	19	0.37	60	49	25.00	22.50	57.27	3.46 +	100	100	0.00	30.89
33	1		5			454	1900	70	25.00	35	154	16.46	5.40	38.26	3.40	100	100	0.00	11.85
34	1		5	4	B	132	1900	19	2.11	24	268	19.99	17.60	49.40	1.27	100	100	0.00	9.98
35	1		6			474	1900	70	15.00	25	261	22.76	0.31	0.00	0.04	100	100	0.00	0.59
36	1		6	5	C	642	1900	42	14.05	56	60	22.38	8.84	72.93	9.53	100	100	0.00	28.26
	2		6	5	C	827	1900	42	10.74	72	25	24.60	11.67	52.61	8.43	100	100	0.00	43.52
	3		6	5	C	418	1900	42	26.37	36	149	25.23	12.80	46.05	3.74	100	100	0.00	23.52
37	1		6	5	D	368	1900	18	0.68	74	22	44.98	33.40	98.53	7.13	100	100	0.00	53.03
38	1		6	5	D	434 <	1900	18	0.79	88	3	55.06	47.82	120.73	10.41 +	100	100	0.00	88.43
39	1		6	5	D	178	1900	18	1.26	35	157	29.71	22.53	81.27	2.81	100	100	0.00	17.64
40	1		6			612	1900	70	2.28	33	170	4.73	0.51	1.94	1.53	100	100	0.00	1.38
41	1					820	Unrestricted	70	22.00	0	Unrestricted	18.23	0.00	0.00	0.00	100	100	0.00	0.00
42	1		7			1261	1900	70	18.00	66	36	9.86	1.86	0.00	0.65	100	100	0.00	9.26
43	1					266	Unrestricted	70	54.00	0	Unrestricted	10.74	0.00	0.00	0.00	100	100	0.00	0.00
44	1		7	6	A	995 <	1900	39	1.00	92	-2	35.61	25.74	72.15	16.34 +	100	100	18.24	128.24
45	2		7	6	A	786	1900	39	8.31	73	23	28.17	10.65	35.11	6.77	100	100	0.00	36.49
46	1		7			109 <	1900	70	65.98	1072	-92	17542.27	17534.44	2272.18	532.61 +	100	100	0.00	7580.74

47	1		7			568	1900	70	0.00	30	201	4.34	0.40	0.00	0.06	100	100	0.00	0.90
48	1		7	6	B	148	1900	20	0.21	26	243	43.06	19.84	74.47	2.14	100	100	0.00	12.96
49	1		7	6	B	272	1900	20	0.42	49	85	30.40	23.25	80.02	4.23	100	100	0.00	27.68
49	2		7	6	B	148	1900	20	0.21	26	243	27.07	19.84	74.47	2.14	100	100	0.00	12.96
50	1		7			420	1900	70	0.00	22	307	16.16	0.27	0.00	0.03	100	100	0.00	0.45
51	1		7	6	B	55	1900	20	18.11	10	835	34.21	14.87	98.47	1.45	100	100	0.00	3.87
51	2		7	6	B	55	1900	20	11.04	20	346	1688.59	1669.10	270.09	27.56	100	100	0.00	368.48
52	1					904	Unrestricted	70	10.00	0	Unrestricted	19.45	0.00	0.00	0.00	100	100	0.00	0.00
53	1		1			595	1900	70	21.00	31	187	1.43	0.43	0.00	0.07	100	100	0.00	1.01
53	2		1			537	1900	70	21.00	28	218	1.37	0.37	0.00	0.06	100	100	0.00	0.79
53	3		1			506	1900	70	21.00	27	238	1.34	0.34	0.00	0.05	100	100	0.00	0.69
54	1		1	1	A	328 <	1980	45	7.18	25	255	3.45	2.45	17.45	1.25 +	100	100	0.00	3.68
54	2		1	1	A	328 <	1980	45	7.18	25	255	3.45	2.45	17.45	1.25 +	100	100	0.00	3.68

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	2731.40	781.06	3.50	689.92	9796.80	183.46	2523.53	12503.78
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	2731.40	781.06	3.50	689.92	9796.80	183.46	2523.53	12503.78

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

A4 - 2021 PM Scenario 2 D4 - 2021 PM Scenario 2*

Signal Timings

Network Default: 70s cycle time; 70 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A		6		0		
	B		5	5			
	C	6	6			6	
	D		11				
	E	8					
	F		5				

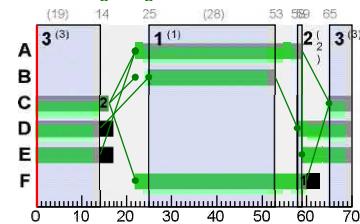
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1			B,F,A	25	53	28	1	7
	2			A,D,F	58	59	1	1	1
	3			C,D,E	65	14	19	1	5

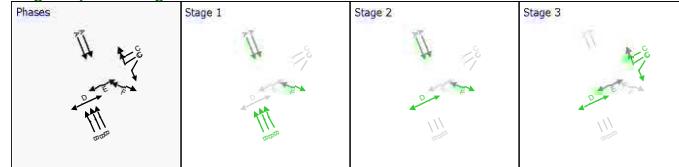
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1	1	1	B	25	53	28
3	2	1	1	B	25	53	28
4	1	1	1	B	25	53	28
5	1	1	1	C	65	16	21
6	1	1	1	C	65	16	21
7	1	1	1	C	65	16	21
54	1	1	1	A	22	59	37
54	2	1	1	A	22	59	37

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Intergreen Matrix for Controller Stream 2

From	To									
	C	D	E	F	G	H	I	J		
C		5								
D	5									
E			5	5						
F		5			5					
G			5		5					
H				13	13					
I							6			
J								9		

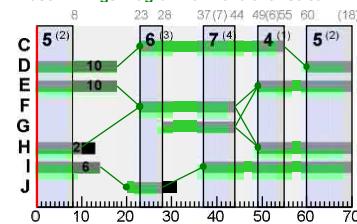
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
2	1			C,E,H,I	49	55	6	1	1
	2			D,E,H,I	60	8	18	1	1
	3			C,F,J	23	28	5	1	3
	4			C,F,G,I	37	44	7	1	1

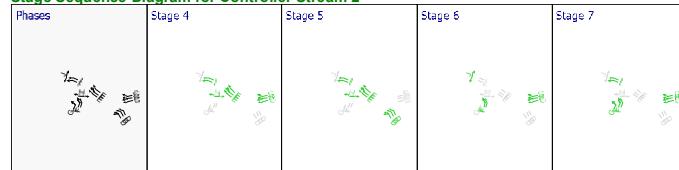
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
16	1	2	2	D	60	18	28
16	2	2	2	D	60	18	28
16	3	2	2	D	60	18	28
17	1	2	2	C	23	55	32
19	1	2	2	C	23	55	32
19	2	2	2	C	23	55	32
20	1	3	2	E	49	18	39
20	2	3	2	E	49	18	39
20	3	3	2	E	49	18	39
23	1	3	2	F	23	44	21
24	1	3	2	G	28	44	16
25	1	3	2	F	23	44	21
28	1	3	2	I	37	14	47
28	2	3	2	I	37	14	47

Phase Timings Diagram for Controller Stream 2



Stage Sequence Diagram for Controller Stream 2



Intergreen Matrix for Controller Stream 3

From	To		
	K	L	
K		6	
L		8	

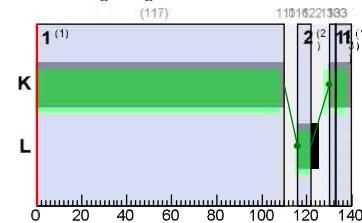
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1			K	133	110	117	1	1
	2			L	116	122	6	1	6
	3			K	130	133	3	1	1

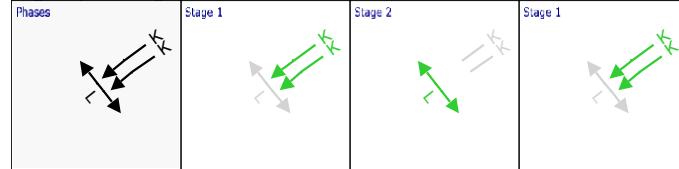
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
21	1	4	3	K	130	110	120
21	2	4	3	K	130	110	120

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Intergreen Matrix for Controller Stream 4

		To			
		A	B	E	
From	A	5			
	B	5	5		
E		12			

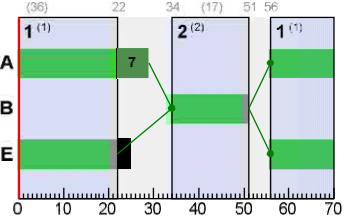
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1		1	A,E	56	22	36	1	7
	2		2	B	34	51	17	1	7

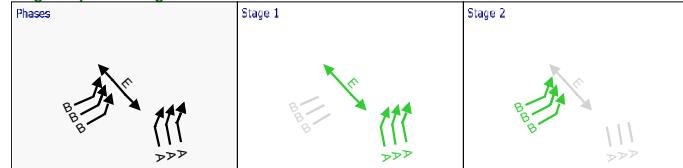
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
30	1	5	4	A	56	29	43
30	2	5	4	A	56	29	43
30	3	5	4	A	56	29	43
31	1	5	4	B	34	51	17
32	1	5	4	B	34	51	17
34	1	5	4	B	34	51	17

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Intergreen Matrix for Controller Stream 5

From	To	
	C	D
C	5	
D	5	

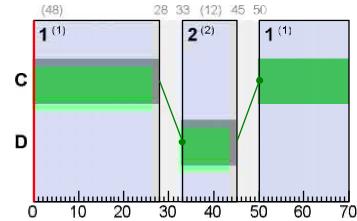
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
5	1		1	C	50	28	48	1	7
	2		2	D	33	45	12	1	7

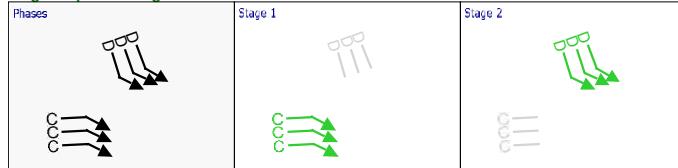
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
36	1	6	5	C	50	28	48
36	2	6	5	C	50	28	48
36	3	6	5	C	50	28	48
37	1	6	5	D	33	45	12
38	1	6	5	D	33	45	12
39	1	6	5	D	33	45	12

Phase Timings Diagram for Controller Stream 5



Stage Sequence Diagram for Controller Stream 5



Intergreen Matrix for Controller Stream 6

From	To	
	A	B
A	6	
B	5	

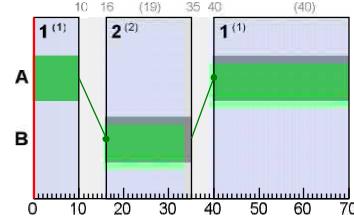
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
6	1		1	A	40	10	40	1	7
	2		2	B	16	35	19	1	7

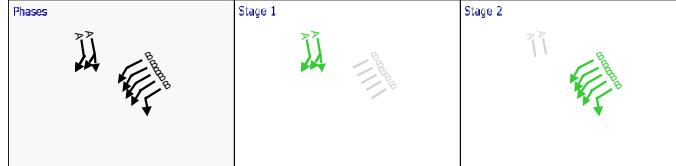
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
44	1	7	6	A	40	10	40
45	2	7	6	A	40	10	40
48	1	7	6	B	16	35	19
49	1	7	6	B	16	35	19
49	2	7	6	B	16	35	19
51	1	7	6	B	16	35	19
51	2	7	6	B	16	35	19

Phase Timings Diagram for Controller Stream 6



Stage Sequence Diagram for Controller Stream 6



Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE					PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)			
RA	1		R3			929	2312	70	11.00	40	124	12.52	0.52	0.00	0.13	100	100	0.00	1.91		
RAc	1		R3			17	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RAx	1					682	1800	70	0.00	38	138	12.61	0.61	0.00	0.12	100	100	0.00	1.64		
RB	1		R4			179	1148	70	0.00	16	477	12.29	0.29	0.00	0.01	100	100	0.00	0.20		
RBC	1		R4			827	Unrestricted	70	11.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RBx	1					119	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RC	1		R1			475	1623	70	0.00	29	207	12.46	0.46	0.00	0.06	100	100	0.00	0.86		
RCc	1		R1			158	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RCx	1					848	Unrestricted	70	10.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RD	1		R2			67	878	70	0.00	8	1080	12.17	0.17	0.00	0.00	100	100	0.00	0.04		
RDc	1		R2			632	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
RDx	1					1	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00		
1	1	Burtonwood Road South	1	1	B	208	1980	28	0.45	26	249	22.81	14.36	62.53	2.53	100	100	0.00	13.41		
2	1	Burtonwood Road South	1			639	1980	70	0.00	32	179	4.48	0.43	0.00	0.08	100	100	0.00	1.09		
3	2	Burtonwood Road South	1	1	B	223	2120	28	0.75	26	245	20.44	14.45	65.32	2.83	100	100	0.00	14.54		
4	1	Burtonwood Road South	1	1	B	208	1975	28	0.44	26	249	20.52	14.37	65.27	2.65	100	100	0.00	13.49		
5	1	Charon Way Left	1	1	C	65	1995	21	4.00	10	768	15.14	13.12	35.97	0.45	100	100	0.00	3.66		
6	1	Charon Way Right	1	1	C	430 <	1842	21	0.18	75	20	24.69	22.63	47.28	3.99 +	100	100	0.00	40.94		

7	1	Charon Way Right	1	1	C	424	1819	21	0.00	74	21	43.33	30.31	93.22	7.72	100	100	0.00	55.65
8	1	Charon Way	1			495	1653	70	29.69	52	73	21.67	10.49	52.31	5.09	100	100	0.00	23.73
10	1	Charon Way	1			919	1962	70	0.00	47	92	5.89	0.81	0.00	0.21	100	100	0.00	2.93
11	1	Burtonwood Road South	1			431	2120	70	0.00	20	343	2.79	0.22	0.00	0.03	100	100	0.00	0.37
12	1	Burtonwood Road South	1			730	1980	70	36.00	37	144	5.25	0.53	0.00	0.11	100	100	0.00	1.53
13	1		1				Unrestricted	70	36.00	0	Unrestricted	10.75	0.00	0.00	0.00	100	100	0.00	0.00
14	1						Unrestricted	70	18.00	0	Unrestricted	7.24	0.00	0.00	0.00	100	100	0.00	0.00
15	1	Omega Road North	1			733	1934	70	27.64	57	57	20.19	4.86	25.09	3.59	100	100	0.00	16.35
	2	Burtonwood Road North	1			733	1937	70	27.65	57	58	20.57	4.85	25.07	3.59	100	100	0.00	16.32
16	1		2	2	D	570	1900	28	0.00	72	24	29.94	23.32	83.21	9.25	100	100	0.00	58.38
	2		2	2	D	692 <	1900	28	1.50	93	-3	51.64	44.96	97.69	13.56 +	100	100	0.00	131.21
	3		2	2	D	237	1900	28	0.32	30	196	21.58	14.85	64.58	3.04	100	100	0.00	15.80
17	1		2	2	C	342 <	1900	32	18.29	80	12	52.15	48.35	89.11	5.89 +	100	100	0.00	69.08
18	1		2			458	1900	70	34.00	24	274	7.81	0.30	0.00	0.04	100	100	0.00	0.54
	2		2			621	1900	70	45.98	67	34	24.02	16.50	86.84	10.64	100	100	53.61	100.77
19	1		2	2	C	458	1900	32	14.00	51	76	9.42	5.00	20.44	2.30	100	100	0.00	10.20
	2		2	2	C	279	1900	32	10.00	31	189	11.02	6.89	20.81	1.16	100	100	0.00	8.30
20	1		3	2	E	590	1900	39	12.21	55	65	12.69	6.64	25.25	2.77	100	100	0.00	17.31
	2		3	2	E	1034 <	1900	39	0.00	95	-6	41.93	35.92	77.89	15.94 +	100	100	550.96	707.57
	3		3	2	E	237	1900	39	16.00	22	312	8.95	2.82	9.23	0.43	100	100	0.00	2.91
21	1		4	3	K	489	1900	120	4.35	31	191	8.53	2.85	16.74	3.27	100	100	0.00	6.51
	2		4	3	K	228	1900	120	3.16	14	531	7.96	1.92	13.71	1.46	100	100	0.00	2.12
22	1					717	Unrestricted	140	19.00	0	Unrestricted	7.28	0.00	0.00	0.00	100	100	0.00	0.00
23	1		3	2	F	518 <	1900	21	1.00	91	-1	66.78	57.92	128.63	13.31 +	100	100	0.00	126.74
24	1		3	2	G	267	1900	16	0.00	58	56	38.77	33.01	80.93	4.21	100	100	0.00	37.46
25	1		3	2	F	545 <	1900	21	0.00	91	-1	60.77	54.28	110.34	12.05 +	100	100	0.00	124.21
26	1		3			812 <	1900	70	24.06	65	38	9.00	6.67	22.15	3.50 +	100	100	0.00	23.61
27	1		3			1330 <	1900	70	18.60	104	-13	253.82	248.93	122.41	98.12 +	100	100	0.00	1326.37
28	1		3	2	I	723	1900	47	18.65	63	43	12.82	8.47	34.35	4.96	100	100	0.00	27.29
	2		3	2	I	215	1900	47	34.74	18	391	7.64	2.95	39.69	1.86	100	100	0.00	3.58
29	1					939	Unrestricted	70	29.00	0	Unrestricted	10.40	0.00	0.00	0.00	100	100	0.00	0.00
30	1		5	4	A	755	1900	43	1.84	64	40	20.39	7.52	38.16	9.28	100	100	0.00	25.99
	2		5	4	A	742	1900	43	5.84	63	42	24.80	12.02	59.97	8.69	100	100	0.00	40.78
	3		5	4	A	755	1900	43	1.11	65	39	30.52	17.82	78.65	13.64	100	100	0.00	60.54
31	1		5	4	B	128	1900	17	0.16	26	241	35.87	22.13	79.04	1.97	100	100	0.00	12.44
32	1		5	4	B	358 <	1900	17	0.32	75	21	30.63	28.13	59.42	4.06 +	100	100	0.00	42.39
33	1		5			537	1900	70	37.00	48	88	20.46	9.39	51.38	5.37	100	100	0.00	23.36
34	1		5	4	B	179	1900	17	2.11	37	144	21.28	18.88	46.06	1.60	100	100	0.00	14.36
35	1		6			934	1900	70	11.00	49	83	23.36	0.91	0.00	0.24	100	100	0.00	3.37
36	1		6	5	C	742	1900	48	15.42	56	60	20.35	6.81	30.58	4.42	100	100	0.00	22.80
	2		6	5	C	1113	1900	48	2.79	85	6	22.69	9.76	39.35	9.88	100	100	0.00	48.34
	3		6	5	C	128	1900	48	35.21	10	831	15.91	3.48	80.63	2.10	100	100	0.00	3.05
37	1		6	5	D	196	1900	12	0.32	57	58	44.45	32.87	96.65	3.69	100	100	0.00	27.79
38	1		6	5	D	297 <	1900	12	0.58	88	2	68.49	61.25	135.64	8.30 +	100	100	0.00	76.80
39	1		6	5	D	193	1900	12	0.32	56	61	39.77	32.59	97.29	3.73	100	100	0.00	27.17
40	1		6			490	1900	70	0.00	26	249	4.54	0.33	0.00	0.04	100	100	0.00	0.64
41	1					935	Unrestricted	70	23.00	0	Unrestricted	18.23	0.00	0.00	0.00	100	100	0.00	0.00
42	1		7			1410	1900	70	10.25	74	21	10.76	2.76	4.18	2.53	100	100	0.00	16.08
43	1					444	Unrestricted	70	37.00	0	Unrestricted	10.74	0.00	0.00	0.00	100	100	0.00	0.00
44	1		7	6	A	966 <	1900	40	2.00	87	4	28.33	18.45	62.87	14.72 +	100	100	8.36	86.28
45	2		7	6	A	324	1900	40	14.00	29	209	18.18	0.66	0.00	0.06	100	100	0.00	0.85
46	1		7			755 <	1900	70	41.07	105	-14	157.90	150.07	188.23	36.98 +	100	100	0.00	464.59

47	1		7		1015	1900	70	0.00	53	68	5.02	1.08	0.00	0.31	100	100	0.00	4.34	
48	1		7	6	B	426	1900	19	0.79	82	10	61.25	38.03	104.16	9.01	100	100	0.00	69.47
49	1		7	6	B	163	1900	19	0.21	30	197	28.24	21.09	76.36	2.42	100	100	0.00	15.12
	2		7	6	B	426	1900	19	0.79	82	10	45.26	38.03	104.16	9.01	100	100	0.00	69.47
50	1		7		589	1900	70	0.00	31	190	16.31	0.43	0.00	0.07	100	100	0.00	0.99	
51	1		7	6	B	378	1900	19	5.74	72	25	40.40	21.05	107.87	8.19	100	100	0.00	36.49
	2		7	6	B	377 <	1900	19	6.11	100	-10	313.16	293.67	436.36	36.77 +	100	100	0.00	457.23
52	1				516	Unrestricted	70	11.00	0	Unrestricted	19.45	0.00	0.00	0.00	100	100	0.00	0.00	
53	1		1		638	1900	70	19.00	34	168	1.48	0.48	0.00	0.08	100	100	0.00	1.20	
	2		1		435	1900	70	19.00	23	293	1.28	0.28	0.00	0.03	100	100	0.00	0.48	
	3		1		420	1900	70	19.00	22	307	1.27	0.27	0.00	0.03	100	100	0.00	0.45	
54	1		1	1	A	730 <	1980	37	4.91	70	29	7.44	6.44	13.99	2.00 +	100	100	0.00	19.44
	2		1	1	A	730 <	1980	37	4.91	70	29	7.44	6.44	13.99	2.00 +	100	100	0.00	19.44

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	3337.83	383.77	8.70	272.38	3867.78	219.64	612.94	4700.35
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	3337.83	383.77	8.70	272.38	3867.78	219.64	612.94	4700.35

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
 - * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
 - ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
 - + = average link/traffic stream excess queue is greater than 0
 - P.I. = PERFORMANCE INDEX

A7 - 2021 AM Scenario 5
D7 - 2021 AM Scenario 5*

Signal Timings

Network Default: 70s cycle time; 70 steps

Intergreen Matrix for Controller Stream 1

	To					
	A	B	C	D	E	F
A			6		0	
B			5	5		
C	6	6				6
D		11				
E	8					
F			5			

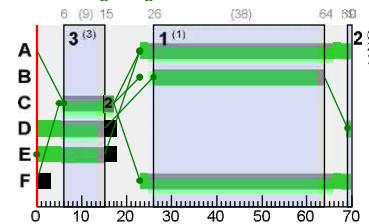
Resultant Stages

Resultant Stages									
Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1		1	B,F,A	26	64	38	1	7
	2		2	A,D,F	69	0	1	1	1
	3		3	C,D,E	6	15	9	1	5

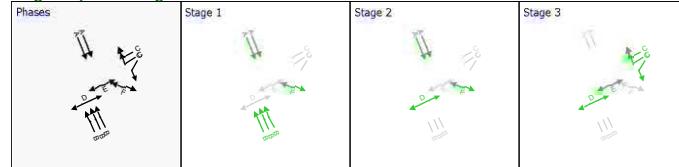
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1	1	1	B	26	64	38
3	2	1	1	B	26	64	38
4	1	1	1	B	26	64	38
5	1	1	1	C	6	17	11
6	1	1	1	C	6	17	11
7	1	1	1	C	6	17	11
54	1	1	1	A	23	0	47
54	2	1	1	A	23	0	47

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Intergreen Matrix for Controller Stream 2

From	To									
	C	D	E	F	G	H	I	J		
C		5								
D	5									
E			5	5						
F			5		5					
G			5		5					
H				13	13					
I							6			
J								9		

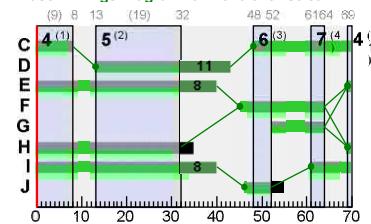
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
2	1			C,E,H,I	69	8	9	1	1
	2			D,E,H,I	13	32	19	1	1
	3			C,F,J	48	52	4	1	4
	4			C,F,G,I	61	64	3	1	1

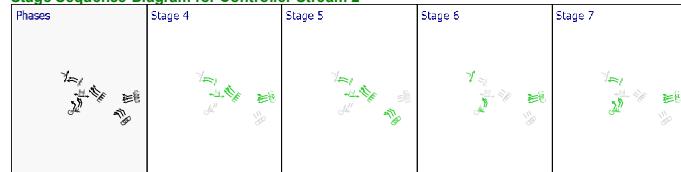
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
16	1	2	2	D	13	43	30
16	2	2	2	D	13	43	30
16	3	2	2	D	13	43	30
17	1	2	2	C	48	8	30
19	1	2	2	C	48	8	30
19	2	2	2	C	48	8	30
20	1	3	2	E	69	40	41
20	2	3	2	E	69	40	41
20	3	3	2	E	69	40	41
23	1	3	2	F	45	64	19
24	1	3	2	G	52	64	12
25	1	3	2	F	45	64	19
28	1	3	2	I	61	40	49
28	2	3	2	I	61	40	49

Phase Timings Diagram for Controller Stream 2



Stage Sequence Diagram for Controller Stream 2



Intergreen Matrix for Controller Stream 3

From	To	K	L
K			6
L		8	

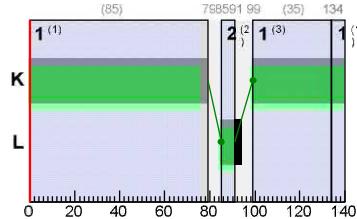
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1			K	134	79	85	1	1
	2			L	85	91	6	1	6
	3			K	99	134	35	1	1

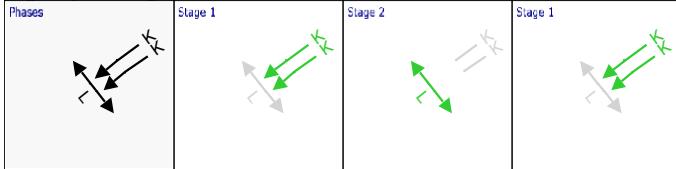
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
21	1	4		K	99	79	120
21	2	4		K	99	79	120

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Intergreen Matrix for Controller Stream 4

		To			
		A	B	E	
From	A	5			
	B	5	5		
	E		12		

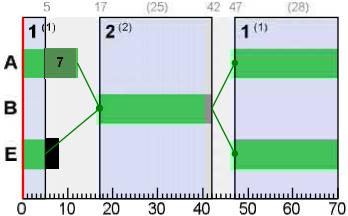
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1		1	A,E	47	5	28	1	7
	2		2	B	17	42	25	1	7

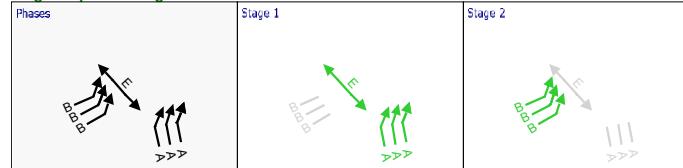
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
30	1	5	4	A	47	12	35
30	2	5	4	A	47	12	35
30	3	5	4	A	47	12	35
31	1	5	4	B	17	42	25
32	1	5	4	B	17	42	25
34	1	5	4	B	17	42	25

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Intergreen Matrix for Controller Stream 5

From	To	
	C	D
C	5	
D	5	

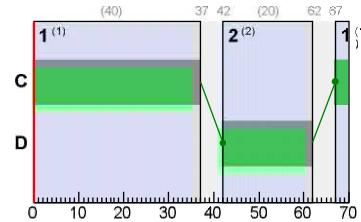
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
5	1		1	C	67	37	40	1	7
	2		2	D	42	62	20	1	7

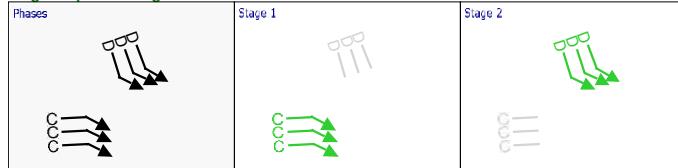
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
36	1	6	5	C	67	37	40
36	2	6	5	C	67	37	40
36	3	6	5	C	67	37	40
37	1	6	5	D	42	62	20
38	1	6	5	D	42	62	20
39	1	6	5	D	42	62	20

Phase Timings Diagram for Controller Stream 5



Stage Sequence Diagram for Controller Stream 5



Intergreen Matrix for Controller Stream 6

From	To	
	A	B
A	6	
B	5	

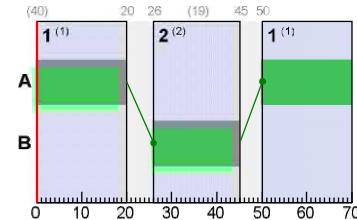
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
6	1		1	A	50	20	40	1	7
	2		2	B	26	45	19	1	7

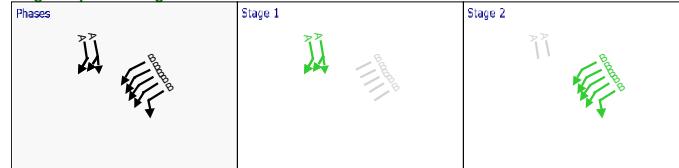
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
44	1	7	6	A	50	20	40
45	2	7	6	A	50	20	40
48	1	7	6	B	26	45	19
49	1	7	6	B	26	45	19
49	2	7	6	B	26	45	19
51	1	7	6	B	26	45	19
51	2	7	6	B	26	45	19

Phase Timings Diagram for Controller Stream 6



Stage Sequence Diagram for Controller Stream 6



Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE					PER PCU			QUEUES		WEIGHTS		P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.	
RA	1		R3			593	2299	70	14.00	26	249	12.27	0.27	0.00	0.04	100	100	0.00	0.64	
RAc	1		R3			34	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RAx	1					928	1800	70	0.00	52	75	13.06	1.06	0.00	0.27	100	100	0.00	3.89	
RB	1		R4			78	1393	70	0.00	6	1507	12.08	0.08	0.00	0.00	100	100	0.00	0.02	
RBC	1		R4			437	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RBx	1					190	Unrestricted	70	25.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RC	1		R1			798	1677	70	0.00	48	89	12.97	0.97	0.00	0.22	100	100	0.00	3.06	
RCc	1		R1			74	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RCx	1					441	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RD	1		R2			90	749	70	0.00	12	649	12.33	0.33	0.00	0.01	100	100	0.00	0.12	
RDc	1		R2			872	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RDx	1					0	Unrestricted	70	70.00	0	Unrestricted	0.00	0.00	0.00	0.00	100	100	0.00	0.00	
1	1	Burtonwood Road South	1	1	B	393	1980	38	0.73	36	148	18.18	9.73	51.34	3.92	100	100	0.00	17.62	
2	1	Burtonwood Road South	1			1206	1980	70	0.00	61	48	5.46	1.41	0.00	0.47	100	100	0.00	6.72	
3	2	Burtonwood Road South	1	1	B	421	2120	38	1.36	37	144	15.87	9.89	54.15	4.44	100	100	0.00	19.28	
4	1	Burtonwood Road South	1	1	B	392	1975	38	0.71	36	148	15.88	9.73	54.15	4.13	100	100	0.00	17.70	
5	1	Charon Way Left	1	1	C	17	1995	11	11.00	5	1711	26.74	24.72	81.56	0.28	100	100	0.00	1.83	
6	1	Charon Way Right	1	1	C	164 <	1842	11	0.11	52	72	34.78	32.72	94.48	3.02 +	100	100	0.00	23.11	

7	1	Charon Way Right	1	1	C	162	1819	11	0.00	52	73	45.59	32.57	94.34	2.98	100	100	0.00	22.73
8	1	Charon Way	1			181	1653	70	0.00	11	722	11.31	0.13	0.00	0.01	100	100	0.00	0.10
10	1	Charon Way	1			343	1962	70	0.00	17	415	5.28	0.19	0.00	0.02	100	100	0.00	0.26
11	1	Burtonwood Road South	1			813	2120	70	0.00	38	135	3.10	0.53	0.00	0.12	100	100	0.00	1.69
12	1	Burtonwood Road South	1			331	1980	70	35.00	17	438	4.91	0.18	0.00	0.02	100	100	0.00	0.24
13	1		1			331	Unrestricted	70	35.00	0	Unrestricted	10.75	0.00	0.00	0.00	100	100	0.00	0.00
14	1					348	Unrestricted	70	34.00	0	Unrestricted	7.24	0.00	0.00	0.00	100	100	0.00	0.00
15	1	Omega Road North	1			332	1934	70	15.94	18	403	15.59	0.27	3.37	1.47	100	100	0.00	0.49
	2	Burtonwood Road North	1			332	1937	70	15.94	18	404	15.99	0.27	3.37	1.47	100	100	0.00	0.49
16	1		2	2	D	543	1900	30	0.00	65	39	25.88	19.27	76.42	8.19	100	100	0.00	46.48
	2		2	2	D	719 <	1900	30	1.32	89	1	41.63	34.96	84.89	12.06 +	100	100	0.00	106.80
	3		2	2	D	274	1900	30	0.37	33	173	20.61	13.88	62.88	3.35	100	100	0.00	17.16
17	1		2	2	C	240	1900	30	8.11	29	215	9.91	6.11	33.66	1.57	100	100	0.00	6.78
18	1		2			682	1900	70	36.17	45	100	15.54	8.03	61.71	8.18	100	100	15.22	42.07
	2		2			889	1900	70	23.75	56	60	13.07	5.55	40.81	7.75	100	100	10.78	34.76
19	1		2	2	C	682 <	1900	30	0.00	81	11	18.41	13.99	42.94	5.74 +	100	100	15.84	57.11
	2		2	2	C	649 <	1900	30	0.00	77	17	17.96	13.83	44.37	5.63 +	100	100	12.30	51.31
20	1		3	2	E	577	1900	41	8.16	51	77	11.13	5.07	18.28	2.05	100	100	0.00	12.85
	2		3	2	E	959	1900	41	4.00	84	7	21.37	15.35	47.05	8.56	100	100	94.82	158.50
	3		3	2	E	274	1900	41	18.05	24	274	9.75	3.62	13.57	1.49	100	100	0.00	4.38
21	1		4	3	K	716	1900	120	22.98	54	67	12.66	6.97	20.40	6.20	100	100	17.17	38.69
	2		4	3	K	580	1900	120	17.89	41	117	10.58	4.54	17.57	3.97	100	100	0.00	11.65
22	1					1296	Unrestricted	140	19.00	0	Unrestricted	7.28	0.00	0.00	0.00	100	100	0.00	0.00
23	1		3	2	F	272	1900	19	0.42	51	76	33.43	24.57	82.12	4.35	100	100	0.00	29.16
24	1		3	2	G	134	1900	12	0.00	38	137	33.87	28.11	88.68	2.31	100	100	0.00	16.35
25	1		3	2	F	272	1900	19	0.00	50	80	30.73	24.23	84.44	4.48	100	100	0.00	28.88
26	1		3			406	1900	70	0.00	21	321	2.59	0.26	0.00	0.03	100	100	0.00	0.41
27	1		3			678	1900	70	0.00	36	152	5.41	0.53	0.00	0.10	100	100	0.00	1.40
28	1		3	2	I	644	1900	49	14.71	50	80	7.23	2.88	15.49	1.98	100	100	0.00	8.57
	2		3	2	I	171	1900	49	36.66	14	564	7.08	2.39	46.83	1.46	100	100	0.00	2.61
29	1					814	Unrestricted	70	28.00	0	Unrestricted	10.40	0.00	0.00	0.00	100	100	0.00	0.00
30	1		5	4	A	466	1900	35	4.79	49	85	31.69	18.82	78.32	6.92	100	100	0.00	39.16
	2		5	4	A	661	1900	35	5.21	70	29	30.91	18.14	93.65	12.50	100	100	0.00	55.05
	3		5	4	A	546	1900	35	4.47	57	59	21.44	8.74	47.79	5.01	100	100	0.00	22.10
31	1		5	4	B	318	1900	25	0.47	46	96	32.74	19.00	73.23	4.64	100	100	0.00	26.75
32	1		5	4	B	330 <	1900	25	0.37	47	90	19.18	16.68	52.24	3.21 +	100	100	0.00	23.87
33	1		5			462	1900	70	17.00	32	180	14.38	3.32	27.94	2.51	100	100	0.00	7.67
34	1		5	4	B	132	1900	25	2.11	19	379	16.48	14.08	47.55	1.22	100	100	0.00	8.12
35	1		6			598	1900	70	14.00	31	186	22.88	0.43	0.00	0.07	100	100	0.00	1.03
36	1		6	5	C	661	1900	40	15.26	61	47	22.70	9.17	85.78	16.42	100	100	5.39	36.40
	2		6	5	C	876	1900	40	6.26	81	11	29.84	16.91	79.96	14.77	100	100	2.50	69.71
	3		6	5	C	318	1900	40	28.16	29	214	19.36	6.94	28.25	1.75	100	100	0.00	9.83
37	1		6	5	D	318	1900	20	0.53	57	57	36.72	25.14	84.83	5.25	100	100	0.00	34.91
38	1		6	5	D	436 <	1900	20	0.79	79	13	42.09	34.85	103.85	8.87 +	100	100	0.00	65.62
39	1		6	5	D	178	1900	20	0.26	32	185	27.70	20.52	77.81	2.69	100	100	0.00	16.15
40	1		6			614	1900	70	0.00	32	179	4.67	0.45	0.00	0.08	100	100	0.00	1.09
41	1					839	Unrestricted	70	22.00	0	Unrestricted	18.23	0.00	0.00	0.00	100	100	0.00	0.00
42	1		7			1312	1900	70	17.32	78	15	12.82	4.82	16.17	7.20	100	100	0.00	27.59
43	1					329	Unrestricted	70	47.00	0	Unrestricted	10.74	0.00	0.00	0.00	100	100	0.00	0.00
44	1		7	6	A	983 <	1900	40	0.05	88	2	30.99	21.11	80.67	15.92 +	100	100	40.87	132.67
45	2		7	6	A	636	1900	40	7.00	57	57	21.06	3.55	35.53	6.22	100	100	0.00	11.73
46	1		7			934	1900	70	0.00	49	83	8.75	0.91	0.00	0.24	100	100	0.00	3.37

47	1		7			582	1900	70	0.00	31	194	4.35	0.42	0.00	0.07	100	100	0.00	0.96
48	1		7	6	B	155	1900	19	0.21	29	212	44.13	20.91	76.21	2.30	100	100	0.00	14.27
49	1		7	6	B	272	1900	19	0.42	51	76	31.71	24.57	82.12	4.35	100	100	0.00	29.16
49	2		7	6	B	155	1900	19	0.21	29	212	28.14	20.91	76.21	2.30	100	100	0.00	14.27
50	1		7			427	1900	70	0.00	22	300	16.16	0.27	0.00	0.03	100	100	0.00	0.46
51	1		7	6	B	467	1900	19	0.89	90	0	70.33	50.99	122.40	11.44	100	100	0.00	101.09
51	2		7	6	B	467	1900	19	0.89	90	0	70.48	50.99	122.40	11.44	100	100	0.00	101.09
52	1					902	Unrestricted	70	9.00	0	Unrestricted	19.45	0.00	0.00	0.00	100	100	0.00	0.00
53	1		1			557	1900	70	19.00	29	207	1.39	0.39	0.00	0.06	100	100	0.00	0.86
53	2		1			502	1900	70	19.00	26	241	1.34	0.34	0.00	0.05	100	100	0.00	0.67
	3		1			473	1900	70	19.00	25	262	1.31	0.31	0.00	0.04	100	100	0.00	0.59
54	1		1	1	A	331 <	1980	47	13.36	25	266	4.71	3.71	19.39	1.25 +	100	100	0.00	5.42
54	2		1	1	A	331 <	1980	47	13.36	25	266	4.71	3.71	19.39	1.25 +	100	100	0.00	5.42

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	3023.14	192.07	15.74	91.20	1295.06	153.04	214.88	1662.99
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	3023.14	192.07	15.74	91.20	1295.06	153.04	214.88	1662.99

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

A8 - 2021 PM Scenario 5 D8 - 2021 PM Scenario 5*

Signal Timings

Network Default: 70s cycle time; 70 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A		6		0		
	B		5	5			
	C	6	6			6	
	D		11				
	E	8					
	F		5				

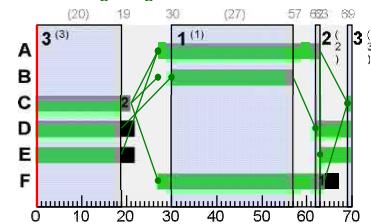
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1			B,F,A	30	57	27	1	7
	2			A,D,F	62	63	1	1	1
	3			C,D,E	69	19	20	1	5

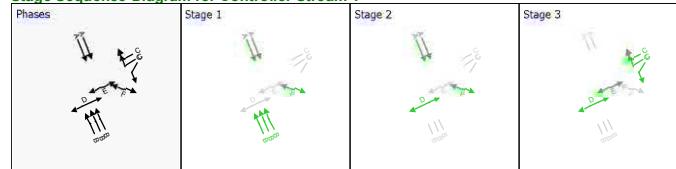
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1	1	1	B	30	57	27
3	2	1	1	B	30	57	27
4	1	1	1	B	30	57	27
5	1	1	1	C	69	21	22
6	1	1	1	C	69	21	22
7	1	1	1	C	69	21	22
54	1	1	1	A	27	63	36
54	2	1	1	A	27	63	36

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Intergreen Matrix for Controller Stream 2

From	To							
	C	D	E	F	G	H	I	J
C	5							
D	5							
E			5	5				
F		5			5			
G			5		5			
H				13	13			
I						6		
J							9	

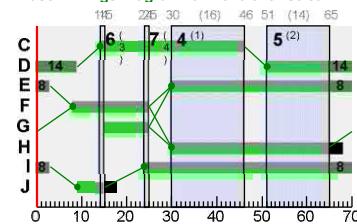
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
2	1			C,E,H,I	30	46	16	1	1
	2			D,E,H,I	51	65	14	1	1
	3			C,F,J	14	15	1	1	1
	4			C,F,G,I	24	25	1	1	1

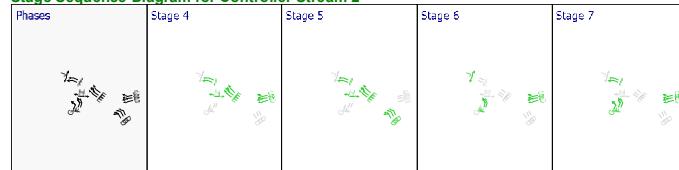
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
16	1	2	2	D	51	9	28
16	2	2	2	D	51	9	28
16	3	2	2	D	51	9	28
17	1	2	2	C	14	46	32
19	1	2	2	C	14	46	32
19	2	2	2	C	14	46	32
20	1	3	2	E	30	3	43
20	2	3	2	E	30	3	43
20	3	3	2	E	30	3	43
23	1	3	2	F	8	25	17
24	1	3	2	G	15	25	10
25	1	3	2	F	8	25	17
28	1	3	2	I	24	3	49
28	2	3	2	I	24	3	49

Phase Timings Diagram for Controller Stream 2



Stage Sequence Diagram for Controller Stream 2



Intergreen Matrix for Controller Stream 3

From	To		
	K	L	
K		6	
L		8	

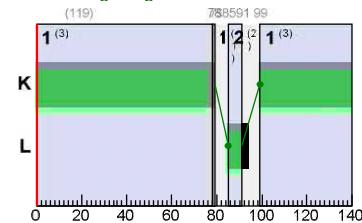
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1			K	78	79	1	1	1
	2			L	85	91	6	1	6
	3			K	99	78	119	1	1

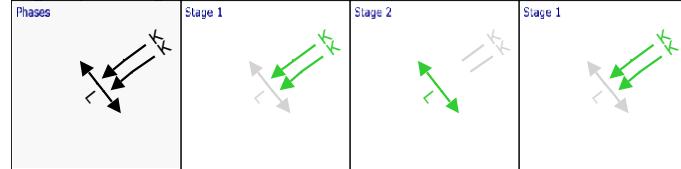
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
21	1	4		K	99	79	120
21	2	4		K	99	79	120

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Intergreen Matrix for Controller Stream 4

		To			
		A	B	E	
From	A	5			
	B	5	5		
	E		12		

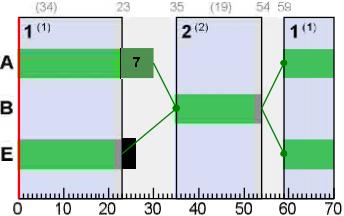
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1		1	A,E	59	23	34	1	7
	2		2	B	35	54	19	1	7

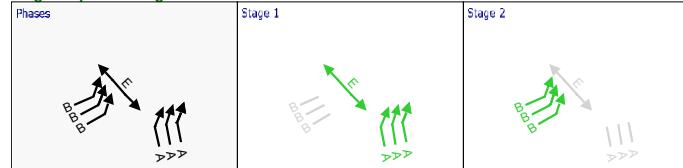
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
30	1	5	4	A	59	30	41
30	2	5	4	A	59	30	41
30	3	5	4	A	59	30	41
31	1	5	4	B	35	54	19
32	1	5	4	B	35	54	19
34	1	5	4	B	35	54	19

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Intergreen Matrix for Controller Stream 5

From	To	
	C	D
C	5	
D	5	

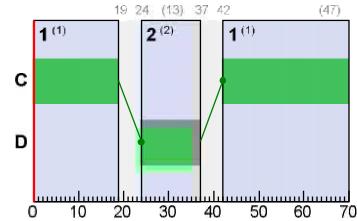
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
5	1		1	C	42	19	47	1	7
	2		2	D	24	37	13	1	7

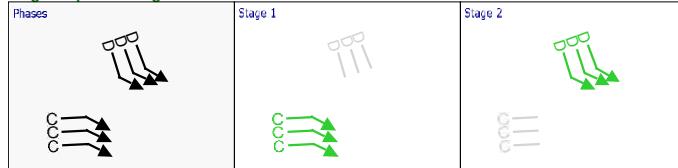
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
36	1	6	5	C	42	19	47
36	2	6	5	C	42	19	47
36	3	6	5	C	42	19	47
37	1	6	5	D	24	37	13
38	1	6	5	D	24	37	13
39	1	6	5	D	24	37	13

Phase Timings Diagram for Controller Stream 5



Stage Sequence Diagram for Controller Stream 5



Intergreen Matrix for Controller Stream 6

From	To	
	A	B
A	6	
B	5	

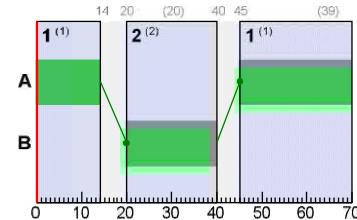
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
6	1		1	A	45	14	39	1	7
	2		2	B	20	40	20	1	7

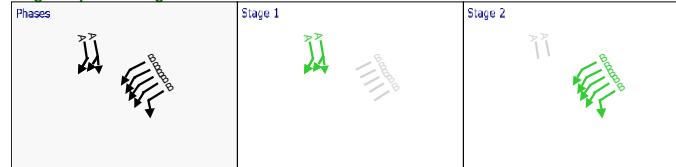
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
44	1	7	6	A	45	14	39
45	2	7	6	A	45	14	39
48	1	7	6	B	20	40	20
49	1	7	6	B	20	40	20
49	2	7	6	B	20	40	20
51	1	7	6	B	20	40	20
51	2	7	6	B	20	40	20

Phase Timings Diagram for Controller Stream 6



Stage Sequence Diagram for Controller Stream 6



Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE					PER PCU			QUEUES		WEIGHTS		P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.	
RA	1		R3			938	2312	70	14.00	41	122	12.53	0.53	0.00	0.14	100	100	0.00	1.96	
RAc	1		R3			17	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RAx	1					692	1800	70	0.00	38	134	12.62	0.62	0.00	0.12	100	100	0.00	1.70	
RB	1		R4			179	1145	70	0.00	16	476	12.29	0.29	0.00	0.01	100	100	0.00	0.21	
RBC	1		R4			831	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RBx	1					124	Unrestricted	70	18.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RC	1		R1			485	1623	70	0.00	30	201	12.47	0.47	0.00	0.06	100	100	0.00	0.90	
RCc	1		R1			158	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RCx	1					852	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RD	1		R2			67	873	70	0.00	8	1072	12.17	0.17	0.00	0.00	100	100	0.00	0.05	
RDc	1		R2			642	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
RDx	1					1	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00	
1	1	Burtonwood Road South	1	1	B	215	1980	27	0.45	28	226	23.65	15.20	64.11	2.68	100	100	0.00	14.62	
2	1	Burtonwood Road South	1			659	1980	70	0.00	33	170	4.50	0.45	0.00	0.08	100	100	0.00	1.18	
3	2	Burtonwood Road South	1	1	B	230	2120	27	0.91	28	221	21.29	15.31	66.93	2.99	100	100	0.00	15.82	
4	1	Burtonwood Road South	1	1	B	214	1975	27	0.44	28	227	21.35	15.19	66.96	2.79	100	100	0.00	14.62	
5	1	Charon Way Left	1	1	C	65	1995	22	4.00	10	808	14.75	12.73	35.91	0.45	100	100	0.00	3.56	
6	1	Charon Way Right	1	1	C	430 <	1842	22	0.18	72	26	22.65	20.59	45.00	3.79 +	100	100	0.00	37.35	

7	1	Charon Way Right	1	1	C	424	1819	22	0.00	71	27	40.84	27.82	89.61	7.41	100	100	0.00	51.30
8	1	Charon Way	1			495	1653	70	28.69	51	77	20.94	9.77	50.24	4.94	100	100	0.00	22.19
10	1	Charon Way	1			919	1962	70	0.00	47	92	5.89	0.81	0.00	0.21	100	100	0.00	2.93
11	1	Burtonwood Road South	1			444	2120	70	0.00	21	330	2.79	0.22	0.00	0.03	100	100	0.00	0.39
12	1	Burtonwood Road South	1			706	1980	70	37.00	36	152	5.23	0.50	0.00	0.10	100	100	0.00	1.40
13	1		1			706	Unrestricted	70	37.00	0	Unrestricted	10.75	0.00	0.00	0.00	100	100	0.00	0.00
14	1					771	Unrestricted	70	18.00	0	Unrestricted	7.24	0.00	0.00	0.00	100	100	0.00	0.00
15	1	Omega Road North	1			709	1934	70	23.72	51	76	18.67	3.35	20.86	2.88	100	100	0.00	11.21
	2	Burtonwood Road North	1			709	1937	70	23.72	51	77	19.06	3.34	20.85	2.87	100	100	0.00	11.19
16	1		2	2	D	564	1900	28	0.00	72	26	29.64	23.02	82.87	9.12	100	100	0.00	57.08
	2		2	2	D	653 <	1900	28	1.21	87	4	39.92	33.24	87.96	11.30 +	100	100	0.00	92.83
	3		2	2	D	302	1900	28	0.42	39	131	22.64	15.91	66.38	3.90	100	100	0.00	21.47
17	1		2	2	C	365	1900	32	15.33	45	99	13.83	10.03	36.54	2.15	100	100	0.00	16.12
18	1		2			567	1900	70	22.00	30	202	7.92	0.40	0.00	0.06	100	100	0.00	0.90
	2		2			731	1900	70	19.00	38	134	8.11	0.59	0.00	0.12	100	100	0.00	1.71
19	1		2	2	C	567	1900	32	6.00	63	42	13.59	9.17	30.86	3.38	100	100	0.00	22.69
	2		2	2	C	366	1900	32	6.00	41	120	17.39	13.25	55.93	3.98	100	100	0.00	21.70
20	1		3	2	E	600	1900	43	19.10	53	71	14.07	8.01	37.64	4.08	100	100	0.51	22.30
	2		3	2	E	1018 <	1900	43	4.00	85	6	22.25	16.23	52.07	10.45 +	100	100	157.82	229.65
	3		3	2	E	302	1900	43	25.11	25	255	10.25	4.11	17.87	1.49	100	100	0.00	5.58
21	1		4	3	K	590	1900	120	6.93	38	136	9.29	3.60	17.50	4.48	100	100	0.41	10.09
	2		4	3	K	307	1900	120	4.74	19	363	8.27	2.23	15.14	1.82	100	100	0.00	3.29
22	1					897	Unrestricted	140	19.00	0	Unrestricted	7.28	0.00	0.00	0.00	100	100	0.00	0.00
23	1		3	2	F	420	1900	17	0.79	90	0	63.11	54.25	125.93	10.78	100	100	0.00	96.50
24	1		3	2	G	230	1900	10	0.00	77	17	53.26	47.50	118.30	5.37	100	100	0.00	46.51
25	1		3	2	F	419 <	1900	17	0.00	86	5	51.83	45.34	116.47	9.66 +	100	100	0.00	81.05
26	1		3			649	1900	70	0.00	34	163	2.83	0.49	0.00	0.09	100	100	0.00	1.26
27	1		3			1069	1900	70	0.00	56	60	6.10	1.22	0.00	0.36	100	100	0.00	5.13
28	1		3	2	I	715	1900	49	21.52	61	49	11.95	7.60	43.60	5.39	100	100	0.00	25.35
	2		3	2	I	197	1900	49	40.73	16	449	8.31	3.62	62.12	1.95	100	100	0.00	4.35
29	1					912	Unrestricted	70	33.00	0	Unrestricted	10.40	0.00	0.00	0.00	100	100	0.00	0.00
30	1		5	4	A	762	1900	41	5.16	69	31	25.70	12.83	71.27	10.97	100	100	0.00	45.36
	2		5	4	A	593	1900	41	6.37	52	72	21.48	8.71	35.24	4.03	100	100	0.00	22.99
	3		5	4	A	722	1900	41	6.37	64	41	22.41	9.71	31.04	4.28	100	100	0.00	30.46
31	1		5	4	B	164	1900	19	0.26	31	194	34.87	21.13	76.39	2.44	100	100	0.00	15.24
32	1		5	4	B	374 <	1900	19	0.37	70	28	26.27	23.77	53.72	3.81 +	100	100	0.00	37.58
33	1		5			553	1900	70	33.00	47	90	19.82	8.75	49.60	5.35	100	100	0.00	22.53
34	1		5	4	B	179	1900	19	2.11	33	172	19.32	16.93	43.54	1.52	100	100	0.00	12.93
35	1		6			941	1900	70	14.00	50	82	23.37	0.93	0.00	0.24	100	100	0.00	3.45
36	1		6	5	C	593	1900	47	20.58	46	95	22.17	8.63	50.73	6.04	100	100	0.00	23.96
	2		6	5	C	1096	1900	47	5.37	87	4	27.44	14.50	68.06	15.84	100	100	14.69	86.74
	3		6	5	C	164	1900	47	28.00	13	615	12.62	0.20	0.00	0.01	100	100	0.00	0.13
37	1		6	5	D	198	1900	13	0.32	53	69	42.24	30.65	93.38	3.60	100	100	0.00	26.26
38	1		6	5	D	303	1900	13	0.58	83	8	56.62	49.38	121.71	7.45	100	100	0.00	63.64
39	1		6	5	D	193	1900	13	0.32	52	73	37.47	30.30	93.00	3.50	100	100	0.00	25.32
40	1		6			496	1900	70	0.00	26	245	4.55	0.33	0.00	0.05	100	100	0.00	0.65
41	1					786	Unrestricted	70	28.00	0	Unrestricted	18.23	0.00	0.00	0.00	100	100	0.00	0.00
42	1		7			1399	1900	70	12.00	74	22	10.63	2.63	0.00	1.02	100	100	0.00	14.50
43	1					525	Unrestricted	70	40.00	0	Unrestricted	10.74	0.00	0.00	0.00	100	100	0.00	0.00
44	1		7	6	A	874	1900	39	0.00	81	12	21.35	11.48	52.25	10.34	100	100	0.00	45.29
45	2		7	6	A	362	1900	39	10.00	33	170	20.30	2.79	47.57	4.47	100	100	0.00	6.14
46	1		7			936	1900	70	0.00	49	83	8.75	0.92	0.00	0.24	100	100	0.00	3.39

47	1		7			1053	1900	70	0.00	55	62	5.11	1.18	0.00	0.34	100	100	0.00	4.88
48	1		7	6	B	445	1900	20	0.84	81	11	59.67	36.45	103.29	9.15	100	100	0.00	69.74
49	1		7	6	B	163	1900	20	0.21	29	212	27.30	20.16	74.70	2.37	100	100	0.00	14.49
	2		7	6	B	445	1900	20	0.84	81	11	43.68	36.45	103.29	9.15	100	100	0.00	69.74
50	1		7			608	1900	70	0.00	32	181	16.33	0.45	0.00	0.08	100	100	0.00	1.07
51	1		7	6	B	468	1900	20	0.89	86	5	60.86	41.52	110.47	10.23	100	100	0.00	83.12
	2		7	6	B	468	1900	20	0.89	86	5	61.00	41.52	110.47	10.23	100	100	0.00	83.12
52	1					510	Unrestricted	70	9.00	0	Unrestricted	19.45	0.00	0.00	0.00	100	100	0.00	0.00
53	1		1			645	1900	70	19.00	34	165	1.49	0.49	0.00	0.09	100	100	0.00	1.24
	2		1			442	1900	70	19.00	23	287	1.29	0.29	0.00	0.04	100	100	0.00	0.50
	3		1			426	1900	70	19.00	22	301	1.27	0.27	0.00	0.03	100	100	0.00	0.46
54	1		1	1	A	706 <	1980	36	4.82	69	30	7.51	6.51	14.27	1.97 +	100	100	0.00	19.03
	2		1	1	A	706 <	1980	36	4.82	69	30	7.51	6.51	14.27	1.97 +	100	100	0.00	19.03

Network Results

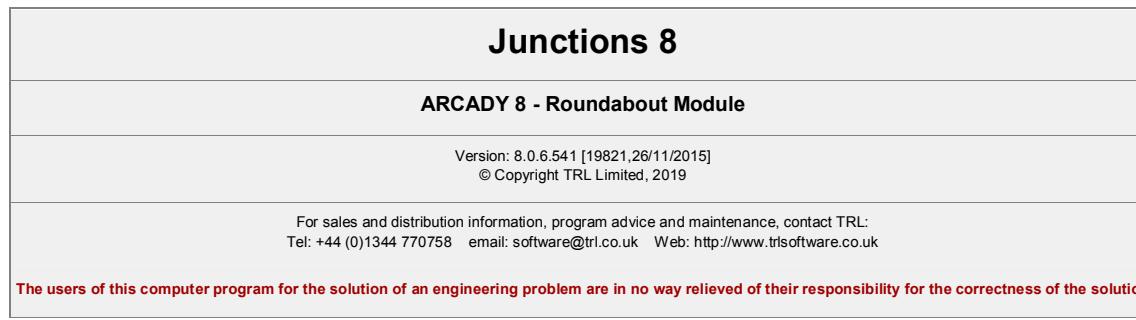
	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	3351.67	216.32	15.49	104.47	1483.48	154.16	173.43	1811.07
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	3351.67	216.32	15.49	104.47	1483.48	154.16	173.43	1811.07

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

Appendix E

**BURTONWOOD RD / WESTBROOK
WAY MODELLING RESULTS**





Filename: Westbrook Way_Burtonwood Road Roundabout_ISSUE z8.arc8

Path: M:\50400134 - Omega, Warrington\Omegamega, Warrington\ANALYSIS\Zone 8 Directory\JUNCTIONS 9

Report generation date: 25/11/2019 16:20:58

Summary of junction performance

	AM		PM	
	Queue (PCU)	RFC	Queue (PCU)	RFC
Proposed Layout (Zone 3) - Scenario 2				
Burtonwood Rd (N)	1.02	0.51	11.01	0.93
Westbrook Way	0.61	0.38	1.62	0.62
Burtonwood Rd (S)	0.19	0.16	0.08	0.08
Whittle Ave	3.77	0.79	1.28	0.56
Omega Access	1.23	0.55	0.37	0.27
Proposed Layout (Zone 3) - Scenario 5				
Burtonwood Rd (N)	1.17	0.54	8.00	0.90
Westbrook Way	0.60	0.38	1.75	0.64
Burtonwood Rd (S)	0.19	0.16	0.08	0.08
Whittle Ave	2.80	0.74	1.48	0.60
Omega Access	1.41	0.59	0.44	0.31

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

"D2 - Scenario 2, AM" model duration: 07:30 - 09:00
 "D5 - Scenario 5, AM" model duration: 07:30 - 09:00
 "D7 - Scenario 2, PM" model duration: 16:30 - 18:00
 "D10 - Scenario 5, PM" model duration: 16:30 - 18:00

Run using Junctions 8.0.6.541 at 25/11/2019 16:20:54

File summary

Title	(untitled)
Location	
Site Number	
Date	29/08/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	UKAPS002
Description	

Analysis Options

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

Units

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

Proposed Layout (Zone 3) - Scenario 2, AM

Data Errors and Warnings

Severity	Area	Item	Description

Warning	Geometry	Westbrook Way - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.			
Warning	Geometry	Whittle Ave - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.			

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Proposed Layout (Zone 3)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2, AM	Scenario 2	AM		ONE HOUR	07:30	09:00	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			6.38	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description
Burtonwood Rd (N)	1	Burtonwood Rd (N)	
Westbrook Way	2	Westbrook Way	
Burtonwood Rd (S)	3	Burtonwood Rd (S)	
Whittle Ave	4	Whittle Ave	
Omega Access	5	Omega Access	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
Burtonwood Rd (N)	0.00	99999.00
Westbrook Way	0.00	99999.00
Burtonwood Rd (S)	0.00	99999.00
Whittle Ave	0.00	99999.00
Omega Access	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Burtonwood Rd (N)	7.30	7.30	0.00	40.00	90.00	42.00	
Westbrook Way	3.70	7.90	100.00	40.00	90.00	39.00	
Burtonwood Rd (S)	3.18	7.50	22.40	45.00	90.00	24.00	
Whittle Ave	3.42	8.60	100.00	25.00	90.00	47.00	
Omega Access	5.50	7.44	12.20	25.00	90.00	32.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Burtonwood Rd (N)		(calculated)	(calculated)	0.520	2173.877
Westbrook Way		(calculated)	(calculated)	0.530	2227.719
Burtonwood Rd (S)		(calculated)	(calculated)	0.489	1858.046
Whittle Ave		(calculated)	(calculated)	0.526	2265.377
Omega Access		(calculated)	(calculated)	0.508	2061.920

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Burtonwood Rd (N)	ONE HOUR		743.00	100.000
Westbrook Way	ONE HOUR		599.00	100.000
Burtonwood Rd (S)	ONE HOUR		161.00	100.000
Whittle Ave	ONE HOUR		1457.00	100.000
Omega Access	ONE HOUR		581.00	100.000

Turning Proportions

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

From		To				
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
	Burtonwood Rd (N)	0.000	136.000	7.000	477.000	123.000
	Westbrook Way	170.000	0.000	9.000	369.000	51.000
	Burtonwood Rd (S)	40.000	40.000	0.000	81.000	0.000
	Whittle Ave	729.000	611.000	29.000	0.000	88.000
	Omega Access	280.000	111.000	0.000	190.000	0.000

Turning Proportions (PCU) - (untitled) (for whole period)

From		To				
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
	Burtonwood Rd (N)	0.00	0.18	0.01	0.64	0.17
	Westbrook Way	0.28	0.00	0.02	0.62	0.09
	Burtonwood Rd (S)	0.25	0.25	0.00	0.50	0.00
	Whittle Ave	0.50	0.42	0.02	0.00	0.06
	Omega Access	0.48	0.19	0.00	0.33	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

From		To				
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
	Burtonwood Rd (N)	1.000	1.000	1.000	1.000	1.000
	Westbrook Way	1.000	1.000	1.000	1.000	1.000
	Burtonwood Rd (S)	1.000	1.000	1.000	1.000	1.000
	Whittle Ave	1.000	1.000	1.000	1.000	1.000
	Omega Access	1.000	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

From		To				
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
	Burtonwood Rd (N)	0.0	0.0	0.0	0.0	0.0
	Westbrook Way	0.0	0.0	0.0	0.0	0.0
	Burtonwood Rd (S)	0.0	0.0	0.0	0.0	0.0
	Whittle Ave	0.0	0.0	0.0	0.0	0.0
	Omega Access	0.0	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
Burtonwood Rd (N)	0.51	4.53	1.02	A
Westbrook Way	0.38	3.31	0.61	A
Burtonwood Rd (S)	0.16	3.84	0.19	A
Whittle Ave	0.79	8.64	3.77	A
Omega Access	0.55	6.97	1.23	A

Main Results for each time segment

Main results: (07:30-07:45)

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	559.37	557.56	735.65	0.00	1791.52	0.312	0.45	2.914	A
Westbrook Way	450.96	449.72	619.73	0.00	1899.49	0.237	0.31	2.480	A
Burtonwood Rd (S)	121.21	120.82	1035.69	0.00	1351.65	0.090	0.10	2.925	A
Whittle Ave	1096.91	1092.56	318.26	0.00	2098.02	0.523	1.09	3.567	A
Omega Access	437.41	435.68	1214.24	0.00	1444.87	0.303	0.43	3.561	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	667.94	667.22	880.33	0.00	1716.32	0.389	0.63	3.430	A
Westbrook Way	538.49	538.08	741.63	0.00	1834.92	0.293	0.41	2.776	A
Burtonwood Rd (S)	144.74	144.61	1239.32	0.00	1252.08	0.116	0.13	3.250	A
Whittle Ave	1309.81	1307.32	380.83	0.00	2065.11	0.634	1.71	4.736	A
Omega Access	522.31	521.45	1452.92	0.00	1323.57	0.395	0.65	4.483	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	818.06	816.53	1075.39	0.00	1614.93	0.507	1.02	4.501	A
Westbrook Way	659.51	658.75	907.30	0.00	1747.18	0.377	0.60	3.306	A
Burtonwood Rd (S)	177.26	177.03	1516.69	0.00	1116.46	0.159	0.19	3.832	A
Whittle Ave	1604.19	1596.26	466.19	0.00	2020.23	0.794	3.69	8.338	A
Omega Access	639.69	637.44	1774.77	0.00	1160.02	0.551	1.21	6.862	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	818.06	818.03	1079.93	0.00	1612.58	0.507	1.02	4.530	A

Westbrook Way	659.51	659.50	909.39	0.00	1746.07	0.378	0.61	3.312	A
Burtonwood Rd (S)	177.26	177.26	1519.35	0.00	1115.16	0.159	0.19	3.837	A
Whittle Ave	1604.19	1603.87	466.82	0.00	2019.89	0.794	3.77	8.635	A
Omega Access	639.69	639.63	1782.25	0.00	1156.22	0.553	1.23	6.966	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	667.94	669.46	886.66	0.00	1713.03	0.390	0.64	3.456	A
Westbrook Way	538.49	539.24	744.70	0.00	1833.30	0.294	0.42	2.785	A
Burtonwood Rd (S)	144.74	144.96	1243.30	0.00	1250.14	0.116	0.13	3.257	A
Whittle Ave	1309.81	1317.86	381.81	0.00	2064.60	0.634	1.76	4.871	A
Omega Access	522.31	524.57	1463.34	0.00	1318.28	0.396	0.66	4.549	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	559.37	560.11	740.19	0.00	1789.15	0.313	0.46	2.930	A
Westbrook Way	450.96	451.38	622.81	0.00	1897.86	0.238	0.31	2.491	A
Burtonwood Rd (S)	121.21	121.34	1040.24	0.00	1349.42	0.090	0.10	2.931	A
Whittle Ave	1096.91	1099.52	319.55	0.00	2097.34	0.523	1.11	3.619	A
Omega Access	437.41	438.30	1221.51	0.00	1441.17	0.304	0.44	3.591	A

Proposed Layout (Zone 3) - Scenario 5, AM

Data Errors and Warnings

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

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Proposed Layout (Zone 3)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 5, AM	Scenario 5	AM		ONE HOUR	07:30	09:00	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			5.75	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description
Burtonwood Rd (N)	1	Burtonwood Rd (N)	
Westbrook Way	2	Westbrook Way	
Burtonwood Rd (S)	3	Burtonwood Rd (S)	
Whittle Ave	4	Whittle Ave	
Omega Access	5	Omega Access	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
Burtonwood Rd (N)	0.00	99999.00
Westbrook Way	0.00	99999.00
Burtonwood Rd (S)	0.00	99999.00
Whittle Ave	0.00	99999.00
Omega Access	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Burtonwood Rd (N)	7.30	7.30	0.00	40.00	90.00	42.00	
Westbrook Way	3.70	7.90	100.00	40.00	90.00	39.00	
Burtonwood Rd (S)	3.18	7.50	22.40	45.00	90.00	24.00	
Whittle Ave	3.42	8.60	100.00	25.00	90.00	47.00	
Omega Access	5.50	7.44	12.20	25.00	90.00	32.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Burtonwood Rd (N)		(calculated)	(calculated)	0.520	2173.877
Westbrook Way		(calculated)	(calculated)	0.530	2227.719
Burtonwood Rd (S)		(calculated)	(calculated)	0.489	1858.046
Whittle Ave		(calculated)	(calculated)	0.526	2265.377
Omega Access		(calculated)	(calculated)	0.508	2061.920

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
			780.00	100.000
Westbrook Way	ONE HOUR		583.00	100.000

Burtonwood Rd (S)	ONE HOUR		161.00	100.000
Whittle Ave	ONE HOUR		1360.00	100.000
Omega Access	ONE HOUR		658.00	100.000

Turning Proportions

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

From		To				
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
	Burtonwood Rd (N)	0.000	131.000	22.000	488.000	139.000
	Westbrook Way	140.000	0.000	9.000	377.000	57.000
	Burtonwood Rd (S)	40.000	40.000	0.000	81.000	0.000
	Whittle Ave	620.000	612.000	29.000	0.000	99.000
	Omega Access	318.000	125.000	0.000	215.000	0.000

Turning Proportions (PCU) - (untitled) (for whole period)

From		To				
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
	Burtonwood Rd (N)	0.00	0.17	0.03	0.63	0.18
	Westbrook Way	0.24	0.00	0.02	0.65	0.10
	Burtonwood Rd (S)	0.25	0.25	0.00	0.50	0.00
	Whittle Ave	0.46	0.45	0.02	0.00	0.07
	Omega Access	0.48	0.19	0.00	0.33	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

From		To				
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
	Burtonwood Rd (N)	1.000	1.000	1.000	1.000	1.000

	Westbrook Way	1.000	1.000	1.000	1.000	1.000
	Burtonwood Rd (S)	1.000	1.000	1.000	1.000	1.000
	Whittle Ave	1.000	1.000	1.000	1.000	1.000
	Omega Access	1.000	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

	To					
From	Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access	
	Burtonwood Rd (N)	0.0	0.0	0.0	0.0	0.0
	Westbrook Way	0.0	0.0	0.0	0.0	0.0
	Burtonwood Rd (S)	0.0	0.0	0.0	0.0	0.0
	Whittle Ave	0.0	0.0	0.0	0.0	0.0
	Omega Access	0.0	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
Burtonwood Rd (N)	0.54	4.92	1.17	A
Westbrook Way	0.38	3.38	0.60	A
Burtonwood Rd (S)	0.16	3.92	0.19	A
Whittle Ave	0.74	6.82	2.80	A
Omega Access	0.59	7.07	1.41	A

Main Results for each time segment

Main results: (07:30-07:45)

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
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Burtonwood Rd (N)	587.22	585.26	765.77	0.00	1775.86	0.331	0.49	3.018	A
Westbrook Way	438.91	437.69	669.94	0.00	1872.89	0.234	0.30	2.506	A
Burtonwood Rd (S)	121.21	120.81	1062.62	0.00	1338.48	0.091	0.10	2.956	A
Whittle Ave	1023.88	1020.10	312.23	0.00	2101.19	0.487	0.94	3.319	A
Omega Access	495.38	493.41	1110.98	0.00	1497.34	0.331	0.49	3.580	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	701.20	700.37	916.40	0.00	1697.57	0.413	0.70	3.606	A
Westbrook Way	524.11	523.69	801.73	0.00	1803.09	0.291	0.41	2.814	A
Burtonwood Rd (S)	144.74	144.60	1271.56	0.00	1236.32	0.117	0.13	3.297	A
Whittle Ave	1222.61	1220.67	373.62	0.00	2068.90	0.591	1.43	4.235	A
Omega Access	591.53	590.54	1329.43	0.00	1386.33	0.427	0.74	4.518	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	858.80	856.96	1120.22	0.00	1591.63	0.540	1.16	4.888	A
Westbrook Way	641.89	641.13	980.72	0.00	1708.29	0.376	0.60	3.372	A
Burtonwood Rd (S)	177.26	177.03	1555.96	0.00	1097.26	0.162	0.19	3.911	A
Whittle Ave	1497.39	1492.06	457.32	0.00	2024.89	0.739	2.76	6.690	A
Omega Access	724.47	721.86	1625.37	0.00	1235.94	0.586	1.39	6.968	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	858.80	858.76	1124.03	0.00	1589.65	0.540	1.17	4.925	A
Westbrook Way	641.89	641.89	983.15	0.00	1707.00	0.376	0.60	3.379	A
Burtonwood Rd (S)	177.26	177.26	1558.98	0.00	1095.78	0.162	0.19	3.919	A
Whittle Ave	1497.39	1497.23	458.01	0.00	2024.53	0.740	2.80	6.823	A
Omega Access	724.47	724.40	1630.46	0.00	1233.35	0.587	1.41	7.070	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	701.20	703.03	921.79	0.00	1694.77	0.414	0.71	3.638	A
Westbrook Way	524.11	524.86	805.28	0.00	1801.21	0.291	0.41	2.821	A
Burtonwood Rd (S)	144.74	144.97	1276.02	0.00	1234.14	0.117	0.13	3.305	A
Whittle Ave	1222.61	1227.96	374.67	0.00	2068.35	0.591	1.46	4.310	A
Omega Access	591.53	594.15	1336.65	0.00	1382.66	0.428	0.75	4.580	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	587.22	588.08	770.17	0.00	1773.57	0.331	0.50	3.038	A
Westbrook Way	438.91	439.33	673.38	0.00	1871.07	0.235	0.31	2.514	A
Burtonwood Rd (S)	121.21	121.34	1067.47	0.00	1336.11	0.091	0.10	2.963	A
Whittle Ave	1023.88	1025.90	313.55	0.00	2100.50	0.487	0.96	3.355	A
Omega Access	495.38	496.40	1117.01	0.00	1494.28	0.332	0.50	3.610	A

Proposed Layout (Zone 3) - Scenario 2, PM

Data Errors and Warnings

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

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Proposed Layout (Zone 3)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2, PM	Scenario 2	PM		ONE HOUR	16:30	18:00	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(Untitled)	Roundabout	1,2,3,4,5			13.22	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description
Burtonwood Rd (N)	1	Burtonwood Rd (N)	
Westbrook Way	2	Westbrook Way	
Burtonwood Rd (S)	3	Burtonwood Rd (S)	
Whittle Ave	4	Whittle Ave	
Omega Access	5	Omega Access	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
Burtonwood Rd (N)	0.00	99999.00
Westbrook Way	0.00	99999.00
Burtonwood Rd (S)	0.00	99999.00
Whittle Ave	0.00	99999.00
Omega Access	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Burtonwood Rd (N)	7.30	7.30	0.00	40.00	90.00	42.00	
Westbrook Way	3.70	7.90	100.00	40.00	90.00	39.00	
Burtonwood Rd (S)	3.18	7.50	22.40	45.00	90.00	24.00	

Whittle Ave	3.42	8.60	100.00	25.00	90.00	47.00	
Omega Access	5.50	7.44	12.20	25.00	90.00	32.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Burtonwood Rd (N)		(calculated)	(calculated)	0.520	2173.877
Westbrook Way		(calculated)	(calculated)	0.530	2227.719
Burtonwood Rd (S)		(calculated)	(calculated)	0.489	1858.046
Whittle Ave		(calculated)	(calculated)	0.526	2265.377
Omega Access		(calculated)	(calculated)	0.508	2061.920

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Burtonwood Rd (N)	ONE HOUR		1513.00	100.000
Westbrook Way	ONE HOUR		795.00	100.000
Burtonwood Rd (S)	ONE HOUR		52.00	100.000
Whittle Ave	ONE HOUR		1003.00	100.000
Omega Access	ONE HOUR		374.00	100.000

Turning Proportions

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

	To					
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
From	Burtonwood Rd (N)	0.000	275.000	31.000	924.000	283.000
	Westbrook Way	121.000	0.000	38.000	529.000	107.000
	Burtonwood Rd (S)	9.000	10.000	0.000	33.000	0.000
	Whittle Ave	359.000	415.000	45.000	0.000	184.000
	Omega Access	179.000	68.000	0.000	127.000	0.000

Turning Proportions (PCU) - (untitled) (for whole period)

	To					
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
From	Burtonwood Rd (N)	0.00	0.18	0.02	0.61	0.19
	Westbrook Way	0.15	0.00	0.05	0.67	0.13
	Burtonwood Rd (S)	0.17	0.19	0.00	0.63	0.00
	Whittle Ave	0.36	0.41	0.04	0.00	0.18
	Omega Access	0.48	0.18	0.00	0.34	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

	To					
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
From	Burtonwood Rd (N)	1.000	1.000	1.000	1.000	1.000
	Westbrook Way	1.000	1.000	1.000	1.000	1.000
	Burtonwood Rd (S)	1.000	1.000	1.000	1.000	1.000
	Whittle Ave	1.000	1.000	1.000	1.000	1.000
	Omega Access	1.000	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

From		To				
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
	Burtonwood Rd (N)	0.0	0.0	0.0	0.0	0.0
	Westbrook Way	0.0	0.0	0.0	0.0	0.0
	Burtonwood Rd (S)	0.0	0.0	0.0	0.0	0.0
	Whittle Ave	0.0	0.0	0.0	0.0	0.0
	Omega Access	0.0	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
Burtonwood Rd (N)	0.93	25.33	11.01	D
Westbrook Way	0.62	6.76	1.62	A
Burtonwood Rd (S)	0.08	5.32	0.08	A
Whittle Ave	0.56	4.21	1.28	A
Omega Access	0.27	3.23	0.37	A

Main Results for each time segment

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	1139.07	1133.26	499.15	0.00	1914.44	0.595	1.45	4.575	A
Westbrook Way	598.52	596.29	1056.40	0.00	1668.21	0.359	0.56	3.351	A
Burtonwood Rd (S)	39.15	39.00	1567.20	0.00	1091.77	0.036	0.04	3.419	A
Whittle Ave	755.11	752.80	397.23	0.00	2056.49	0.367	0.58	2.757	A
Omega Access	281.57	280.77	719.71	0.00	1696.18	0.166	0.20	2.542	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	1360.16	1355.45	597.26	0.00	1863.44	0.730	2.63	7.020	A
Westbrook Way	714.69	713.55	1263.58	0.00	1558.48	0.459	0.84	4.256	A
Burtonwood Rd (S)	46.75	46.69	1874.84	0.00	941.34	0.050	0.05	4.023	A
Whittle Ave	901.68	900.77	475.23	0.00	2015.47	0.447	0.80	3.226	A
Omega Access	336.22	335.97	861.19	0.00	1624.28	0.207	0.26	2.794	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	1665.84	1637.17	731.07	0.00	1793.90	0.929	9.80	20.095	C
Westbrook Way	875.31	872.34	1528.75	0.00	1418.03	0.617	1.58	6.562	A
Burtonwood Rd (S)	57.25	57.13	2276.38	0.00	745.01	0.077	0.08	5.233	A
Whittle Ave	1104.32	1102.44	577.28	0.00	1961.81	0.563	1.27	4.179	A
Omega Access	411.78	411.35	1053.85	0.00	1526.38	0.270	0.37	3.229	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	1665.84	1661.00	732.16	0.00	1793.33	0.929	11.01	25.332	D
Westbrook Way	875.31	875.15	1548.47	0.00	1407.59	0.622	1.62	6.757	A
Burtonwood Rd (S)	57.25	57.25	2298.21	0.00	734.33	0.078	0.08	5.316	A
Whittle Ave	1104.32	1104.28	582.59	0.00	1959.02	0.564	1.28	4.211	A
Omega Access	411.78	411.78	1055.82	0.00	1525.37	0.270	0.37	3.232	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	1360.16	1393.04	598.92	0.00	1862.58	0.730	2.79	8.177	A
Westbrook Way	714.69	717.70	1294.69	0.00	1542.00	0.463	0.87	4.384	A
Burtonwood Rd (S)	46.75	46.87	1909.00	0.00	924.64	0.051	0.05	4.101	A
Whittle Ave	901.68	903.54	483.52	0.00	2011.12	0.448	0.82	3.255	A

Omega Access	336.22	336.64	864.15	0.00	1622.78	0.207	0.26	2.801	A
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Main results: (17:45-18:00)

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	1139.07	1144.26	501.22	0.00	1913.36	0.595	1.49	4.713	A
Westbrook Way	598.52	599.74	1065.90	0.00	1663.18	0.360	0.57	3.388	A
Burtonwood Rd (S)	39.15	39.21	1579.61	0.00	1085.70	0.036	0.04	3.442	A
Whittle Ave	755.11	756.05	400.36	0.00	2054.85	0.367	0.58	2.773	A
Omega Access	281.57	281.82	722.96	0.00	1694.53	0.166	0.20	2.550	A

Proposed Layout (Zone 3) - Scenario 5, PM

Data Errors and Warnings

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

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Proposed Layout (Zone 3)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 5, PM	Scenario 5	PM		ONE HOUR	16:30	18:00	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			10.54	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description
Burtonwood Rd (N)	1	Burtonwood Rd (N)	
Westbrook Way	2	Westbrook Way	
Burtonwood Rd (S)	3	Burtonwood Rd (S)	
Whittle Ave	4	Whittle Ave	
Omega Access	5	Omega Access	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
Burtonwood Rd (N)	0.00	99999.00
Westbrook Way	0.00	99999.00
Burtonwood Rd (S)	0.00	99999.00
Whittle Ave	0.00	99999.00
Omega Access	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Burtonwood Rd (N)	7.30	7.30	0.00	40.00	90.00	42.00	
Westbrook Way	3.70	7.90	100.00	40.00	90.00	39.00	
Burtonwood Rd (S)	3.18	7.50	22.40	45.00	90.00	24.00	
Whittle Ave	3.42	8.60	100.00	25.00	90.00	47.00	
Omega Access	5.50	7.44	12.20	25.00	90.00	32.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Burtonwood Rd (N)		(calculated)	(calculated)	0.520	2173.877
Westbrook Way		(calculated)	(calculated)	0.530	2227.719
Burtonwood Rd (S)		(calculated)	(calculated)	0.489	1858.046
Whittle Ave		(calculated)	(calculated)	0.526	2265.377
Omega Access		(calculated)	(calculated)	0.508	2061.920

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Burtonwood Rd (N)	ONE HOUR		1447.00	100.000
Westbrook Way	ONE HOUR		824.00	100.000
Burtonwood Rd (S)	ONE HOUR		52.00	100.000
Whittle Ave	ONE HOUR		1047.00	100.000
Omega Access	ONE HOUR		420.00	100.000

Turning Proportions

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

From	To					
	Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access	

	Burtonwood Rd (N)	0.000	246.000	39.000	843.000	319.000
	Westbrook Way	131.000	0.000	38.000	534.000	121.000
	Burtonwood Rd (S)	9.000	10.000	0.000	33.000	0.000
	Whittle Ave	370.000	424.000	45.000	0.000	208.000
	Omega Access	201.000	77.000	0.000	142.000	0.000

Turning Proportions (PCU) - (untitled) (for whole period)

		To				
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
From	Burtonwood Rd (N)	0.00	0.17	0.03	0.58	0.22
	Westbrook Way	0.16	0.00	0.05	0.65	0.15
	Burtonwood Rd (S)	0.17	0.19	0.00	0.63	0.00
	Whittle Ave	0.35	0.40	0.04	0.00	0.20
	Omega Access	0.48	0.18	0.00	0.34	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

		To				
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
From	Burtonwood Rd (N)	1.000	1.000	1.000	1.000	1.000
	Westbrook Way	1.000	1.000	1.000	1.000	1.000
	Burtonwood Rd (S)	1.000	1.000	1.000	1.000	1.000
	Whittle Ave	1.000	1.000	1.000	1.000	1.000
	Omega Access	1.000	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

		To				
		Burtonwood Rd (N)	Westbrook Way	Burtonwood Rd (S)	Whittle Ave	Omega Access
From	Burtonwood Rd (N)	0.0	0.0	0.0	0.0	0.0

	Westbrook Way	0.0	0.0	0.0	0.0	0.0
	Burtonwood Rd (S)	0.0	0.0	0.0	0.0	0.0
	Whittle Ave	0.0	0.0	0.0	0.0	0.0
	Omega Access	0.0	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
Burtonwood Rd (N)	0.90	19.05	8.00	C
Westbrook Way	0.64	7.02	1.75	A
Burtonwood Rd (S)	0.08	5.32	0.08	A
Whittle Ave	0.60	4.67	1.48	A
Omega Access	0.31	3.44	0.44	A

Main Results for each time segment

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	1089.38	1084.07	523.85	0.00	1901.60	0.573	1.33	4.376	A
Westbrook Way	620.35	618.02	1040.14	0.00	1676.82	0.370	0.58	3.393	A
Burtonwood Rd (S)	39.15	39.00	1566.66	0.00	1092.03	0.036	0.04	3.418	A
Whittle Ave	788.24	785.72	442.25	0.00	2032.82	0.388	0.63	2.880	A
Omega Access	316.20	315.28	742.13	0.00	1684.79	0.188	0.23	2.627	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	1300.82	1296.84	626.85	0.00	1848.07	0.704	2.32	6.485	A

Westbrook Way	740.76	739.55	1244.33	0.00	1568.67	0.472	0.89	4.336	A
Burtonwood Rd (S)	46.75	46.69	1874.41	0.00	941.55	0.050	0.05	4.022	A
Whittle Ave	941.23	940.18	529.13	0.00	1987.13	0.474	0.89	3.435	A
Omega Access	377.57	377.27	888.03	0.00	1610.64	0.234	0.30	2.918	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	1593.18	1572.79	767.17	0.00	1775.13	0.898	7.42	16.368	C
Westbrook Way	907.24	903.95	1511.02	0.00	1427.43	0.636	1.71	6.877	A
Burtonwood Rd (S)	57.25	57.13	2281.44	0.00	742.53	0.077	0.08	5.252	A
Whittle Ave	1152.77	1150.46	644.06	0.00	1926.69	0.598	1.47	4.623	A
Omega Access	462.43	461.89	1086.49	0.00	1509.79	0.306	0.44	3.433	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	1593.18	1590.86	768.48	0.00	1774.45	0.898	8.00	19.046	C
Westbrook Way	907.24	907.09	1526.29	0.00	1419.34	0.639	1.75	7.023	A
Burtonwood Rd (S)	57.25	57.25	2299.12	0.00	733.89	0.078	0.08	5.319	A
Whittle Ave	1152.77	1152.72	649.04	0.00	1924.07	0.599	1.48	4.667	A
Omega Access	462.43	462.42	1088.84	0.00	1508.59	0.307	0.44	3.440	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Burtonwood Rd (N)	1300.82	1323.05	628.82	0.00	1847.04	0.704	2.44	7.150	A
Westbrook Way	740.76	744.09	1266.51	0.00	1556.92	0.476	0.92	4.448	A
Burtonwood Rd (S)	46.75	46.87	1900.07	0.00	929.01	0.050	0.05	4.082	A
Whittle Ave	941.23	943.53	536.36	0.00	1983.33	0.475	0.91	3.468	A
Omega Access	377.57	378.10	891.51	0.00	1608.87	0.235	0.31	2.927	A

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

Name	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
Westbrook Way	740.76	744.09	1266.51	0.00	1556.92	0.476	0.92	4.448	A

Burtonwood Rd (N)	1089.38	1093.70	526.15	0.00	1900.41	0.573	1.36	4.487	A
Westbrook Way	620.35	621.64	1048.70	0.00	1672.29	0.371	0.59	3.429	A
Burtonwood Rd (S)	39.15	39.21	1578.27	0.00	1086.35	0.036	0.04	3.439	A
Whittle Ave	788.24	789.33	445.55	0.00	2031.08	0.388	0.64	2.903	A
Omega Access	316.20	316.50	745.67	0.00	1682.98	0.188	0.23	2.636	A

Appendix E

BURTONWOOD RD / KINGSWOOD ROAD EXISTING LAYOUT MODELLING RESULTS



Basic Results Summary

Basic Results Summary

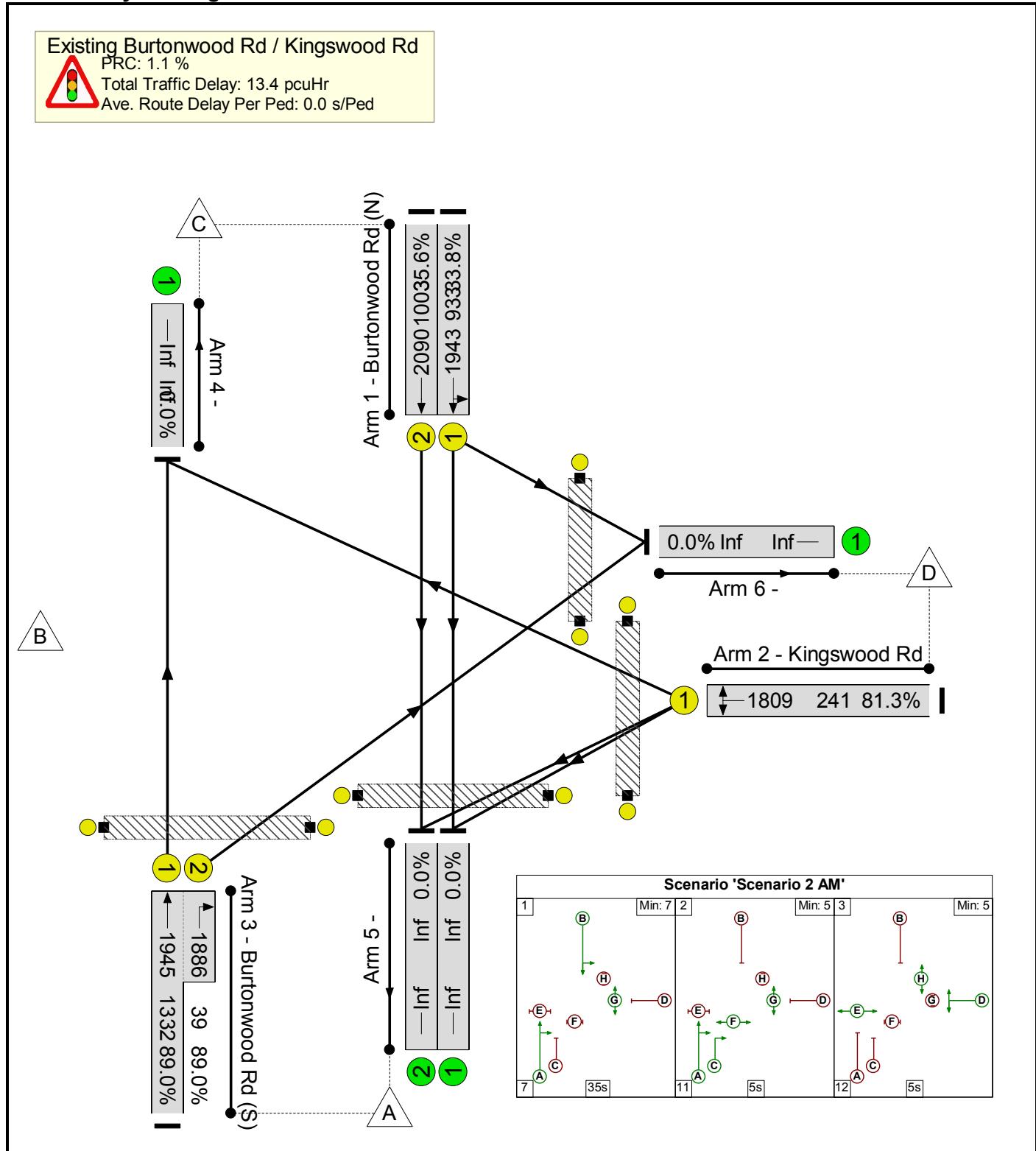
User and Project Details

Project:	Omega West TA
Title:	Existing Burtonwood Rd/ Kingswood Rd
Location:	
File name:	Burtonwood Rd_Kingswood _Existing Layout_ISSUE.lsg3x
Author:	UKAPS002
Company:	WSP UK
Address:	
Notes:	

Basic Results Summary

Scenario 1: 'Scenario 2 AM' (FG3: 'Scenario 2 - 2021 Base AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

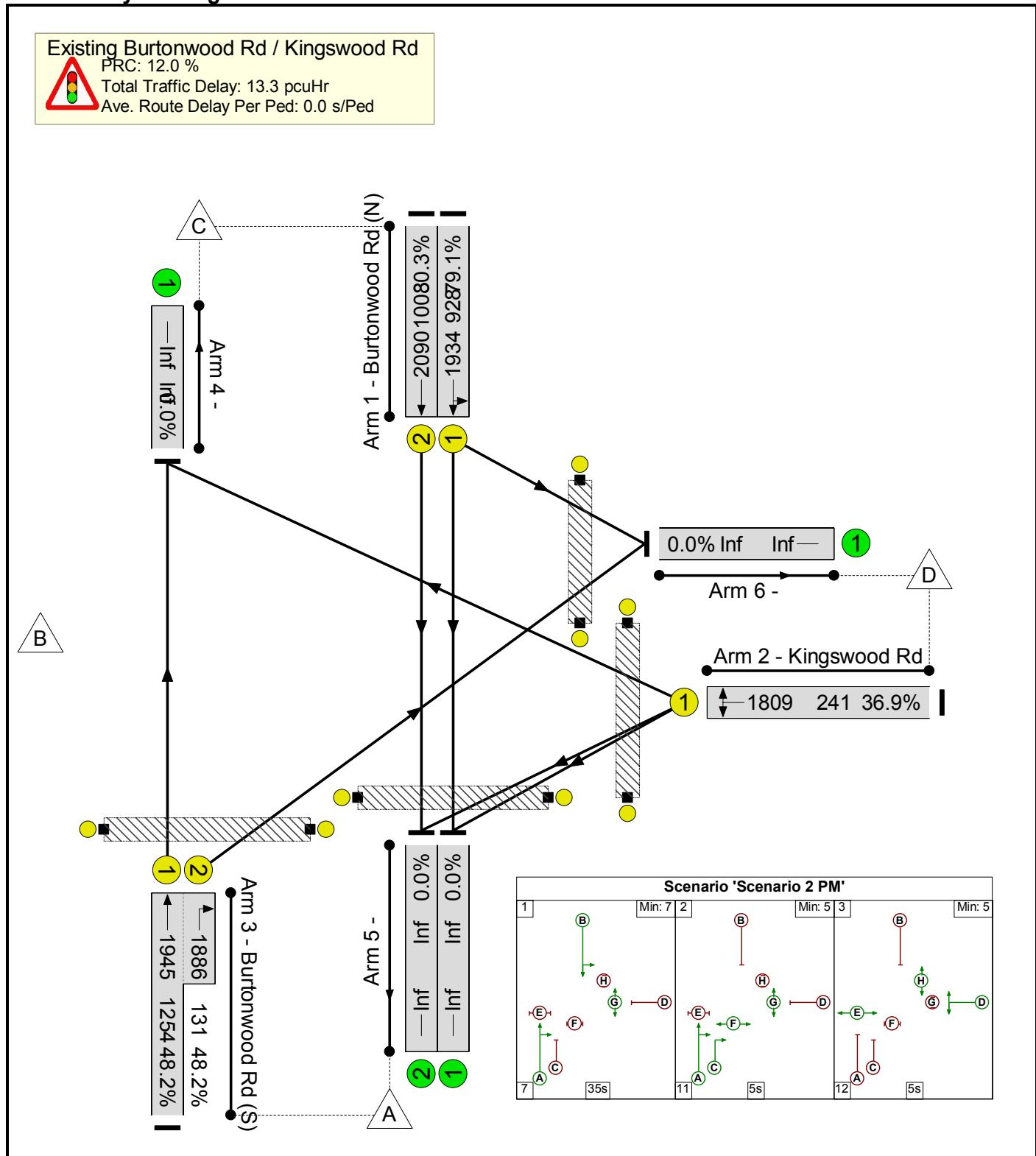
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcu/Hr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Existing Burtonwood Rd/ Kingswood Rd	-	-	-	-	-	-	-	-	-	-	89.0%	0	0	0	13.4	-	-
Existing Burtonwood Rd / Kingswood Rd	-	-	-	-	-	-	-	-	-	-	89.0%	0	0	0	13.4	-	-
1/1	Burtonwood Rd (N) Ahead Left	U	B		1	35	-	315	1943	933	33.8%	-	-	-	1.3	15.0	4.3
1/2	Burtonwood Rd (N) Ahead	U	B		1	35	-	357	2090	1003	35.6%	-	-	-	1.5	15.0	4.9
2/1	Kingswood Rd Right Left	U	D		1	9	-	196	1809	241	81.3%	-	-	-	3.7	68.2	5.9
3/1+3/2	Burtonwood Rd (S) Ahead Right	U	A	C	1	51	7	1220	1945:1886	1332+39	89.0 : 89.0%	-	-	-	6.9	20.4	23.7
Ped Link: P1	Unnamed Ped Link	-	G		1	52	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	H		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	E		1	10	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	F		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1		PRC for Signalled Lanes (%): PRC Over All Lanes (%):				1.1	1.1	Total Delay for Signalled Lanes (pcu/Hr): Total Delay Over All Lanes(pcu/Hr):				13.42	Cycle Time (s): 75				

Basic Results Summary

Scenario 2: 'Scenario 2 PM' (FG4: 'Scenario 2 - 2021 Base PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Existing Burtonwood Rd/ Kingswood Rd	-	-	-	-	-	-	-	-	-	-	80.3%	0	0	0	13.3	-	-
Existing Burtonwood Rd / Kingswood Rd	-	-	-	-	-	-	-	-	-	-	80.3%	0	0	0	13.3	-	-
1/1	Burtonwood Rd (N) Ahead Left	U	B		1	35	-	734	1934	928	79.1%	-	-	-	5.2	25.4	14.5
1/2	Burtonwood Rd (N) Ahead	U	B		1	35	-	806	2090	1003	80.3%	-	-	-	5.7	25.5	16.1
2/1	Kingswood Rd Right Left	U	D		1	9	-	89	1809	241	36.9%	-	-	-	1.0	41.4	2.0
3/1+3/2	Burtonwood Rd (S) Ahead Right	U	A	C	1	51	7	667	1945:1886	1254+131	48.2% : 48.2%	-	-	-	1.4	7.5	6.0
Ped Link: P1	Unnamed Ped Link	-	G		1	52	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	H		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	E		1	10	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	F		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1		PRC for Signalled Lanes (%): PRC Over All Lanes (%):				12.0	12.0	Total Delay for Signalled Lanes (pcuHr): Total Delay Over All Lanes(pcuHr):				13.30	Cycle Time (s): 75				

Appendix E

BURTONWOOD RD / KINGSWOOD ROAD PROPOSED LAYOUT MODELLING RESULTS



Basic Results Summary

Basic Results Summary

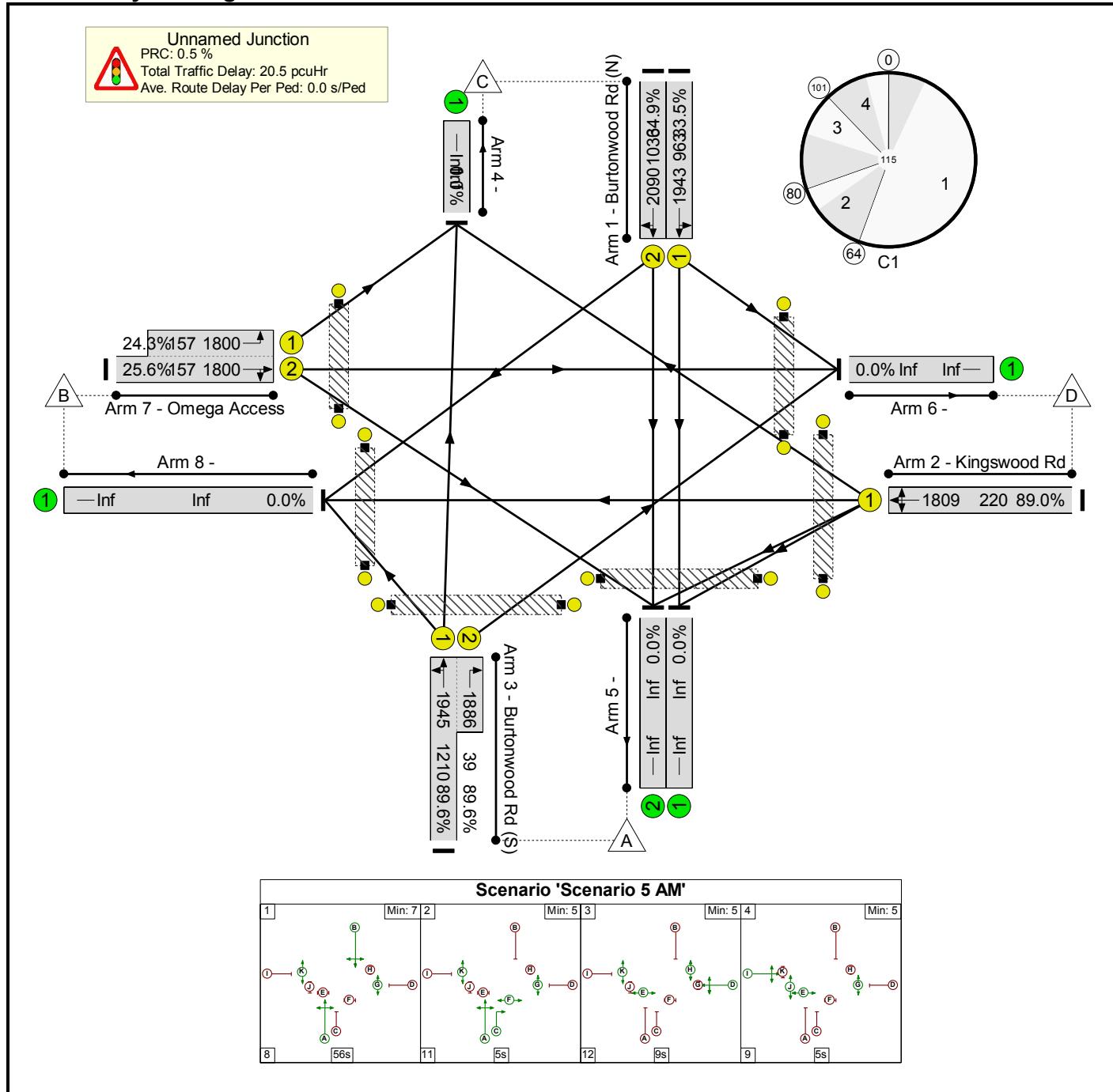
User and Project Details

Project:	Omega West, St Helens
Title:	Proposed Burtonwood Rd / Kingswood Rd / Omega Ah 4-7 Access
Location:	
File name:	Burtonwood Rd_Kingswood _Proposed Layout_ISSUE sc5.lsg3x
Author:	UKAPS002
Company:	WSPUK
Address:	
Notes:	

Basic Results Summary

Scenario 1: 'Scenario 5 AM' (FG5: 'Scenario 5 AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

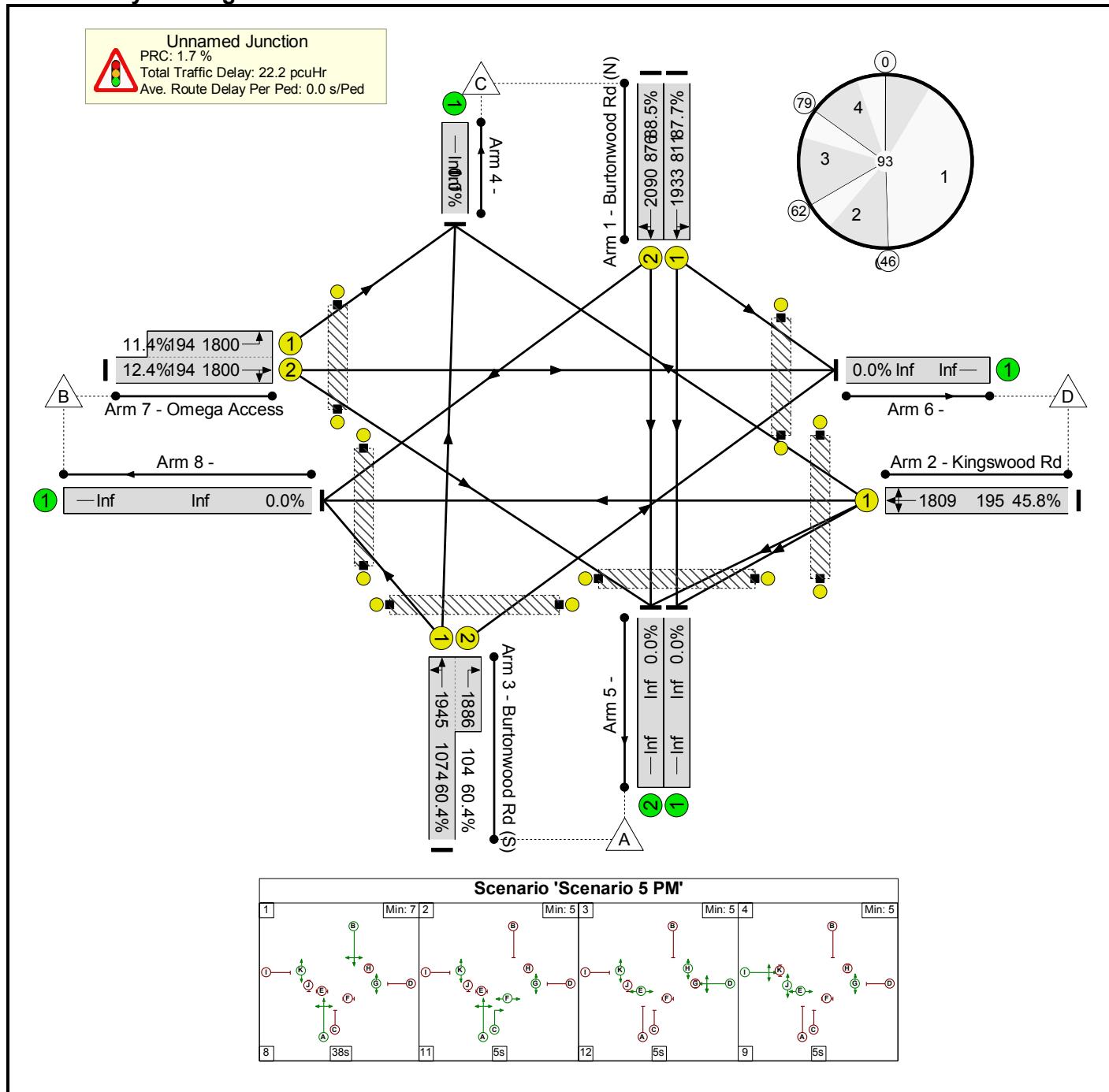
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	89.6%	0	0	0	20.5	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	89.6%	0	0	0	20.5	-	-
1/1	Burtonwood Rd (N) Ahead Left	U	B		1	56	-	323	1943	963	33.5%	-	-	-	1.8	20.4	6.4
1/2	Burtonwood Rd (N) Ahead Right	U	B		1	56	-	362	2090	1036	34.9%	-	-	-	2.0	20.4	7.3
2/1	Kingswood Rd Right Left Ahead	U	D		1	13	-	196	1809	220	89.0%	-	-	-	5.9	108.5	9.4
3/1+3/2	Burtonwood Rd (S) Ahead Right Left	U	A	C	1	72	7	1119	1945:1886	1210+39	89.6 : 89.6%	-	-	-	9.5	30.5	33.7
7/2+7/1	Omega Access Left Right Ahead	U	I		1	9	-	78	1800:1800	157+157	25.6 : 24.3%	-	-	-	1.2	56.7	1.4
Ped Link: P1	Unnamed Ped Link	-	G		1	96	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	H		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	E		1	28	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	F		1	13	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P5	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P6	Unnamed Ped Link	-	K		1	96	-	0	-	0	0.0%	-	-	-	-	-	-
C1				PRC for Signalled Lanes (%): 0.5			Total Delay for Signalled Lanes (pcuHr): 20.49			Cycle Time (s): 115							
				PRC Over All Lanes (%): 0.5			Total Delay Over All Lanes(pcuHr): 20.49										

Basic Results Summary

Scenario 2: 'Scenario 5 PM' (FG6: 'Scenario 5 PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
Network	-	-	-		-	-	-	-	-	-	88.5%	0	0	0	22.2	-	-	
Unnamed Junction	-	-	-		-	-	-	-	-	-	88.5%	0	0	0	22.2	-	-	
1/1	Burtonwood Rd (N) Ahead Left	U	B		1	38	-	711	1933	811	87.7%	-	-	-	8.2	41.7	20.1	
1/2	Burtonwood Rd (N) Ahead Right	U	B		1	38	-	776	2090	876	88.5%	-	-	-	9.0	41.7	21.9	
2/1	Kingswood Rd Right Left Ahead	U	D		1	9	-	89	1809	195	45.8%	-	-	-	1.4	55.9	2.6	
3/1+3/2	Burtonwood Rd (S) Ahead Right Left	U	A	C	1	54	7	711	1945:1886	1074+104	60.4 : 60.4%	-	-	-	3.1	15.4	11.6	
7/2+7/1	Omega Access Left Right Ahead	U	I		1	9	-	46	1800:1800	194+194	12.4 : 11.4%	-	-	-	0.5	42.8	0.6	
Ped Link: P1	Unnamed Ped Link	-	G		1	78	-	0	-	0	0.0%	-	-	-	-	-	-	
Ped Link: P2	Unnamed Ped Link	-	H		1	5	-	0	-	0	0.0%	-	-	-	-	-	-	
Ped Link: P3	Unnamed Ped Link	-	E		1	24	-	0	-	0	0.0%	-	-	-	-	-	-	
Ped Link: P4	Unnamed Ped Link	-	F		1	13	-	0	-	0	0.0%	-	-	-	-	-	-	
Ped Link: P5	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-	
Ped Link: P6	Unnamed Ped Link	-	K		1	74	-	0	-	0	0.0%	-	-	-	-	-	-	
C1				PRC for Signalled Lanes (%): PRC Over All Lanes (%):			1.7 1.7	Total Delay for Signalled Lanes (pcuHr): Total Delay Over All Lanes(pcuHr):			22.20 22.20	Cycle Time (s): 93						

Appendix E

FAIRCHILD ROAD / SKYLINE DRIVE PROPOSED LAYOUT MODELLING RESULTS



Junctions 9								
ARCADY 9 - Roundabout Module								
Version: 9.5.0.6896								
© Copyright TRL Limited, 2018								
For sales and distribution information, program advice and maintenance, contact TRL: +44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk								
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution								

Filename: Fairchild & Skyline Drive.j9

Path: M:\50400134 - Omega, Warrington\Omegamega, Warrington\ANALYSIS\Zone 8 Directory\JUNCTIONS 9

Report generation date: 26/11/2019 09:20:04

»2021 Base + Consented + Com + Proposed, AM

»2021 Base + Consented + Com + Proposed, PM

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
2021 Base + Consented + Com + Proposed								
1 - Skyline Drive East	1.6	4.01	0.61	A	0.7	2.70	0.43	A
2 - Fairchild Road	0.1	3.37	0.08	A	0.1	2.88	0.11	A
3 - Skyline Drive West	0.4	1.99	0.27	A	0.7	2.58	0.43	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.

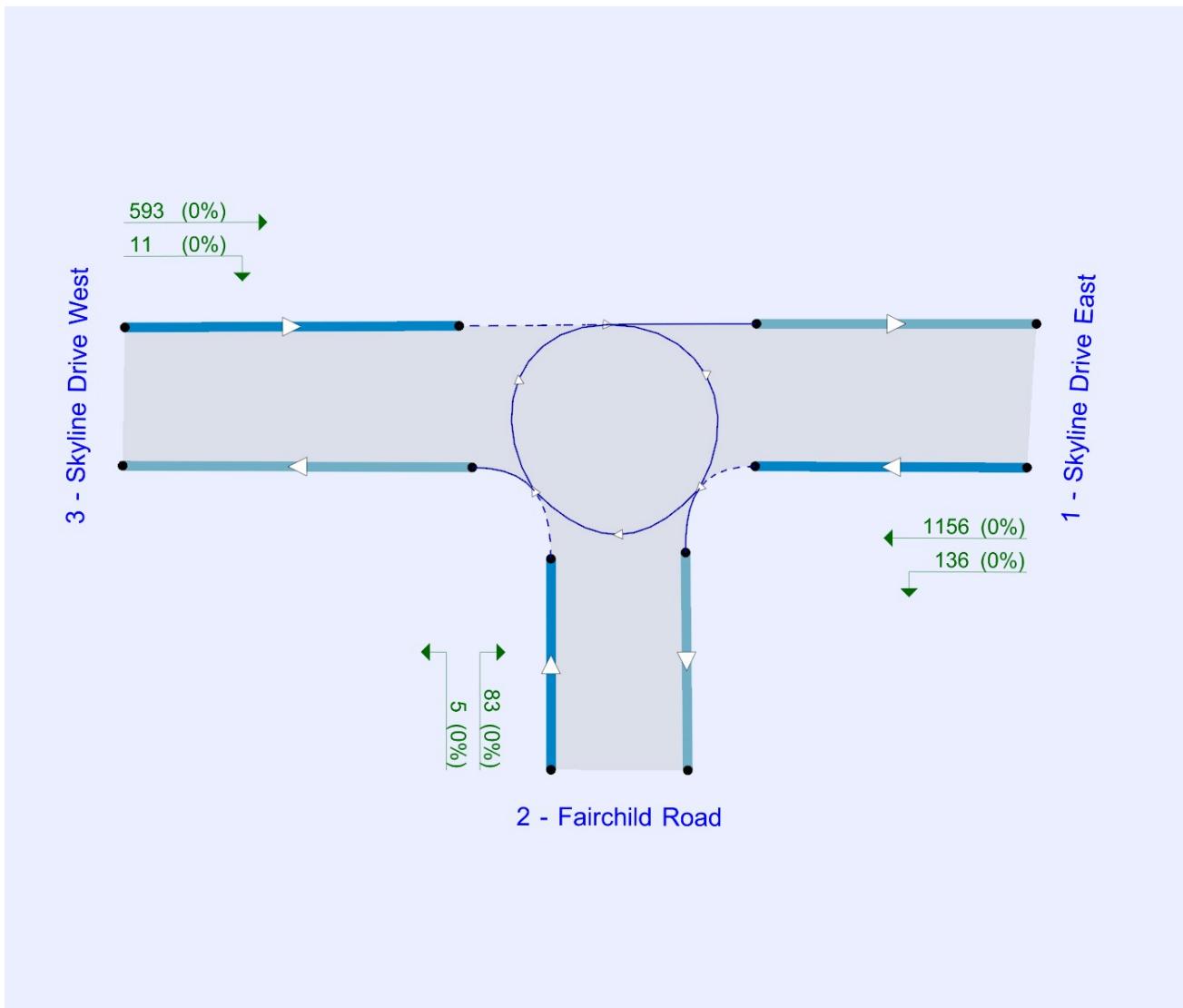
File summary

File Description

Title	Proposed Skyline Roundabout
Location	Omega South, Warrington
Site number	
Date	17/07/2019
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	CORP\UKMJO002
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

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				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)	Run automatically
D1	2021 Base + Consented + Com + Proposed	AM	ONE HOUR	07:30	09:00	15	✓
D2	2021 Base + Consented + Com + Proposed	PM	ONE HOUR	16:30	18:00	15	✓

Analysis Set Details

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

2021 Base + Consented + Com + Proposed, AM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Skyline Drive / Fairchild Road	Standard Roundabout		1, 2, 3	3.37	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Skyline Drive East	
2	Fairchild Road	
3	Skyline Drive West	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Skyline Drive East	8.00	8.00	0.0	30.0	50.0	46.0	
2 - Fairchild Road	3.68	8.20	28.8	15.0	50.0	27.7	
3 - Skyline Drive West	8.00	8.00	0.0	22.5	50.0	17.5	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Skyline Drive East	0.716	2329
2 - Fairchild Road	0.665	2010
3 - Skyline Drive West	0.782	2542

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
D1	2021 Base + Consented + Com + Proposed	AM	ONE HOUR	07:30	09:00	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 - Skyline Drive East		ONE HOUR	✓	1292	100.000
2 - Fairchild Road		ONE HOUR	✓	88	100.000
3 - Skyline Drive West		ONE HOUR	✓	604	100.000

Origin-Destination Data

Demand (PCU/hr)

From	To		
	1 - Skyline Drive East	2 - Fairchild Road	3 - Skyline Drive West
1 - Skyline Drive East	0	136	1156
2 - Fairchild Road	83	0	5
3 - Skyline Drive West	593	11	0

Vehicle Mix

Heavy Vehicle Percentages

From	To		
	1 - Skyline Drive East	2 - Fairchild Road	3 - Skyline Drive West
1 - Skyline Drive East	0	0	0
2 - Fairchild Road	0	0	0
3 - Skyline Drive West	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Skyline Drive East	0.61	4.01	1.6	A	1186	1778
2 - Fairchild Road	0.08	3.37	0.1	A	81	121
3 - Skyline Drive West	0.27	1.99	0.4	A	554	831

Main Results for each time segment

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 - Skyline Drive East	973	243	8	2323	0.419	970	508	0.0	0.7	2.655	A
2 - Fairchild Road	66	17	868	1433	0.046	66	110	0.0	0.0	2.633	A
3 - Skyline Drive West	455	114	62	2494	0.182	454	871	0.0	0.2	1.764	A

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 - Skyline Drive East	1161	290	10	2322	0.500	1160	607	0.7	1.0	3.096	A
2 - Fairchild Road	79	20	1038	1320	0.060	79	132	0.0	0.1	2.901	A
3 - Skyline Drive West	543	136	75	2484	0.219	543	1043	0.2	0.3	1.853	A

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 - Skyline Drive East	1423	356	12	2320	0.613	1420	744	1.0	1.6	3.989	A
2 - Fairchild Road	97	24	1271	1165	0.083	97	162	0.1	0.1	3.369	A
3 - Skyline Drive West	665	166	91	2471	0.269	665	1276	0.3	0.4	1.993	A

08:15 - 08:30

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 - Skyline Drive East	1423	356	12	2320	0.613	1422	744	1.6	1.6	4.009	A
2 - Fairchild Road	97	24	1273	1164	0.083	97	162	0.1	0.1	3.373	A
3 - Skyline Drive West	665	166	91	2471	0.269	665	1278	0.4	0.4	1.993	A

08:30 - 08:45

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 - Skyline Drive East	1161	290	10	2322	0.500	1164	608	1.6	1.0	3.116	A
2 - Fairchild Road	79	20	1041	1318	0.060	79	132	0.1	0.1	2.906	A
3 - Skyline Drive West	543	136	75	2484	0.219	543	1046	0.4	0.3	1.857	A

08:45 - 09:00

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 - Skyline Drive East	973	243	8	2323	0.419	974	509	1.0	0.7	2.672	A
2 - Fairchild Road	66	17	871	1431	0.046	66	111	0.1	0.0	2.638	A
3 - Skyline Drive West	455	114	63	2493	0.182	455	875	0.3	0.2	1.768	A

2021 Base + Consented + Com + Proposed, PM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Skyline Drive / Fairchild Road	Standard Roundabout		1, 2, 3	2.66	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2021 Base + Consented + Com + Proposed	PM	ONE HOUR	16:30	18:00	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 - Skyline Drive East		ONE HOUR	✓	899	100.000
2 - Fairchild Road		ONE HOUR	✓	138	100.000
3 - Skyline Drive West		ONE HOUR	✓	943	100.000

Origin-Destination Data

Demand (PCU/hr)

From	To			
		1 - Skyline Drive East	2 - Fairchild Road	3 - Skyline Drive West
1 - Skyline Drive East		0	67	832
2 - Fairchild Road		129	0	9
3 - Skyline Drive West		936	7	0

Vehicle Mix

Heavy Vehicle Percentages

From	To			
		1 - Skyline Drive East	2 - Fairchild Road	3 - Skyline Drive West
1 - Skyline Drive East		0	0	0
2 - Fairchild Road		0	0	0
3 - Skyline Drive West		0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Skyline Drive East	0.43	2.70	0.7	A	825	1237
2 - Fairchild Road	0.11	2.88	0.1	A	127	190
3 - Skyline Drive West	0.43	2.58	0.7	A	865	1298

Main Results for each time segment

16:30 - 16:45

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 - Skyline Drive East	677	169	5	2325	0.291	675	800	0.0	0.4	2.180	A
2 - Fairchild Road	104	26	625	1594	0.065	104	56	0.0	0.1	2.414	A
3 - Skyline Drive West	710	177	97	2467	0.288	708	632	0.0	0.4	2.045	A

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 - Skyline Drive East	808	202	6	2324	0.348	808	957	0.4	0.5	2.373	A
2 - Fairchild Road	124	31	748	1513	0.082	124	66	0.1	0.1	2.591	A
3 - Skyline Drive West	848	212	116	2452	0.346	847	756	0.4	0.5	2.244	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 - Skyline Drive East	990	247	8	2323	0.426	989	1172	0.5	0.7	2.696	A
2 - Fairchild Road	152	38	915	1401	0.108	152	81	0.1	0.1	2.880	A
3 - Skyline Drive West	1038	260	142	2431	0.427	1037	925	0.5	0.7	2.581	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 - Skyline Drive East	990	247	8	2323	0.426	990	1173	0.7	0.7	2.698	A
2 - Fairchild Road	152	38	916	1401	0.108	152	81	0.1	0.1	2.881	A
3 - Skyline Drive West	1038	260	142	2431	0.427	1038	926	0.7	0.7	2.583	A

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 - Skyline Drive East	808	202	6	2324	0.348	809	958	0.7	0.5	2.378	A
2 - Fairchild Road	124	31	749	1512	0.082	124	67	0.1	0.1	2.595	A
3 - Skyline Drive West	848	212	116	2452	0.346	849	757	0.7	0.5	2.248	A

17:45 - 18:00

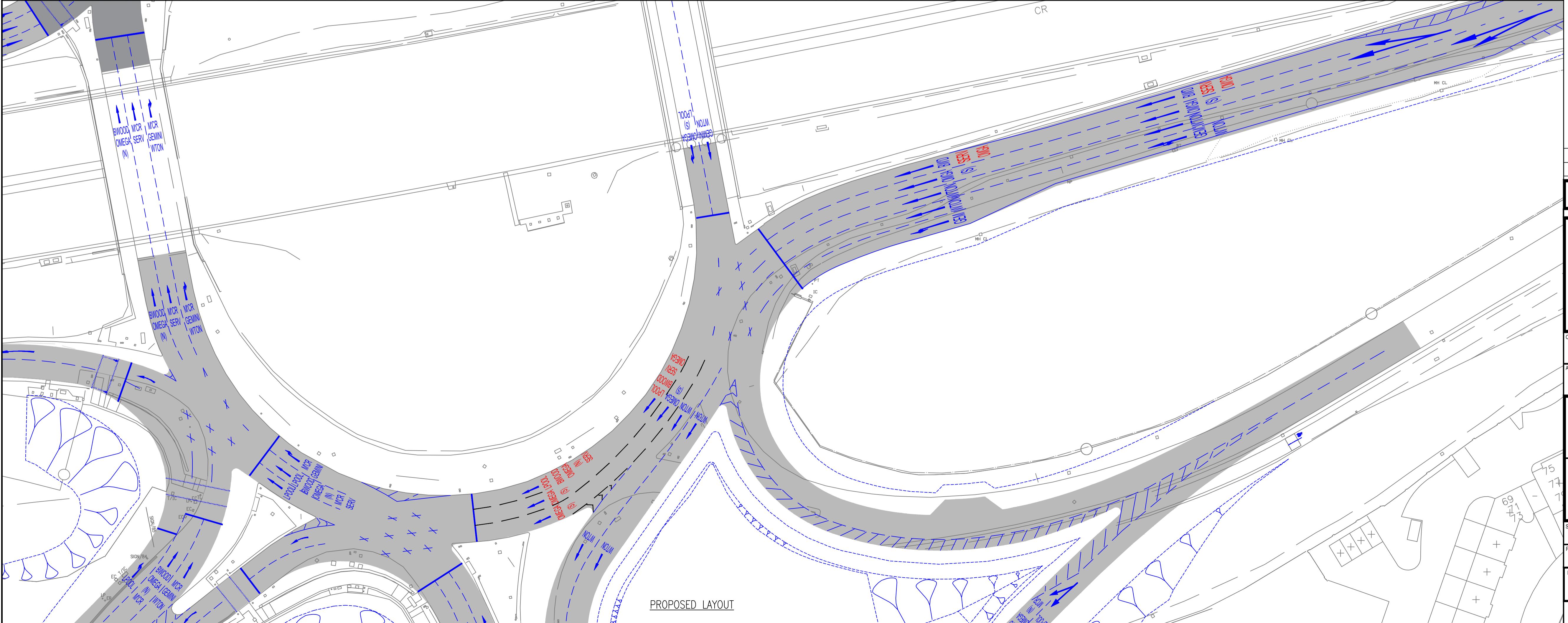
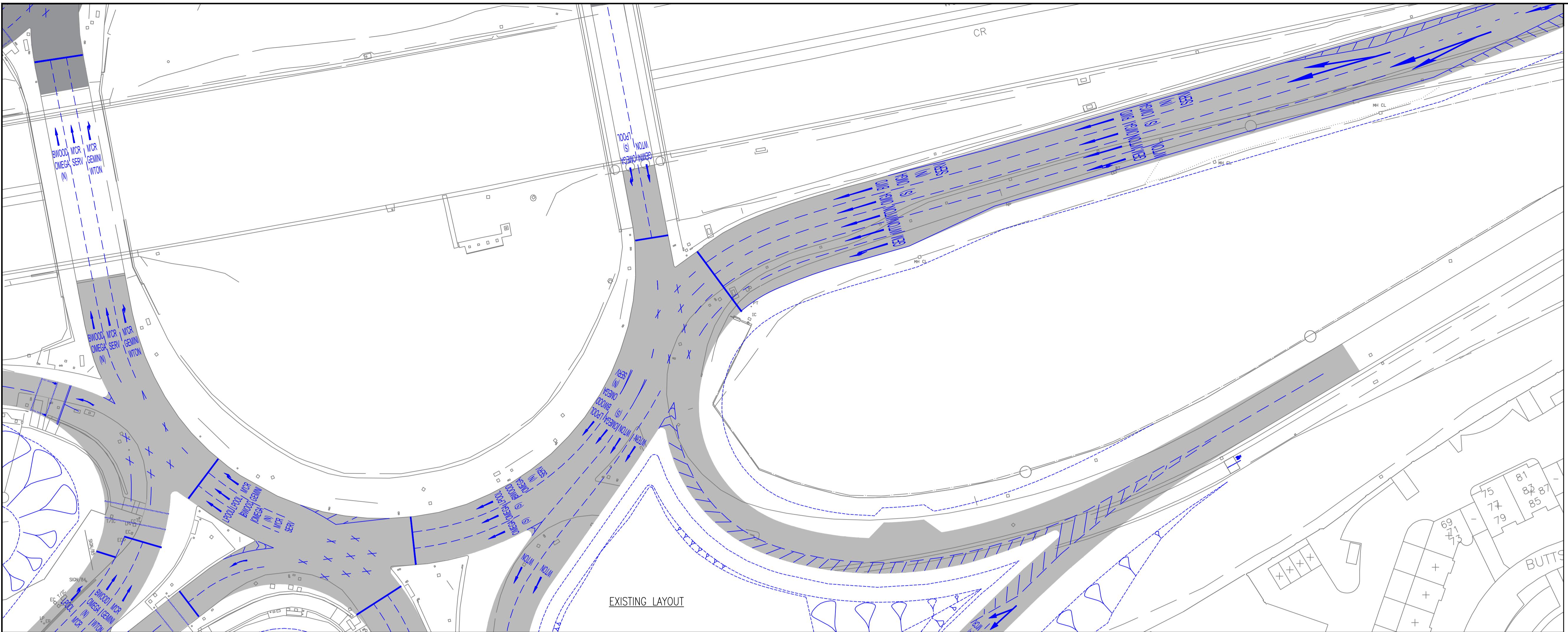
Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Skyline Drive East	677	169	5	2325	0.291	677	802	0.5	0.4	2.186	A
2 - Fairchild Road	104	26	627	1593	0.065	104	56	0.1	0.1	2.417	A
3 - Skyline Drive West	710	177	97	2466	0.288	710	634	0.5	0.4	2.052	A

Appendix F

**11191042_SK326 PROPOSED
MITIGATION AT M62 JUNCTION 8**



DO NOT SCALE

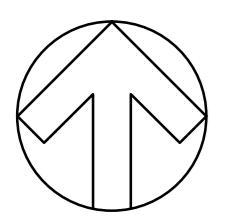


A	30/09/2019	AS	FIRST ISSUE	WW	WW
REV	DATE	BY	DESCRIPTION	CHK	APP
DRAWING STATUS:					
S2 - FOR INFORMATION					
	7 Lochside View, Edinburgh Park, Edinburgh, EH12 9DH, UK T+44 (0) 131 344 2300, F+44 (0) 131 344 2301 wsp.com	CLIENT:	OMEGA WARRINGTON LIMITED	ARCHITECT:	SITE/PROJECT:
OMEGA WARRINGTON PHASES 4-7					
TITLE:					
PROPOSED MITIGATION AT M62 J8					
SCALE @ A1:	1:500	CHECKED:	DB	APPROVED:	DB
PROJECT NO:	11191042	DESIGNED:	AS	DRAWN:	AS
DRAWING NO:	11191042_SK326	REV:	A		
© WSP UK Ltd					

Appendix G

**PROPOSED MITIGATION AT
BURTONWOOD ROAD / WESTBROOK
WAY ROUNDABOUT AS PER ZONE 3-
6 TA**






DO NOT SCALE

NOTES:

- BURTONWOOD ROAD NORTH EASTERN FOOTWAY TO BE 2m WIDE WITH 1m WIDE VERGE SEGREGATION TO ADJACENT CARRIAGEWAY AND 1m WIDE VERGE TO REPOSITIONED ACOUSTIC FENCE.

LEGEND:

-  : PROPOSED TACTILE PAVING (UNCONTROLLED)
 -  : PROPOSED VERGE
 -  : PROPOSED FOOTWAY / CYCLEWAY



/	DATE	BY	DESCRIPTION	CHK	APD
	05/01/2016	SDT	REVISED FOOTWAY / CYCLEWAY PROVISION INTRODUCED	DB	DB
	15/12/2015	SDT	LANE MARKING SCHEME INTRODUCED AT WESTBROOK WAY ROUNDABOUT	DB	DB
	04/12/2015	SDT	FIRST ISSUE	DB	DB

FOR INFORMATION ONLY



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OMEGA, WARRINGTON

OMEGA ZONES 3-6

WOOD ROAD / WHITTLE AVENUE ROUNDABOUT
SIGN MEASURES & OMEGA INTERNAL ROAD

MEASURES & OMEGA INTERNAL ROAD LAYOUT IMPROVEMENTS

CHECKED: _____ APPROVED: _____

	DB	DB
DESIGN DRAWN:		DATE:

5 ST December 2015

	DRAWING No:	REV:
042	SK 205	C

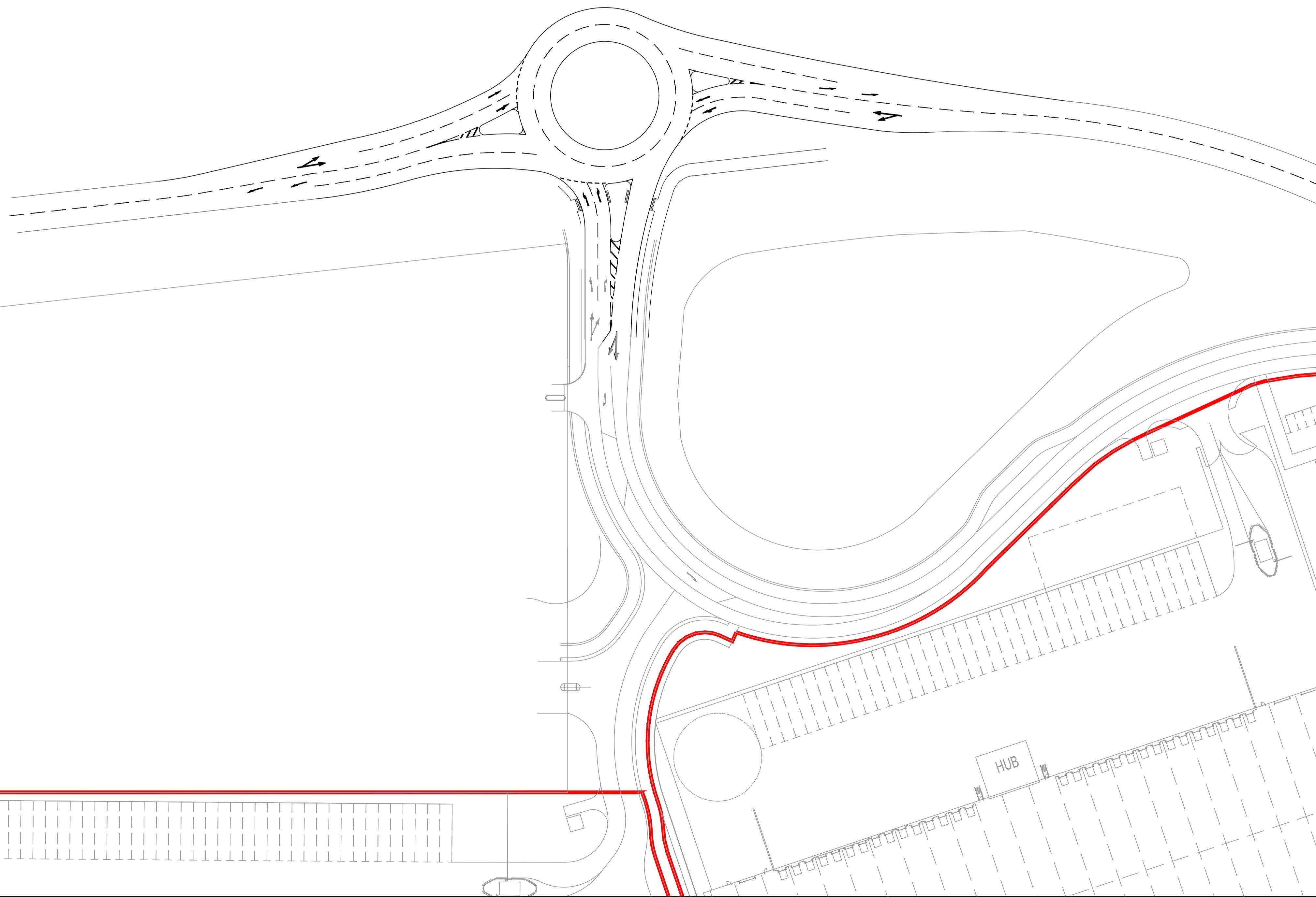
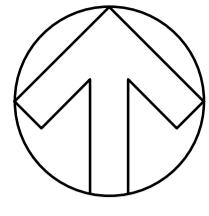
042 SK 305

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Appendix H

**11191042_SK323 PROPOSED
ROUNABOUT AT FAIRCHILD ROAD /
SKYLINE DRIVE**





B	25/07/2019	AS	AMENDED SOUTH EXIT TO TIE INTO MASTERPLAN	DB	DB
A	24/07/2019	AS	FIRST ISSUE	DB	DB
REV	DATE	BY	DESCRIPTION	CHK	APP
DRAWING STATUS:					
S2 - FOR INFORMATION					
WSP 7 Lochside View, Edinburgh Park, Edinburgh, EH12 9DH, UK T+ 44 (0) 131 344 2300, F+ 44 (0) 131 344 2301 wsp.com					
CLIENT: OMEGA WARRINGTON LIMITED					
ARCHITECT:					
SITE/PROJECT: OMEGA, WARRINGTON					
TITLE: ZONE 1 / 2 PROPOSED 50m ROUNDABOUT SKYLINE DRIVE / FAIRCHILD ROAD					
SCALE @ A1:	1:500	CHECKED:	DB	APPROVED:	DB
PROJECT NO:	11191042	DESIGNED:	AS	DRAWN:	AS
		DATE:			July 19
DRAWING NO:	11191042_SK323				REV: B

Appendix I

**M62 J8 - 2029 SENSITIVITY TEST -
TRANSYT RESULTS**



TRANSYT 15

Version: 15.5.2.7994

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Filename: Junction 8 M62 _ Proposed Mitigation 2029 Test _FOR ISSUE.t15

Path: M:\50400134 - Omega, Warrington\Omegamega, Warrington\ANALYSIS\Zone 8 Directory\TRANSYT

Report generation date: 04/11/2019 14:36:26

»A5 - 2029 AM Scenario 4 : D5 - 2029 AM Scenario 4* :

»A6 - 2029 PM Scenario 4 : D6 - 2029 PM Scenario 4* :

A5 - 2029 AM Scenario 4

D5 - 2029 AM Scenario 4*

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
07:30-08:30	RA	1	27	231	625	2298	70	0.29	0.05	0.29	0.72	0.00	0.72
	RAc	1	0	Unrestricted	36	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	RAx	1	54	67	968	1800	70	1.16	0.31	1.80	4.43	0.00	4.43
	RB	1	6	1377	84	1379	70	0.08	0.00	0.01	0.03	0.00	0.03
	RBc	1	0	Unrestricted	459	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	RBx	1	0	Unrestricted	202	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	RC	1	50	82	829	1674	70	1.05	0.24	1.39	3.44	0.00	3.44
	RCc	1	0	Unrestricted	79	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	RCx	1	0	Unrestricted	464	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	RD	1	13	584	96	730	70	0.37	0.01	0.06	0.14	0.00	0.14
	RDc	1	0	Unrestricted	908	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	RDx	1	0	Unrestricted	0	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	40	124	412	1980	36	11.27	4.65	37.98	18.32	2.93	21.25
08:30-09:30	2	1	64	41	1264	1980	70	1.60	0.56	9.58	7.97	0.00	7.97
	3	2	41	119	441	2120	36	11.47	5.20	69.38	19.95	3.20	23.15
	4	1	40	124	411	1975	36	11.27	4.59	61.35	18.27	2.96	21.23
	5	1	5	1610	18	1995	11	24.74	0.29	9.72	1.76	0.18	1.94
	6	1	54	65	170	1842	11	33.33	3.16	105.70	22.35	2.03	24.38
	7	1	54	67	168	1819	11	33.14	3.23	17.11	21.96	2.01	23.98
	8	1	12	670	188	1653	70	0.17	1.46	8.99	0.12	0.04	0.16
	10	1	18	396	356	1962	70	0.20	0.02	0.27	0.29	0.00	0.29
	11	1	40	124	852	2120	70	0.57	0.13	6.75	1.92	0.00	1.92
	12	1	18	407	351	1980	70	0.20	0.02	0.28	0.27	0.00	0.27
	13	1	0	Unrestricted	351	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00

	14	1	0	Unrestricted	369	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
15	1	18	390	355	1934	70	0.21	0.02	0.09	0.29	0.00	0.00	0.29
	2	18	391	355	1937	70	0.21	0.02	0.09	0.29	0.00	0.00	0.29
16	1	64	41	570	1900	32	17.66	8.24	85.91	39.70	5.24	44.94	
	2	79	13	687	1900	32	23.68	10.16	105.09	64.18	6.53	70.70	
	3	41	119	363	1900	32	13.68	4.53	46.44	19.58	2.78	22.37	
17	1	33	173	258	1900	28	15.09	2.30	41.80	15.36	1.48	16.84	
18	1	34	162	606	1900	70	0.57	1.54	14.13	1.37	0.17	1.55	
	2	56	61	829	1900	70	2.92	2.24	20.50	9.55	1.44	10.99	
19	1	77	17	606	1900	28	14.21	5.33	118.40	33.96	3.41	42.77	
	2	73	24	571	1900	28	17.65	5.30	117.81	39.76	3.41	47.79	
20	1	51	77	616	1900	44	5.73	3.31	37.68	13.93	2.12	16.05	
	2	78	16	945	1900	44	9.00	6.18	70.88	33.55	4.05	59.79	
	3	30	202	363	1900	44	2.27	1.51	17.02	3.25	0.37	3.61	
21	1	44	103	639	1900	120	4.95	4.89	59.36	12.47	1.51	17.86	
	2	33	172	492	1900	120	3.44	3.30	37.71	6.68	1.04	7.72	
22	1	0	Unrestricted	1131	Unrestricted	140	0.00	0.00	0.00	0.00	0.00	0.00	
23	1	54	65	245	1900	16	27.98	4.20	32.71	27.04	2.71	29.74	
24	1	33	171	108	1900	11	28.24	1.88	25.09	12.03	1.21	13.24	
25	1	53	70	244	1900	16	27.44	4.33	49.76	26.41	2.69	29.09	
26	1	19	386	352	1900	70	0.22	0.02	0.62	0.30	0.00	0.30	
27	1	31	186	597	1900	70	0.43	0.07	1.02	1.02	0.00	1.02	
28	1	56	60	670	1900	49	4.05	2.18	34.58	10.71	2.26	12.97	
	2	14	544	166	1900	49	3.09	1.77	26.00	2.02	1.27	3.29	
29	1	0	Unrestricted	836	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00	
30	1	43	111	492	1900	42	6.68	4.67	25.04	12.96	2.96	15.92	
	2	50	79	585	1900	42	5.50	2.36	12.72	12.69	1.52	14.22	
	3	52	71	608	1900	42	8.50	3.62	19.65	20.38	2.33	22.72	
31	1	55	63	278	1900	18	26.37	4.76	23.92	28.92	3.00	31.92	
32	1	69	30	349	1900	18	24.86	3.75	125.15	34.22	2.50	36.72	
33	1	41	119	491	1900	70	7.50	4.57	28.51	14.52	2.76	17.29	
34	1	28	225	142	1900	18	17.60	1.27	42.41	9.86	0.82	10.68	
35	1	33	170	634	1900	70	0.47	0.08	0.26	1.19	0.00	1.19	
36	1	52	73	585	1900	41	14.61	6.65	33.91	33.72	4.29	38.01	
	2	86	4	957	1900	41	14.57	12.85	68.53	55.00	7.15	62.15	
	3	24	269	278	1900	41	0.51	0.04	0.22	0.56	0.00	0.56	

	37	1	62	46	326	1900	19	27.28	5.58	33.26	35.08	3.59	38.68
	38	1	89	1	463	1900	19	47.88	10.83	135.39	87.45	6.82	94.27
	39	1	36	151	192	1900	19	21.86	2.98	37.25	16.56	1.92	18.48
	40	1	37	141	655	1900	70	0.85	1.56	25.56	2.20	0.52	2.72
	41	1	0	Unrestricted	777	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	42	1	75	20	1420	1900	70	2.85	2.57	22.20	15.96	0.77	16.73
	43	1	0	Unrestricted	381	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	44	1	87	3	1039	1900	43	15.27	14.90	104.12	62.57	8.46	86.01
	45	2	51	78	604	1900	43	1.75	7.51	29.60	4.17	0.30	4.48
	46	1	44	106	831	1900	70	0.74	0.17	1.50	2.41	0.00	2.41
	47	1	33	176	620	1900	70	0.46	0.08	1.39	1.12	0.00	1.12
	48	1	37	146	166	1900	16	24.39	2.64	7.85	15.97	1.70	17.67
	49	1	64	40	288	1900	16	31.06	5.30	51.20	35.29	3.41	38.70
		2	37	146	166	1900	16	24.39	2.64	25.21	15.97	1.70	17.67
	50	1	24	277	454	1900	70	0.30	0.04	0.16	0.53	0.00	0.53
	51	1	95	-5	416	1900	16	72.58	12.80	45.67	119.10	7.66	126.75
		2	94	-5	415	1900	16	71.54	12.66	44.81	117.11	7.58	124.69
	52	1	0	Unrestricted	949	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	53	1	31	194	582	1900	70	0.42	0.07	5.55	0.96	0.00	0.96
		2	28	226	525	1900	70	0.36	0.05	4.33	0.75	0.00	0.75
		3	26	245	495	1900	70	0.33	0.05	3.77	0.65	0.00	0.65
	54	1	27	231	351	1980	45	2.69	1.26	103.37	3.73	0.57	4.30
		2	27	231	351	1980	45	2.69	1.26	103.37	3.73	0.57	4.30

Traffic Stream Results: Flows and signals

Time Segment	Arm	Traffic Stream	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Calculated sat flow (PCU/hr)	Calculated capacity (PCU/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s per cycle)
07:30-08:30	RA	1	625	625	0		2298	2298	27		231	0.65	70
	RAc	1	36	36	0		Unrestricted	Unrestricted	0		Unrestricted	0.00	70
	RAx	1	968	968	0		1800	1800	54		67	0.00	70
	RB	1	84	84	0		1379	1379	6		1377	0.00	70
	RBc	1	459	459	0		Unrestricted	Unrestricted	0		Unrestricted	0.64	70
	RBx	1	202	202	0		Unrestricted	Unrestricted	0		Unrestricted	0.56	70
	RC	1	829	829	0		1674	1674	50		82	0.00	70
	RCc	1	79	79	0		Unrestricted	Unrestricted	0		Unrestricted	0.00	70
	RCx	1	464	464	0		Unrestricted	Unrestricted	0		Unrestricted	0.63	70
	RD	1	96	96	0		730	730	13		584	0.00	70
	RDc	1	908	908	0		Unrestricted	Unrestricted	0		Unrestricted	0.00	70
	RDx	1	0	0	0		Unrestricted	Unrestricted	0		Unrestricted	0.00	70
	1	1	412	412	0		1980	1023	40		124	0.00	36
	2	1	1264	1264	1		1980	1980	64		41	0.00	70
	3	2	441	441	0		2120	1075	41		119	0.00	36
	4	1	411	411	0		1975	1021	40		124	0.00	36
	5	1	18	18	0		1995	342	5		1610	0.02	11
	6	1	170	170	0		1842	312	54		65	0.03	11
	7	1	168	168	0		1819	312	54		67	0.00	11
	8	1	188	188	0		1653	1609	12		670	0.00	70
	10	1	356	356	0		1962	1962	18		396	0.00	70
	11	1	852	852	1		2120	2120	40		124	0.00	70
	12	1	351	351	-1		1980	1980	18		407	1.07	70
	13	1	351	351	-1		Unrestricted	Unrestricted	0		Unrestricted	1.07	70
	14	1	369	369	-1		Unrestricted	Unrestricted	0		Unrestricted	1.04	70
	15	1	355	355	-1		1934	1934	18		390	0.71	70
		2	355	355	-1		1937	1937	18		391	0.71	70
	16	1	570	570	0		1900	896	64		41	0.00	32
		2	687	687	0		1900	864	79		13	0.17	32
		3	363	363	0		1900	883	41		119	0.00	32
	17	1	258	258	0		1900	781	33		173	1.09	28
	18	1	606	606	-1		1900	1765	34		162	1.02	70

		2	829	829	1		1900	1485	56		61	0.81	70
19	1	606	606	-1		1900	787	77		17	1.03	28	
	2	571	571	1		1900	787	73		24	0.90	28	
20	1	616	616	0		1900	1214	51		77	0.95	44	
	2	945	945	0		1900	1219	78		16	0.69	44	
21	3	363	363	0		1900	1220	30		202	1.06	44	
	1	639	639	-1		1900	1440	44		103	0.00	120	
22	2	492	492	1		1900	1485	33		172	0.00	120	
	1	1131	1131	0		Unrestricted	Unrestricted	0		Unrestricted	0.27	140	
23	1	245	245	-2		1900	450	54		65	0.00	16	
24	1	108	108	-1		1900	326	33		171	0.00	11	
25	1	244	244	-1		1900	461	53		70	0.00	16	
26	1	352	352	-2		1900	1900	19		386	0.00	70	
27	1	597	597	-3		1900	1900	31		186	0.00	70	
28	1	670	670	-1		1900	1191	56		60	0.98	49	
	2	166	166	-1		1900	1187	14		544	1.64	49	
29	1	836	836	-1		Unrestricted	Unrestricted	0		Unrestricted	0.96	70	
30	1	492	492	0		1900	1154	43		111	0.71	42	
	2	585	585	0		1900	1161	50		79	0.88	42	
	3	608	608	-2		1900	1159	52		71	1.03	42	
31	1	278	278	0		1900	503	55		63	0.00	18	
32	1	349	349	-1		1900	506	69		30	0.72	18	
33	1	491	491	-1		1900	1196	41		119	0.00	70	
34	1	142	142	0		1900	513	28		225	0.72	18	
35	1	634	634	0		1900	1900	33		170	0.65	70	
36	1	585	585	0		1900	1123	52		73	0.99	41	
	2	957	957	-3		1900	1110	86		4	0.73	41	
	3	278	278	0		1900	1140	24		269	1.46	41	
37	1	326	326	0		1900	527	62		46	0.00	19	
38	1	463	463	0		1900	521	89		1	0.11	19	
39	1	192	192	0		1900	536	36		151	0.11	19	
40	1	655	655	0		1900	1752	37		141	0.00	70	
41	1	777	777	0		Unrestricted	Unrestricted	0		Unrestricted	0.97	70	
42	1	1420	1420	-3		1900	1891	75		20	0.41	70	
43	1	381	381	-1		Unrestricted	Unrestricted	0		Unrestricted	1.29	70	

	44	1	1039	1039	-2		1900	1194	87		3	0.67	43
	45	2	604	604	0		1900	1194	51		78	1.14	43
	46	1	831	831	0		1900	1900	44		106	0.00	70
	47	1	620	620	0		1900	1900	33		176	0.00	70
	48	1	166	166	0		1900	454	37		146	0.00	16
	49	1	288	288	0		1900	447	64		40	0.00	16
		2	166	166	0		1900	454	37		146	0.00	16
	50	1	454	454	0		1900	1900	24		277	0.00	70
	51	1	416	416	-1		1900	440	95		-5	0.00	16
		2	415	415	1		1900	440	94		-5	0.00	16
	52	1	949	949	0		Unrestricted	Unrestricted	0		Unrestricted	0.48	70
	53	1	582	582	0		1900	1900	31		194	0.94	70
		2	525	525	0		1900	1900	28		226	0.86	70
		3	495	495	0		1900	1900	26		245	0.87	70
	54	1	351	351	-1		1980	1293	27		231	0.78	45
		2	351	351	-1		1980	1293	27		231	0.78	45

Traffic Stream Results: Stops and delays

Time Segment	Arm	Traffic Stream	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Total stops (Stops per hr)	Weighted cost of stops (£ per hr)
07:30-08:30	RA	1	12.00	0.29	0.05	0.72	0.00	0.00	0.00
	R _A c	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00
	R _A x	1	12.00	1.16	0.31	4.43	0.00	0.00	0.00
	RB	1	12.00	0.08	0.00	0.03	0.00	0.00	0.00
	R _B c	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00
	R _B x	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00
	RC	1	12.00	1.05	0.24	3.44	0.00	0.00	0.00
	R _C c	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00
	R _C x	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00
	RD	1	12.00	0.37	0.01	0.14	0.00	0.00	0.00
	R _D c	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00
	R _D x	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	8.45	11.27	1.29	18.32	56.65	233.39	2.93
	2	1	4.04	1.60	0.56	7.97	0.00	0.00	0.00
	3	2	5.98	11.47	1.41	19.95	57.91	255.39	3.20
	4	1	6.15	11.27	1.29	18.27	57.40	235.91	2.96
	5	1	2.02	24.74	0.12	1.76	81.59	14.69	0.18
	6	1	2.06	33.33	1.57	22.35	95.21	161.86	2.03
	7	1	13.02	33.14	1.55	21.96	95.60	160.61	2.01
	8	1	11.18	0.17	0.01	0.12	1.54	2.89	0.04
	10	1	5.08	0.20	0.02	0.29	0.00	0.00	0.00
	11	1	2.57	0.57	0.13	1.92	0.00	0.00	0.00
	12	1	4.72	0.20	0.02	0.27	0.00	0.00	0.00
	13	1	10.75	0.00	0.00	0.00	0.00	0.00	0.00
	14	1	7.24	0.00	0.00	0.00	0.00	0.00	0.00
	15	1	15.32	0.21	0.02	0.29	0.00	0.00	0.00
		2	15.72	0.21	0.02	0.29	0.00	0.00	0.00
	16	1	6.61	17.66	2.80	39.70	73.30	417.82	5.24
		2	6.67	23.68	4.52	64.18	75.78	520.59	6.53
		3	6.73	13.68	1.38	19.58	61.18	222.07	2.78
	17	1	3.80	15.09	1.08	15.36	45.83	118.25	1.48
	18	1	7.51	0.57	0.10	1.37	2.26	13.67	0.17
		2	7.52	2.92	0.67	9.55	13.85	114.85	1.44

19	1	4.42	14.21	2.39	33.96	44.94	272.31	3.41
	2	4.13	17.65	2.80	39.76	47.57	271.62	3.41
20	1	6.05	5.73	0.98	13.93	27.42	168.90	2.12
	2	6.02	9.00	2.36	33.55	34.14	322.61	4.05
	3	6.13	2.27	0.23	3.25	8.03	29.16	0.37
21	1	5.69	4.95	0.88	12.47	18.88	120.66	1.51
	2	6.04	3.44	0.47	6.68	16.84	82.86	1.04
22	1	7.28	0.00	0.00	0.00	0.00	0.00	0.00
23	1	8.86	27.98	1.90	27.04	88.09	215.81	2.71
24	1	5.76	28.24	0.85	12.03	89.58	96.74	1.21
25	1	6.49	27.44	1.86	26.41	87.85	214.35	2.69
26	1	2.34	0.22	0.02	0.30	0.00	0.00	0.00
27	1	4.89	0.43	0.07	1.02	0.00	0.00	0.00
28	1	4.35	4.05	0.75	10.71	26.93	180.44	2.26
	2	4.69	3.09	0.14	2.02	61.17	101.54	1.27
29	1	10.40	0.00	0.00	0.00	0.00	0.00	0.00
30	1	12.87	6.68	0.91	12.96	47.96	235.97	2.96
	2	12.78	5.50	0.89	12.69	20.78	121.58	1.52
	3	12.70	8.50	1.44	20.38	30.58	185.91	2.33
31	1	13.74	26.37	2.04	28.92	86.16	239.52	3.00
32	1	2.50	24.86	2.41	34.22	57.06	199.15	2.50
33	1	11.06	7.50	1.02	14.52	44.88	220.38	2.76
34	1	2.40	17.60	0.69	9.86	46.07	65.41	0.82
35	1	22.44	0.47	0.08	1.19	0.00	0.00	0.00
36	1	13.54	14.61	2.37	33.72	58.50	342.22	4.29
	2	12.94	14.57	3.87	55.00	59.58	570.17	7.15
	3	12.42	0.51	0.04	0.56	0.00	0.00	0.00
37	1	11.58	27.28	2.47	35.08	87.94	286.68	3.59
38	1	7.24	47.88	6.16	87.45	117.51	544.09	6.82
39	1	7.17	21.86	1.17	16.56	79.80	153.21	1.92
40	1	4.21	0.85	0.15	2.20	6.38	41.79	0.52
41	1	18.23	0.00	0.00	0.00	0.00	0.00	0.00
42	1	8.00	2.85	1.12	15.96	4.34	61.59	0.77
43	1	10.74	0.00	0.00	0.00	0.00	0.00	0.00
44	1	9.88	15.27	4.41	62.57	64.97	674.99	8.46

	45	2	17.51	1.75	0.29	4.17	4.01	24.20	0.30
	46	1	7.83	0.74	0.17	2.41	0.00	0.00	0.00
	47	1	3.93	0.46	0.08	1.12	0.00	0.00	0.00
	48	1	23.22	24.39	1.12	15.97	81.79	135.78	1.70
	49	1	7.14	31.06	2.49	35.29	94.32	271.63	3.41
		2	7.23	24.39	1.12	15.97	81.79	135.78	1.70
	50	1	15.89	0.30	0.04	0.53	0.00	0.00	0.00
	51	1	19.34	72.58	8.39	119.10	146.76	610.53	7.66
		2	19.49	71.54	8.25	117.11	145.61	604.29	7.58
	52	1	19.45	0.00	0.00	0.00	0.00	0.00	0.00
	53	1	1.00	0.42	0.07	0.96	0.00	0.00	0.00
		2	1.00	0.36	0.05	0.75	0.00	0.00	0.00
		3	1.00	0.33	0.05	0.65	0.00	0.00	0.00
	54	1	1.00	2.69	0.26	3.73	18.37	64.59	0.57
		2	1.00	2.69	0.26	3.73	18.37	64.59	0.57

Traffic Stream Results: Queues and blocking

Time Segment	Arm	Traffic Stream	Initial queue (PCU)	Mean max queue (PCU)	Max queue storage (PCU)	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time total (s (per cycle))	Estimated blocking
07:30-08:30	RA	1	0.00	0.05	17.39	0.29	0.00	14.00	
	RAc	1	0.00	0.00	34.78	0.00	0.00	70.00	
	RAx	1	0.00	0.31	17.39	1.80	0.00	0.00	
	RB	1	0.00	0.00	17.39	0.01	0.00	0.00	
	RBc	1	0.00	0.00	34.78	0.00	0.00	14.00	
	RBx	1	0.00	0.00	17.39	0.00	0.00	14.00	
	RC	1	0.00	0.24	17.39	1.39	0.00	0.00	
	RCc	1	0.00	0.00	34.78	0.00	0.00	0.00	
	RCx	1	0.00	0.00	17.39	0.00	0.00	14.00	
	RD	1	0.00	0.01	17.39	0.06	0.00	0.00	
	RDc	1	0.00	0.00	34.78	0.00	0.00	0.00	
	RDx	1	0.00	0.00	17.39	0.00	0.00	70.00	
	1	1	0.00	4.65	12.25	37.98	0.00	0.82	
	2	1	0.00	0.56	5.86	9.58	0.00	0.00	
	3	2	0.00	5.20	7.50	69.38	0.00	1.51	
	4	1	0.00	4.59	7.48	61.35	0.00	0.80	
	5	1	0.00	0.29	3.00	9.72	0.00	11.00	
	6	1	0.00	3.16	2.98	105.70	0.00	0.14	
	7	1	0.00	3.23	18.87	17.11	0.00	0.00	
	8	1	0.00	1.46	16.20	8.99	0.00	1.88	
	10	1	0.00	0.02	7.37	0.27	0.00	0.00	
	11	1	0.00	0.13	2.00	6.75	0.00	0.00	
	12	1	0.00	0.02	6.85	0.28	0.00	31.00	
	13	1	0.00	0.00	15.58	0.00	0.00	31.00	
	14	1	0.00	0.00	10.50	0.00	0.00	30.00	
	15	1	0.00	0.02	22.21	0.09	0.00	12.00	
		2	0.00	0.02	22.78	0.09	0.00	12.00	
	16	1	0.00	8.24	9.59	85.91	0.00	0.00	
		2	0.00	10.16	9.67	105.09	0.00	1.16	
		3	0.00	4.53	9.76	46.44	0.00	0.47	
	17	1	0.00	2.30	5.50	41.80	0.00	8.21	
	18	1	0.00	1.54	10.89	14.13	0.00	27.97	
		2	0.00	2.24	10.90	20.50	0.00	26.28	

19	1	0.00	5.33	4.50	118.40	5.40	5.00	
	2	0.00	5.30	4.50	117.81	4.62	1.00	
20	1	0.00	3.31	8.77	37.68	0.00	11.26	
	2	0.00	6.18	8.72	70.88	22.19	4.10	
21	3	0.00	1.51	8.89	17.02	0.00	16.05	
	1	0.00	4.89	8.24	59.36	3.88	14.89	
22	2	0.00	3.30	8.75	37.71	0.00	11.58	
	1	0.00	0.00	10.55	0.00	0.00	19.00	
23	1	0.00	4.20	12.85	32.71	0.00	0.42	
24	1	0.00	1.88	7.50	25.09	0.00	0.00	
25	1	0.00	4.33	8.70	49.76	0.00	0.00	
26	1	0.00	0.02	3.39	0.62	0.00	0.00	
27	1	0.00	0.07	7.08	1.02	0.00	0.00	
28	1	0.00	2.18	6.30	34.58	0.00	18.11	
	2	0.00	1.77	6.80	26.00	0.00	41.26	
29	1	0.00	0.00	15.07	0.00	0.00	30.00	
30	1	0.00	4.67	18.65	25.04	0.00	4.47	
	2	0.00	2.36	18.52	12.72	0.00	6.21	
	3	0.00	3.62	18.41	19.65	0.00	4.32	
31	1	0.00	4.76	19.91	23.92	0.00	0.47	
32	1	0.00	3.75	3.00	125.15	0.00	0.37	
33	1	0.00	4.57	16.03	28.51	0.00	31.00	
34	1	0.00	1.27	3.00	42.41	0.00	2.11	
35	1	0.00	0.08	32.53	0.26	0.00	14.00	
36	1	0.00	6.65	19.62	33.91	0.00	15.63	
	2	0.00	12.85	18.75	68.53	0.00	4.11	
	3	0.00	0.04	18.01	0.22	0.00	23.00	
37	1	0.00	5.58	16.79	33.26	0.00	0.58	
38	1	0.00	10.83	8.00	135.39	0.00	0.79	
39	1	0.00	2.98	8.00	37.25	0.00	4.26	
40	1	0.00	1.56	6.11	25.56	0.00	5.47	
41	1	0.00	0.00	26.42	0.00	0.00	27.00	
42	1	0.00	2.57	11.59	22.20	0.00	11.32	
43	1	0.00	0.00	15.56	0.00	0.00	45.00	
44	1	0.00	14.90	14.32	104.12	14.98	0.00	

	45	2	0.00	7.51	25.38	29.60	0.00	6.00	
	46	1	0.00	0.17	11.35	1.50	0.00	0.00	
	47	1	0.00	0.08	5.70	1.39	0.00	0.00	
	48	1	0.00	2.64	33.65	7.85	0.00	0.26	
	49	1	0.00	5.30	10.35	51.20	0.00	0.53	
		2	0.00	2.64	10.47	25.21	0.00	0.26	
	50	1	0.00	0.04	23.03	0.16	0.00	0.00	
	51	1	0.00	12.80	28.04	45.67	0.00	0.79	
		2	0.00	12.66	28.24	44.81	0.00	0.79	
	52	1	0.00	0.00	28.18	0.00	0.00	9.00	
	53	1	0.00	0.07	1.22	5.55	0.00	21.00	
		2	0.00	0.05	1.22	4.33	0.00	21.00	
		3	0.00	0.05	1.22	3.77	0.00	21.00	
	54	1	0.00	1.26	1.22	103.37	0.00	7.27	
		2	0.00	1.26	1.22	103.37	0.00	7.27	

Traffic Stream Results: Flare

Time Segment	Arm	Traffic Stream	Flare present	Flare components	Degree of saturation (%)	Mean max queue (PCU)	Calculated capacity (PCU/hr)	Practical reserve capacity (%)
07:30-08:30	11	1		CTM flare: 11/1,3/2,4/1	64	9.93	1326	40
	26	1		CTM flare: 26/1,24/1,25/1	63	6.23	563	44
	33	1		CPDM flare: 33/1,34/1,32/1	86	9.60	568	4
	40	1		CTM flare: 40/1,39/1,38/1	92	15.37	708	-3

Traffic Stream Results: Advanced

Time Segment	Arm	Traffic Stream	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	Mean Max Queue EoTS (PCU)	Max End of Green Queue EoTS (PCU)	Max End of Red Queue EoTS (PCU)	PCU Factor	Cost of traffic penalties (£ per hr)	Performance Index (£ per hr)
07:30-08:30	RA	1	0.00	0.00		0.05			1.00	0.00	0.72
	RAc	1	0.00	0.00		0.00			1.00	0.00	0.00
	RAx	1	0.00	0.00		0.31			1.00	0.00	4.43
	RB	1	0.00	0.00		0.00			1.00	0.00	0.03
	RBc	1	0.00	0.00		0.00			1.00	0.00	0.00
	RBx	1	0.00	0.00		0.00			1.00	0.00	0.00
	RC	1	0.00	0.00		0.24			1.00	0.00	3.44
	RCc	1	0.00	0.00		0.00			1.00	0.00	0.00
	RCx	1	0.00	0.00		0.00			1.00	0.00	0.00
	RD	1	0.00	0.00		0.01			1.00	0.00	0.14
	RDc	1	0.00	0.00		0.00			1.00	0.00	0.00
	RDx	1	0.00	0.00		0.00			1.00	0.00	0.00
	1	1	0.00	0.00		4.65	0.14	4.14	1.00	0.00	21.25
	2	1	0.00	0.00		0.56			1.00	0.00	7.97
	3	2	0.00	0.00		5.20	0.14	4.55	1.00	0.00	23.15
	4	1	0.00	0.00		4.59	0.14	4.24	1.00	0.00	21.23
	5	1	0.00	0.00		0.29	0.00	0.29	1.00	0.00	1.94
	6	1	0.00	0.00		3.16	0.32	3.11	1.00	0.00	24.38
	7	1	0.00	0.00		3.23	0.31	3.07	1.00	0.00	23.98
	8	1	0.00	0.00		1.46			1.00	0.00	0.16
	10	1	0.00	0.00		0.02			1.00	0.00	0.29
	11	1	0.00	0.00		0.13			1.00	0.00	1.92
	12	1	0.00	0.00		0.02			1.00	0.00	0.27
	13	1	0.00	0.00		0.00			1.00	0.00	0.00
	14	1	0.00	0.00		0.00			1.00	0.00	0.00
15	1		0.00	0.00		0.02			1.00	0.00	0.29
	2		0.00	0.00		0.02			1.00	0.00	0.29
16	1		0.00	0.00		8.24	0.55	7.04	1.00	0.00	44.94
	2		0.00	0.00		10.18	1.52	9.53	1.00	0.00	70.70

		3	0.00	0.00		4.53	0.14	4.08	1.00	0.00	22.37
17	1	0.00	0.00		2.30	0.08	2.30	1.00	0.00		16.84
18	1	0.00	0.00		1.54			1.00	0.00		1.55
	2	0.00	0.00		2.24			1.00	0.00		10.99
19	1	0.00	0.00		5.34	1.27	5.33	1.00	5.40		42.77
	2	0.00	0.00		5.31	0.95	5.31	1.00	4.62		47.79
20	1	0.00	0.00		3.31	0.26	3.14	1.00	0.00		16.05
	2	0.00	0.00		6.19	1.33	5.40	1.00	22.19		59.79
	3	0.00	0.00		1.51	0.06	0.57	1.00	0.00		3.61
21	1	0.00	0.00		4.89	0.18	3.90	1.00	3.88		17.86
	2	0.00	0.00		3.30	0.08	2.87	1.00	0.00		7.72
22	1	0.00	0.00		0.00			1.00	0.00		0.00
23	1	0.00	0.00		4.20	0.32	4.07	1.00	0.00		29.74
24	1	0.00	0.00		1.88	0.08	1.85	1.00	0.00		13.24
25	1	0.00	0.00		4.33	0.30	4.02	1.00	0.00		29.09
26	1	0.00	0.00		0.02			1.00	0.00		0.30
27	1	0.00	0.00		0.07			1.00	0.00		1.02
28	1	0.00	0.00		2.18	0.36	2.15	1.00	0.00		12.97
	2	0.00	0.00		1.77	0.01	0.96	1.00	0.00		3.29
29	1	0.00	0.00		0.00			1.00	0.00		0.00
30	1	0.00	0.00		4.67	0.16	4.34	1.00	0.00		15.92
	2	0.00	0.00		2.36	0.26	2.36	1.00	0.00		14.22
	3	0.00	0.00		3.62	0.29	3.56	1.00	0.00		22.72
31	1	0.00	0.00		4.76	0.34	4.43	1.00	0.00		31.92
32	1	0.00	0.00		3.76	0.76	3.76	1.00	0.00		36.72
33	1	0.00	0.00		4.57			1.00	0.00		17.29
34	1	0.00	0.00		1.27	0.05	1.27	1.00	0.00		10.68
35	1	0.00	0.00		0.08			1.00	0.00		1.19
36	1	0.00	0.00		6.65	0.28	6.62	1.00	0.00		38.01
	2	0.00	0.00		12.90	2.64	6.67	1.00	0.00		62.15
	3	0.00	0.00		0.04	0.04	0.04	1.00	0.00		0.56
37	1	0.00	0.00		5.59	0.50	5.30	1.00	0.00		38.68

	38	1	0.00	0.00		11.02	3.28	10.49	1.00	0.00	94.27
	39	1	0.00	0.00		2.98	0.10	2.87	1.00	0.00	18.48
	40	1	0.00	0.00		1.56			1.00	0.00	2.72
	41	1	0.00	0.00		0.00			1.00	0.00	0.00
	42	1	0.00	0.00		2.58			1.00	0.00	16.73
	43	1	0.00	0.00		0.00			1.00	0.00	0.00
	44	1	0.00	0.00		14.97	2.84	7.71	1.00	14.98	86.01
	45	2	0.00	0.00		7.51	0.26	0.34	1.00	0.00	4.48
	46	1	0.00	0.00		0.17			1.00	0.00	2.41
	47	1	0.00	0.00		0.08			1.00	0.00	1.12
	48	1	0.00	0.00		2.64	0.11	2.60	1.00	0.00	17.67
	49	1	0.00	0.00		5.31	0.58	5.05	1.00	0.00	38.70
		2	0.00	0.00		2.64	0.11	2.60	1.00	0.00	17.67
	50	1	0.00	0.00		0.04			1.00	0.00	0.53
	51	1	0.00	0.00		13.73	6.30	12.88	1.00	0.00	126.75
		2	0.00	0.00		13.52	6.11	12.68	1.00	0.00	124.69
	52	1	0.00	0.00		0.00			1.00	0.00	0.00
	53	1	0.00	0.00		0.07			1.00	0.00	0.96
		2	0.00	0.00		0.05			1.00	0.00	0.75
		3	0.00	0.00		0.05			1.00	0.00	0.65
	54	1	0.00	0.00		1.26	0.05	1.26	1.00	0.00	4.30
		2	0.00	0.00		1.26	0.05	1.26	1.00	0.00	4.30



Pedestrian Crossing Results

Pedestrian Crossings: Pedestrian summary

Time Segment	Crossing	Side	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s (per cycle))	Mean Delay Per Ped (s)	Mean max queue (Ped)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
07:30-08:30	1	1	0	0	11000	18	0.00	0.00	0.00	0.00
		2	0	0	11000	18	0.00	0.00	0.00	0.00
	2	1	0	0	11000	17	0.00	0.00	0.00	0.00
		2	0	0	11000	17	0.00	0.00	0.00	0.00
	3	1	0	0	11000	47	0.00	0.00	0.00	0.00
		2	0	0	11000	47	0.00	0.00	0.00	0.00
	4	1	0	0	11000	6	0.00	0.00	0.00	0.00
		2	0	0	11000	6	0.00	0.00	0.00	0.00
	5	1	0	0	11000	36	0.00	0.00	0.00	0.00
		2	0	0	11000	36	0.00	0.00	0.00	0.00
	6	1	0	0	11000	6	0.00	0.00	0.00	0.00
		2	0	0	11000	6	0.00	0.00	0.00	0.00
	7	1	0	0	11000	35	0.00	0.00	0.00	0.00
		2	0	0	11000	35	0.00	0.00	0.00	0.00

Pedestrian Crossings: Flows and signals

Time Segment	Crossing	Side	Calculated flow entering (Ped/hr)	Calculated flow out (Ped/hr)	Flow discrepancy (Ped/hr)	Adjusted flow warning	Calculated sat flow (Ped/hr)	Calculated capacity (Ped/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity	Mean modulus of error	Actual green (s (per cycle))
07:30-08:30	1	1	0	0	0		11000	3300	0		Unrestricted	0.00	18
		2	0	0	0		11000	3300	0		Unrestricted	0.00	18
	2	1	0	0	0		11000	3143	0		Unrestricted	0.00	17
		2	0	0	0		11000	3143	0		Unrestricted	0.00	17
	3	1	0	0	0		11000	7857	0		Unrestricted	0.00	47
		2	0	0	0		11000	7857	0		Unrestricted	0.00	47
	4	1	0	0	0		11000	707	0		Unrestricted	0.00	6
		2	0	0	0		11000	707	0		Unrestricted	0.00	6
	5	1	0	0	0		11000	6129	0		Unrestricted	0.00	36
		2	0	0	0		11000	6129	0		Unrestricted	0.00	36
	6	1	0	0	0		11000	1414	0		Unrestricted	0.00	6
		2	0	0	0		11000	1414	0		Unrestricted	0.00	6

	7	1	0	0	0		11000	5971	0		Unrestricted	0.00	35
		2	0	0	0		11000	5971	0		Unrestricted	0.00	35

Pedestrian Crossings: Stops and delays

Time Segment	Crossing	Side	Mean Cruise Time per Ped (s)	Mean Delay per Ped (s)	Total delay (Ped-hr/hr)	Weighted cost of delay (£ per hr)
07:30-08:30	(ALL)	(ALL)	1.00	0.00	0.00	0.00

Pedestrian Crossings: Queues and blocking

Time Segment	Crossing	Side	Mean max queue (Ped)	Max queue storage (Ped)	Utilised storage (%)	Excess queue penalty (£ per hr)
07:30-08:30	(ALL)	(ALL)	0.00	10.00	0.00	0.00

Pedestrian Crossings: Advanced

Time Segment	Crossing	Side	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Mean Max Queue EoTS (Ped)	Ped Factor	Cost of traffic penalties (£ per hr)	Performance Index (£ per hr)
07:30-08:30	(ALL)	(ALL)	0.00	0.00	0.00	1.00	0.00	0.00

Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
5	04/11/2019 14:35:04	04/11/2019 14:35:06	07:30	70	1441.77	88.78	94.55	51/1	2	2	51/1	42/1	51/1	

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
07:30-08:30	95	-5	40572	4320	7.88	1260.73	129.96	1441.77

Network Results: Pedestrian summary

Time Segment	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Actual green (s (per cycle))	Mean Delay Per Ped (s)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
07:30-08:30	0	0	330	0.00	0.00	0.00

Network Results: Flows and signals

Time Segment	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Actual green (s (per cycle))
07:30-08:30	40572	40572	-26		95		-5	4650

Network Results: Stops and delays

Time Segment	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Total stops (Stops per hr)	Weighted cost of stops (£ per hr)
07:30-08:30	9.00	7.88	88.78	1260.73	25.64	10403.03	129.96

Network Results: Queues and blocking

Time Segment	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time total (s (per cycle))
07:30-08:30	135.39	51.08	860.20

Network Results: Advanced

Time Segment	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	PCU Factor	Cost of traffic penalties (£ per hr)	Controller stream penalties (£ per hr)	Performance Index (£ per hr)
07:30-08:30	0.00	0.00		1.00	51.08	0.00	1441.77



Point to Point Journey Time

Average Journey Time (s) for Local Matrix: 1

	To						
	1	2	3	4	5	6	
From	1	0.0	63.8	92.5	113.7	160.5	156.8
2	120.7	0.0	61.5	0.0	123.7	120.0	
3	126.0	150.2	0.0	52.3	116.5	112.7	
4	140.2	0.0	173.3	0.0	78.2	67.8	
5	0.0	0.0	0.0	0.0	0.0	0.0	
6	41.6	51.8	80.9	101.6	133.6	0.0	

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (PCU/hr)	Normal journey time (s)	Calculated Total Flow (PCU/hr)	Avg journey time (s)
1	1	1	0	0.00	0	0.00
3	1	2	54	65.79	54	65.79
4	1	2	54	61.86	54	61.86
6	2	1	139	119.79	139	119.79
9	1	3	108	92.52	108	92.52
10	2	3	142	61.47	142	61.47
13	3	1	51	126.18	51	126.18
16	1	4	136	109.98	136	109.98
17	2	4	0	0.00	0	0.00
18	3	4	192	52.33	192	52.33
19	1	4	81	120.05	81	120.05
20	2	4	0	0.00	0	0.00
21	3	4	0	0.00	0	0.00
22	4	1	416	141.33	416	141.33
28	1	5	100	160.55	100	160.55
29	2	5	179	123.67	179	123.67
30	3	5	319	116.45	319	116.45
31	4	5	288	78.23	288	78.23
35	6	2	0	0.00	0	0.00
36	6	3	238	80.93	238	80.93
37	6	4	449	106.67	449	106.67

38	6	4	300	93.92	300	93.92
39	6	5	63	133.57	63	133.57
40	1	6	32	157.03	32	157.03
41	2	6	85	120.15	85	120.15
42	3	6	72	112.93	72	112.93
43	4	6	166	67.93	166	67.93
44	6	6	0	0.00	0	0.00
45	1	6	32	156.64	32	156.64
46	2	6	85	119.76	85	119.76
47	3	6	72	112.54	72	112.54
48	4	6	166	67.73	166	67.73
49	6	6	0	0.00	0	0.00
59	6	2	504	51.80	504	51.80
60	6	1	33	42.18	33	42.18
61	6	1	33	41.03	33	41.03
62	1	1	0	0.00	0	0.00
63	2	2	0	0.00	0	0.00
64	2	2	0	0.00	0	0.00
65	2	1	139	121.63	139	121.63
66	3	2	112	149.43	112	149.43
67	3	3	0	0.00	0	0.00
68	3	2	112	151.00	112	151.00
69	3	1	51	125.90	51	125.90
70	4	2	0	0.00	0	0.00
71	4	3	146	173.34	146	173.34
72	4	4	0	0.00	0	0.00
73	4	2	0	0.00	0	0.00
74	4	1	270	138.36	270	138.36

Average Journey Time (s) for Local Matrix: 2

From	To		
	1	2	3
1	0.0	0.0	15.1
2	53.1	0.0	50.6
3	27.3	0.0	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (PCU/hr)	Normal journey time (s)	Calculated Total Flow (PCU/hr)	Avg journey time (s)
1	2	1	84	52.81	84	52.81
2	2	1	84	52.78	84	52.78
3	2	1	170	53.44	170	53.44
4	1	3	351	15.86	351	15.86
5	2	3	18	50.63	18	50.63
6	1	3	351	14.44	351	14.44
7	3	1	412	26.79	412	26.79
8	3	1	441	27.60	441	27.60
9	3	1	411	27.54	411	27.54

Average Journey Time (s) for Local Matrix: R1

	To				
	1	2	3	4	
From	1	0.0	24.3	36.3	0.0
	2	49.2	0.0	24.1	0.0
	3	38.2	49.1	0.0	0.0
	4	25.5	36.4	48.4	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (PCU/hr)	Normal journey time (s)	Calculated Total Flow (PCU/hr)	Avg journey time (s)
1	1	1	0	0.00	0	0.00
2	1	4	0	0.00	0	0.00
3	4	4	0	0.00	0	0.00
4	4	1	83	25.53	83	25.53
5	1	2	173	24.29	173	24.29
6	4	2	6	36.37	6	36.37
7	2	2	0	0.00	0	0.00
8	2	1	79	49.25	79	49.25
9	2	4	0	0.00	0	0.00
10	1	3	452	36.29	452	36.29
11	2	3	5	24.08	5	24.08
12	4	3	7	48.37	7	48.37
13	3	3	0	0.00	0	0.00
14	3	2	23	49.05	23	49.05
15	3	1	806	38.21	806	38.21
16	3	4	0	0.00	0	0.00



Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUE S	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Waste time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
RA	1		R3			625	2298	70	14.00	27	231	12.29	0.29	0.00	0.05	100	100	0.00	0.72
RAc	1		R3			36	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00
RAx	1					968	1800	70	0.00	54	67	13.16	1.16	0.00	0.31	100	100	0.00	4.43
RB	1		R4			84	1379	70	0.00	6	1377	12.08	0.08	0.00	0.00	100	100	0.00	0.03
RBc	1		R4			459	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00
RBx	1					202	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00
RC	1		R1			829	1674	70	0.00	50	82	13.05	1.05	0.00	0.24	100	100	0.00	3.44
RCC	1		R1			79	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00
RCx	1					464	Unrestricted	70	14.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00
RD	1		R2			96	730	70	0.00	13	584	12.37	0.37	0.00	0.01	100	100	0.00	0.14
RDC	1		R2			908	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00
RDX	1					0	Unrestricted	70	70.00	0	Unrestricted	0.00	0.00	0.00	0.00	100	100	0.00	0.00
1	1	Burtonwood Road South	1	1	B	412	1980	36	0.82	40	124	19.73	11.27	56.65	4.65	100	100	0.00	21.25
2	1	Burtonwood Road South	1			1264	1980	70	0.00	64	41	5.64	1.60	0.00	0.56	100	100	0.00	7.97
3	2	Burtonwood Road South	1	1	B	441	2120	36	1.51	41	119	17.45	11.47	57.91	5.20	100	100	0.00	23.15

4	1	Burtonwood Road South	1	1	B	411	1975	36	0.80	40	124	17.42	11.27	57.40	4.59	100	100	0.00	21.23
5	1	Charon Way Left	1	1	C	18	1995	11	11.00	5	1610	26.75	24.74	81.59	0.29	100	100	0.00	1.94
6	1	Charon Way Right	1	1	C	170 <	1842	11	0.14	54	65	35.39	33.33	95.21	3.16 +	100	100	0.00	24.38
7	1	Charon Way Right	1	1	C	168	1819	11	0.00	54	67	46.16	33.14	95.60	3.23	100	100	0.00	23.98
8	1	Charon Way	1			188	1653	70	1.88	12	670	11.34	0.17	1.54	1.46	100	100	0.00	0.16
10	1	Charon Way	1			356	1962	70	0.00	18	396	5.29	0.20	0.00	0.02	100	100	0.00	0.29
11	1	Burtonwood Road South	1			852	2120	70	0.00	40	124	3.14	0.57	0.00	0.13	100	100	0.00	1.92
12	1	Burtonwood Road South	1			351	1980	70	31.00	18	407	4.92	0.20	0.00	0.02	100	100	0.00	0.27
13	1		1			351	Unrestrict ed	70	31.00	0	Unrestrict ed	10.75	0.00	0.00	0.00	100	100	0.00	0.00
14	1					369	Unrestrict ed	70	30.00	0	Unrestrict ed	7.24	0.00	0.00	0.00	100	100	0.00	0.00
15	1	Omega Road North	1			355	1934	70	12.00	18	390	15.53	0.21	0.00	0.02	100	100	0.00	0.29
	2	Burtonwood Road North	1			355	1937	70	12.00	18	391	15.93	0.21	0.00	0.02	100	100	0.00	0.29
16	1		2	2	D	570	1900	32	0.00	64	41	24.27	17.66	73.30	8.24	100	100	0.00	44.94
	2		2	2	D	687 <	1900	32	1.16	79	13	30.36	23.68	75.78	10.16 +	100	100	0.00	70.70
	3		2	2	D	363	1900	32	0.47	41	119	20.41	13.68	61.18	4.53	100	100	0.00	22.37
17	1		2	2	C	258	1900	28	8.21	33	173	18.89	15.09	45.83	2.30	100	100	0.00	16.84
18	1		2			606	1900	70	27.97	34	162	8.09	0.57	2.26	1.54	100	100	0.00	1.55
	2		2			829	1900	70	26.28	56	61	10.44	2.92	13.85	2.24	100	100	0.00	10.99
19	1		2	2	C	606 <	1900	28	5.00	77	17	18.63	14.21	44.94	5.33 +	100	100	5.40	42.77
	2		2	2	C	571 <	1900	28	1.00	73	24	21.78	17.65	47.57	5.30 +	100	100	4.62	47.79
20	1		3	2	E	616	1900	44	11.26	51	77	11.79	5.73	27.42	3.31	100	100	0.00	16.05
	2		3	2	E	945	1900	44	4.10	78	16	15.02	9.00	34.14	6.18	100	100	22.19	59.79
	3		3	2	E	363	1900	44	16.05	30	202	8.40	2.27	8.03	1.51	100	100	0.00	3.61
21	1		4	3	K	639	1900	120	14.89	44	103	10.63	4.95	18.88	4.89	100	100	3.88	17.86

	2		4	3	K	492	1900	120	11.58	33	172	9.48	3.44	16.84	3.30	100	100	0.00	7.72
22	1					1131	Unrestrictecd	140	19.00	0	Unrestrictecd	7.28	0.00	0.00	0.00	100	100	0.00	0.00
23	1		3	2	F	245	1900	16	0.42	54	65	36.84	27.98	88.09	4.20	100	100	0.00	29.74
24	1		3	2	G	108	1900	11	0.00	33	171	34.00	28.24	89.58	1.88	100	100	0.00	13.24
25	1		3	2	F	244	1900	16	0.00	53	70	33.93	27.44	87.85	4.33	100	100	0.00	29.09
26	1		3			352	1900	70	0.00	19	386	2.55	0.22	0.00	0.02	100	100	0.00	0.30
27	1		3			597	1900	70	0.00	31	186	5.32	0.43	0.00	0.07	100	100	0.00	1.02
28	1		3	2	I	670	1900	49	18.11	56	60	8.40	4.05	26.93	2.18	100	100	0.00	12.97
	2		3	2	I	166	1900	49	41.26	14	544	7.78	3.09	61.17	1.77	100	100	0.00	3.29
29	1					836	Unrestrictecd	70	30.00	0	Unrestrictecd	10.40	0.00	0.00	0.00	100	100	0.00	0.00
30	1		5	4	A	492	1900	42	4.47	43	111	19.55	6.68	47.96	4.67	100	100	0.00	15.92
	2		5	4	A	585	1900	42	6.21	50	79	18.28	5.50	20.78	2.36	100	100	0.00	14.22
	3		5	4	A	608	1900	42	4.32	52	71	21.20	8.50	30.58	3.62	100	100	0.00	22.72
31	1		5	4	B	278	1900	18	0.47	55	63	40.11	26.37	86.16	4.76	100	100	0.00	31.92
32	1		5	4	B	349 <	1900	18	0.37	69	30	27.36	24.86	57.06	3.75 +	100	100	0.00	36.72
33	1		5			491	1900	70	31.00	41	119	18.56	7.50	44.88	4.57	100	100	0.00	17.29
34	1		5	4	B	142	1900	18	2.11	28	225	20.00	17.60	46.07	1.27	100	100	0.00	10.68
35	1		6			634	1900	70	14.00	33	170	22.92	0.47	0.00	0.08	100	100	0.00	1.19
36	1		6	5	C	585	1900	41	15.63	52	73	28.15	14.61	58.50	6.65	100	100	0.00	38.01
	2		6	5	C	957	1900	41	4.11	86	4	27.51	14.57	59.58	12.85	100	100	0.00	62.15
	3		6	5	C	278	1900	41	23.00	24	269	12.93	0.51	0.00	0.04	100	100	0.00	0.56
37	1		6	5	D	326	1900	19	0.58	62	46	38.87	27.28	87.94	5.58	100	100	0.00	38.68
38	1		6	5	D	463 <	1900	19	0.79	89	1	55.12	47.88	117.5 1	10.83 +	100	100	0.00	94.27
39	1		6	5	D	192	1900	19	4.26	36	151	29.04	21.86	79.80	2.98	100	100	0.00	18.48
40	1		6			655	1900	70	5.47	37	141	5.06	0.85	6.38	1.56	100	100	0.00	2.72
41	1					777	Unrestrictecd	70	27.00	0	Unrestrictecd	18.23	0.00	0.00	0.00	100	100	0.00	0.00
42	1		7			1420	1900	70	11.32	75	20	10.85	2.85	4.34	2.57	100	100	0.00	16.73
43	1					381	Unrestrictecd	70	45.00	0	Unrestrictecd	10.74	0.00	0.00	0.00	100	100	0.00	0.00
44	1		7	6	A	1039 <	1900	43	0.00	87	3	25.15	15.27	64.97	14.90 +	100	100	14.98	86.01
45	2		7	6	A	604	1900	43	6.00	51	78	19.26	1.75	4.01	7.51	100	100	0.00	4.48
46	1		7			831	1900	70	0.00	44	106	8.57	0.74	0.00	0.17	100	100	0.00	2.41
47	1		7			620	1900	70	0.00	33	176	4.39	0.46	0.00	0.08	100	100	0.00	1.12

48	1			7	6	B	166	1900	16	0.26	37	146	47.61	24.39	81.79	2.64	100	100	0.00	17.67
49	1			7	6	B	288	1900	16	0.53	64	40	38.21	31.06	94.32	5.30	100	100	0.00	38.70
	2			7	6	B	166	1900	16	0.26	37	146	31.62	24.39	81.79	2.64	100	100	0.00	17.67
50	1			7			454	1900	70	0.00	24	277	16.18	0.30	0.00	0.04	100	100	0.00	0.53
51	1			7	6	B	416	1900	16	0.79	95	-5	91.93	72.58	146.7 6	12.80	100	100	0.00	126.7 5
	2			7	6	B	415	1900	16	0.79	94	-5	91.03	71.54	145.6 1	12.66	100	100	0.00	124.6 9
52	1						949	Unrestricte d	70	9.00	0	Unrestricte d	19.45	0.00	0.00	0.00	100	100	0.00	0.00
53	1			1			582	1900	70	21.00	31	194	1.42	0.42	0.00	0.07	100	100	0.00	0.96
	2			1			525	1900	70	21.00	28	226	1.36	0.36	0.00	0.05	100	100	0.00	0.75
	3			1			495	1900	70	21.00	26	245	1.33	0.33	0.00	0.05	100	100	0.00	0.65
54	1			1	1	A	351 <	1980	45	7.27	27	231	3.69	2.69	18.37	1.26 +	100	100	0.00	4.30
	2			1	1	A	351 <	1980	45	7.27	27	231	3.69	2.69	18.37	1.26 +	100	100	0.00	4.30

Pedestrian Crossing Results

				SIGNALS		FLOWS		PERFORMANCE			PER PED		QUEUES	WEIGHTS	PENALTIES	P.I.
Pedestrian	Side	Name	Traffic node	Controller stream	Phase	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Ped (s)	Mean max queue (Ped)	Delay weighting (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	(untitled)		1	D	0	11000	18	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
	2	(untitled)		1	D	0	11000	18	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
2	1	(untitled)		1	E	0	11000	17	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
	2	(untitled)		1	E	0	11000	17	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
3	1	(untitled)		1	F	0	11000	47	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
	2	(untitled)		1	F	0	11000	47	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
4	1	(untitled)		3	L	0	11000	6	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
	2	(untitled)		3	L	0	11000	6	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
5	1	(untitled)	3	2	H	0	11000	36	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
	2	(untitled)	3	2	H	0	11000	36	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
6	1	(untitled)	3	2	J	0	11000	6	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
	2	(untitled)	3	2	J	0	11000	6	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
7	1	(untitled)	5	4	E	0	11000	35	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
	2	(untitled)	5	4	E	0	11000	35	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU- hr/hr)	Mean journey speed (kph)	Total delay (PCU- hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	3038.78	190.18	15.98	88.78	1260.73	129.96	51.08	1441.77
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	3038.78	190.18	15.98	88.78	1260.73	129.96	51.08	1441.77

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

A6 - 2029 PM Scenario 4

D6 - 2029 PM Scenario 4*

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
16:45-17:45	RA	1	42	113	977	2311	70	0.57	0.15	0.89	2.20	0.00	2.20
	RAc	1	0	Unrestricted	19	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	RAx	1	40	123	725	1800	70	0.67	0.14	0.78	1.93	0.00	1.93
	RB	1	17	430	191	1125	70	0.33	0.02	0.10	0.25	0.00	0.25
	RBc	1	0	Unrestricted	864	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	RBx	1	0	Unrestricted	132	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	RC	1	31	188	504	1616	70	0.50	0.07	0.41	1.00	0.00	1.00
	RCc	1	0	Unrestricted	169	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	RCx	1	0	Unrestricted	886	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	RD	1	8	971	72	857	70	0.19	0.00	0.02	0.05	0.00	0.05
	RDc	1	0	Unrestricted	672	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	RDx	1	0	Unrestricted	1	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	30	197	227	1980	26	16.17	3.04	24.85	14.48	1.92	16.40
	2	1	35	156	696	1980	70	0.49	0.10	1.62	1.35	0.00	1.35
	3	2	31	193	243	2120	26	16.29	3.24	43.21	15.61	2.09	17.70
	4	1	30	197	226	1975	26	16.16	3.02	40.33	14.40	1.94	16.35
	5	1	11	742	67	1995	21	12.77	0.45	14.95	3.37	0.29	3.66
	6	1	79	15	451	1842	21	24.16	4.29	143.67	42.98	2.73	45.72
	7	1	78	15	446	1819	21	32.64	8.70	46.13	57.43	5.43	62.86
	8	1	56	61	518	1653	70	11.76	5.55	34.29	24.02	3.57	27.60
	10	1	49	83	964	1962	70	0.88	0.24	3.22	3.36	0.00	3.36
	11	1	22	307	469	2120	70	0.24	0.03	1.57	0.45	0.00	0.45
	12	1	38	139	746	1980	70	0.55	0.11	1.66	1.62	0.00	1.62
	13	1	0	Unrestricted	746	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00

	14	1	0	Unrestricted	813	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
15	1	59	53	755	1934	70	5.21	3.51	15.80	15.51	2.24	17.75	
	2	59	53	755	1937	70	5.20	3.51	15.40	15.49	2.24	17.72	
16	1	73	23	596	1900	29	22.87	9.47	98.75	53.75	6.09	59.84	
	2	93	-3	719	1900	29	42.98	13.48	139.33	121.89	8.44	130.33	
17	3	36	147	293	1900	29	14.94	3.69	37.76	17.26	2.38	19.64	
	1	46	97	394	1900	31	6.07	2.39	43.38	9.42	1.54	10.96	
18	1	26	243	498	1900	70	0.34	0.05	0.43	0.66	0.00	0.66	
	2	36	153	675	1900	70	0.52	0.10	0.90	1.39	0.00	1.39	
19	1	57	57	498	1900	31	10.51	2.89	64.12	20.64	1.86	22.50	
	2	32	178	282	1900	31	10.75	3.41	75.74	11.93	2.20	14.13	
20	1	53	68	641	1900	47	5.26	3.33	37.96	13.28	2.11	15.39	
	2	85	5	1113	1900	47	12.25	9.69	111.16	53.74	5.30	151.80	
21	3	23	300	293	1900	47	2.31	1.48	16.68	2.67	0.39	3.06	
	1	33	174	520	1900	120	2.94	3.49	42.34	6.02	1.11	7.13	
22	2	13	572	215	1900	120	1.87	1.46	16.67	1.58	0.37	1.95	
	1	0	Unrestricted	735	Unrestricted	140	0.00	0.00	0.00	0.00	0.00	0.00	
23	1	95	-6	345	1900	13	86.00	11.78	91.69	117.04	6.93	123.97	
24	1	60	51	178	1900	10	36.24	3.55	47.30	25.44	2.28	27.72	
25	1	90	0	343	1900	13	63.17	9.52	109.46	85.46	5.88	91.35	
26	1	27	228	521	1900	70	0.36	0.05	1.53	0.74	0.00	0.74	
27	1	46	97	866	1900	70	0.79	0.19	2.69	2.71	0.00	2.71	
28	1	67	35	730	1900	47	11.68	5.94	94.21	33.62	4.61	38.22	
	2	16	474	178	1900	47	3.50	1.69	24.85	2.45	1.43	3.88	
29	1	0	Unrestricted	907	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00	
30	1	78	16	795	1900	38	16.44	13.36	71.63	51.56	7.87	60.17	
	2	55	64	572	1900	38	14.21	6.68	36.05	32.07	4.35	36.42	
	3	62	46	638	1900	38	16.56	9.24	50.18	41.68	5.62	47.30	
31	1	19	365	120	1900	22	17.62	1.66	8.32	8.34	1.07	9.41	
32	1	65	39	398	1900	22	19.47	3.59	119.65	30.57	2.38	32.96	
33	1	49	82	592	1900	70	8.33	5.52	34.44	19.45	3.55	23.01	
34	1	31	188	194	1900	22	14.83	1.53	51.04	11.35	0.99	12.33	
35	1	52	73	989	1900	70	1.03	0.28	0.87	4.01	0.00	4.01	
36	1	44	102	572	1900	47	5.09	7.51	38.30	11.49	4.14	15.63	
	2	82	10	1036	1900	47	14.62	16.44	87.68	59.76	9.84	87.75	
	3	9	877	120	1900	47	2.64	0.34	1.88	1.25	0.22	1.47	

	37	1	55	64	203	1900	13	31.11	3.71	22.12	24.91	2.39	27.30
	38	1	89	1	322	1900	13	60.22	8.85	110.61	76.48	5.50	81.98
	39	1	56	60	208	1900	13	31.51	3.94	49.24	25.86	2.53	28.39
	40	1	28	223	530	1900	70	0.37	0.05	0.88	0.77	0.00	0.77
	41	1	0	Unrestricted	780	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	42	1	72	25	1358	1900	70	2.40	2.36	20.31	12.84	0.59	13.42
	43	1	0	Unrestricted	437	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	44	1	83	9	921	1900	40	14.89	13.54	94.58	54.10	6.88	63.73
	45	2	29	210	323	1900	40	0.66	0.06	0.23	0.84	0.00	0.84
	46	1	45	101	850	1900	70	0.77	0.18	1.59	2.57	0.00	2.57
	47	1	59	52	1125	1900	70	1.37	0.43	7.52	6.09	0.00	6.09
	48	1	92	-2	475	1900	19	55.07	12.16	36.13	103.18	7.57	110.74
	49	1	33	176	175	1900	19	21.42	2.61	25.18	14.79	1.68	16.47
		2	92	-2	475	1900	19	55.07	12.16	116.06	103.18	7.57	110.74
	50	1	34	163	650	1900	70	0.49	0.09	0.39	1.26	0.00	1.26
	51	1	82	10	425	1900	19	37.84	8.97	32.01	63.44	5.53	68.97
		2	82	10	425	1900	19	37.84	8.97	31.78	63.44	5.53	68.97
	52	1	0	Unrestricted	537	Unrestricted	70	0.00	0.00	0.00	0.00	0.00	0.00
	53	1	36	152	678	1900	70	0.53	0.10	8.13	1.40	0.00	1.40
		2	25	267	466	1900	70	0.31	0.04	3.27	0.57	0.00	0.57
		3	24	281	449	1900	70	0.29	0.04	3.00	0.52	0.00	0.52
	54	1	75	20	746	1980	35	7.99	2.33	191.20	23.52	1.05	24.57
		2	75	20	746	1980	35	7.99	2.33	191.20	23.52	1.05	24.57

Traffic Stream Results: Flows and signals

Time Segment	Arm	Traffic Stream	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Calculated sat flow (PCU/hr)	Calculated capacity (PCU/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s per cycle)
16:45-17:45	RA	1	977	977	0		2311	2311	42		113	0.64	70
	RAc	1	19	19	0		Unrestricted	Unrestricted	0		Unrestricted	0.00	70
	RAx	1	725	725	0		1800	1800	40		123	0.00	70
	RB	1	191	191	0		1125	1125	17		430	0.00	70
	RBC	1	864	864	0		Unrestricted	Unrestricted	0		Unrestricted	0.64	70
	RBx	1	132	132	0		Unrestricted	Unrestricted	0		Unrestricted	0.59	70
	RC	1	504	504	0		1616	1616	31		188	0.00	70
	RCc	1	169	169	0		Unrestricted	Unrestricted	0		Unrestricted	0.00	70
	RCx	1	886	886	0		Unrestricted	Unrestricted	0		Unrestricted	0.62	70
	RD	1	72	72	0		857	857	8		971	0.00	70
	RDc	1	672	672	0		Unrestricted	Unrestricted	0		Unrestricted	0.00	70
	RDx	1	1	1	0		Unrestricted	Unrestricted	0		Unrestricted	0.64	70
	1	1	227	227	0		1980	748	30		197	0.00	26
	2	1	696	696	0		1980	1980	35		156	0.00	70
	3	2	243	243	0		2120	790	31		193	0.00	26
	4	1	226	226	0		1975	747	30		197	0.00	26
	5	1	67	67	0		1995	627	11		742	0.82	21
	6	1	451	451	0		1842	574	79		15	0.82	21
	7	1	446	446	-1		1819	572	78		15	0.00	21
	8	1	518	518	0		1653	928	56		61	0.00	70
	10	1	964	964	-1		1962	1962	49		83	0.00	70
	11	1	469	469	0		2120	2120	22		307	0.00	70
	12	1	746	746	0		1980	1980	38		139	1.12	70
	13	1	746	746	0		Unrestricted	Unrestricted	0		Unrestricted	1.12	70
	14	1	813	813	0		Unrestricted	Unrestricted	0		Unrestricted	0.98	70
	15	1	755	755	-1		1934	1280	59		53	0.71	70
		2	755	755	-1		1937	1281	59		53	0.71	70
	16	1	596	596	0		1900	814	73		23	0.05	29
		2	719	719	0		1900	777	93		-3	0.31	29
		3	293	293	0		1900	804	36		147	0.00	29
	17	1	394	394	0		1900	863	46		97	1.20	31
	18	1	498	498	-1		1900	1900	26		243	1.23	70

		2	675	675	-1		1900	1900	36		153	1.06	70
19	1	498	498	-1		1900	869	57		57	1.23	31	
	2	282	282	-1		1900	869	32		178	1.01	31	
20	1	641	641	0		1900	1198	53		68	1.04	47	
	2	1113	1113	0		1900	1303	85		5	0.61	47	
21	3	293	293	0		1900	1301	23		300	1.14	47	
	1	520	520	-1		1900	1584	33		174	0.00	120	
22	2	215	215	-1		1900	1606	13		572	0.00	120	
	1	735	735	-1		Unrestricted	Unrestricted	0		Unrestricted	0.27	140	
23	1	345	345	-2		1900	361	95		-6	0.00	13	
24	1	178	178	-1		1900	299	60		51	0.00	10	
25	1	343	343	1		1900	380	90		0	0.00	13	
26	1	521	521	-1		1900	1900	27		228	0.00	70	
27	1	866	866	-2		1900	1900	46		97	0.00	70	
28	1	730	730	-1		1900	1093	67		35	0.90	47	
	2	178	178	-1		1900	1131	16		474	1.60	47	
29	1	907	907	-1		Unrestricted	Unrestricted	0		Unrestricted	0.97	70	
30	1	795	795	0		1900	1024	78		16	0.46	38	
	2	572	572	1		1900	1041	55		64	0.82	38	
	3	638	638	-2		1900	1037	62		46	1.13	38	
31	1	120	120	0		1900	620	19		365	0.00	22	
32	1	398	398	0		1900	614	65		39	0.71	22	
33	1	592	592	0		1900	1198	49		82	0.00	70	
34	1	194	194	0		1900	621	31		188	0.71	22	
35	1	989	989	0		1900	1900	52		73	0.64	70	
36	1	572	572	1		1900	1286	44		102	1.14	47	
	2	1036	1036	-2		1900	1263	82		10	0.67	47	
	3	120	120	0		1900	1303	9		877	1.34	47	
37	1	203	203	0		1900	370	55		64	0.00	13	
38	1	322	322	0		1900	363	89		1	0.00	13	
39	1	208	208	0		1900	370	56		60	0.00	13	
40	1	530	530	0		1900	1900	28		223	0.00	70	
41	1	780	780	1		Unrestricted	Unrestricted	0		Unrestricted	0.87	70	

	42	1	1358	1358	-2		1900	1894	72		25	0.44	70
	43	1	437	437	-1		Unrestricted	Unrestricted	0		Unrestricted	1.25	70
	44	1	921	921	-1		1900	1113	83		9	0.69	40
	45	2	323	323	0		1900	1113	29		210	1.43	40
	46	1	850	850	-1		1900	1900	45		101	0.00	70
	47	1	1125	1125	0		1900	1900	59		52	0.00	70
	48	1	475	475	0		1900	519	92		-2	0.00	19
	49	1	175	175	0		1900	536	33		176	0.00	19
		2	475	475	0		1900	519	92		-2	0.00	19
	50	1	650	650	0		1900	1900	34		163	0.00	70
	51	1	425	425	-1		1900	521	82		10	0.00	19
		2	425	425	-1		1900	521	82		10	0.00	19
	52	1	537	537	0		Unrestricted	Unrestricted	0		Unrestricted	0.68	70
	53	1	678	678	0		1900	1900	36		152	1.01	70
		2	466	466	-1		1900	1900	25		267	0.96	70
		3	449	449	0		1900	1900	24		281	0.97	70
	54	1	746	746	0		1980	993	75		20	1.01	35
		2	746	746	0		1980	993	75		20	1.01	35

Traffic Stream Results: Stops and delays

Time Segment	Arm	Traffic Stream	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Total stops (Stops per hr)	Weighted cost of stops (£ per hr)
16:45-17:45	RA	1	12.00	0.57	0.15	2.20	0.00	0.00	0.00
	R _A c	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00
	R _A x	1	12.00	0.67	0.14	1.93	0.00	0.00	0.00
	RB	1	12.00	0.33	0.02	0.25	0.00	0.00	0.00
	R _B c	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00
	R _B x	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00
	RC	1	12.00	0.50	0.07	1.00	0.00	0.00	0.00
	R _C c	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00
	R _C x	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00
	RD	1	12.00	0.19	0.00	0.05	0.00	0.00	0.00
	R _D c	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00
	R _D x	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	8.45	16.17	1.02	14.48	67.56	153.36	1.92
	2	1	4.04	0.49	0.10	1.35	0.00	0.00	0.00
	3	2	5.98	16.29	1.10	15.61	68.58	166.65	2.09
	4	1	6.15	16.16	1.01	14.40	68.63	155.10	1.94
	5	1	2.02	12.77	0.24	3.37	34.42	23.06	0.29
	6	1	2.06	24.16	3.03	42.98	48.29	217.78	2.73
	7	1	13.02	32.64	4.04	57.43	97.19	433.46	5.43
	8	1	11.18	11.76	1.69	24.02	55.02	284.99	3.57
	10	1	5.08	0.88	0.24	3.36	0.00	0.00	0.00
	11	1	2.57	0.24	0.03	0.45	0.00	0.00	0.00
	12	1	4.72	0.55	0.11	1.62	0.00	0.00	0.00
	13	1	10.75	0.00	0.00	0.00	0.00	0.00	0.00
	14	1	7.24	0.00	0.00	0.00	0.00	0.00	0.00
	15	1	15.32	5.21	1.09	15.51	23.66	178.54	2.24
		2	15.72	5.20	1.09	15.49	23.65	178.44	2.24
	16	1	6.61	22.87	3.79	53.75	81.48	485.61	6.09
		2	6.67	42.98	8.58	121.89	93.63	673.23	8.44
		3	6.73	14.94	1.22	17.26	64.67	189.49	2.38
	17	1	3.80	6.07	0.66	9.42	31.14	122.53	1.54
	18	1	7.51	0.34	0.05	0.66	0.00	0.00	0.00
		2	7.52	0.52	0.10	1.39	0.00	0.00	0.00

19	1	4.42	10.51	1.45	20.64	29.83	148.58	1.86
	2	4.13	10.75	0.84	11.93	62.20	175.09	2.20
20	1	6.05	5.26	0.94	13.28	26.22	167.93	2.11
	2	6.02	12.25	3.78	53.74	37.98	422.57	5.30
	3	6.13	2.31	0.19	2.67	10.57	30.98	0.39
21	1	5.69	2.94	0.42	6.02	17.08	88.82	1.11
	2	6.04	1.87	0.11	1.58	13.70	29.44	0.37
22	1	7.28	0.00	0.00	0.00	0.00	0.00	0.00
23	1	8.86	86.00	8.24	117.04	160.19	552.65	6.93
24	1	5.76	36.24	1.79	25.44	102.12	181.77	2.28
25	1	6.49	63.17	6.02	85.46	136.82	469.29	5.88
26	1	2.34	0.36	0.05	0.74	0.00	0.00	0.00
27	1	4.89	0.79	0.19	2.71	0.00	0.00	0.00
28	1	4.35	11.68	2.37	33.62	50.35	367.30	4.61
	2	4.69	3.50	0.17	2.45	64.20	113.96	1.43
29	1	10.40	0.00	0.00	0.00	0.00	0.00	0.00
30	1	12.87	16.44	3.63	51.56	78.91	627.33	7.87
	2	12.78	14.21	2.26	32.07	60.69	347.14	4.35
	3	12.70	16.56	2.93	41.68	70.30	448.51	5.62
31	1	13.74	17.62	0.59	8.34	70.95	85.14	1.07
32	1	2.50	19.47	2.15	30.57	47.74	189.99	2.38
33	1	11.06	8.33	1.37	19.45	47.89	283.50	3.55
34	1	2.40	14.83	0.80	11.35	40.59	78.74	0.99
35	1	22.44	1.03	0.28	4.01	0.00	0.00	0.00
36	1	13.54	5.09	0.81	11.49	57.70	330.04	4.14
	2	12.94	14.62	4.21	59.76	75.72	784.42	9.84
	3	12.42	2.64	0.09	1.25	14.49	17.38	0.22
37	1	11.58	31.11	1.75	24.91	93.90	190.61	2.39
38	1	7.24	60.22	5.39	76.48	136.20	438.56	5.50
39	1	7.17	31.51	1.82	25.86	97.19	202.16	2.53
40	1	4.21	0.37	0.05	0.77	0.00	0.00	0.00
41	1	18.23	0.00	0.00	0.00	0.00	0.00	0.00
42	1	8.00	2.40	0.90	12.84	3.44	46.74	0.59
43	1	10.74	0.00	0.00	0.00	0.00	0.00	0.00
44	1	9.88	14.89	3.81	54.10	59.54	548.38	6.88

	45	2	17.51	0.66	0.06	0.84	0.00	0.00	0.00
	46	1	7.83	0.77	0.18	2.57	0.00	0.00	0.00
	47	1	3.93	1.37	0.43	6.09	0.00	0.00	0.00
	48	1	23.22	55.07	7.27	103.18	127.06	603.51	7.57
	49	1	7.14	21.42	1.04	14.79	76.60	134.04	1.68
		2	7.23	55.07	7.27	103.18	127.06	603.51	7.57
	50	1	15.89	0.49	0.09	1.26	0.00	0.00	0.00
	51	1	19.34	37.84	4.47	63.44	103.78	441.06	5.53
		2	19.49	37.84	4.47	63.44	103.78	441.06	5.53
	52	1	19.45	0.00	0.00	0.00	0.00	0.00	0.00
	53	1	1.00	0.53	0.10	1.40	0.00	0.00	0.00
		2	1.00	0.31	0.04	0.57	0.00	0.00	0.00
		3	1.00	0.29	0.04	0.52	0.00	0.00	0.00
	54	1	1.00	7.99	1.66	23.52	15.90	118.61	1.05
		2	1.00	7.99	1.66	23.52	15.90	118.61	1.05

Traffic Stream Results: Queues and blocking

Time Segment	Arm	Traffic Stream	Initial queue (PCU)	Mean max queue (PCU)	Max queue storage (PCU)	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time total (s (per cycle))	Estimated blocking
16:45-17:45	RA	1	0.00	0.15	17.39	0.89	0.00	10.00	
	RAc	1	0.00	0.00	34.78	0.00	0.00	70.00	
	RAx	1	0.00	0.14	17.39	0.78	0.00	0.00	
	RB	1	0.00	0.02	17.39	0.10	0.00	0.00	
	RBc	1	0.00	0.00	34.78	0.00	0.00	10.00	
	RBx	1	0.00	0.00	17.39	0.00	0.00	16.00	
	RC	1	0.00	0.07	17.39	0.41	0.00	0.00	
	RCc	1	0.00	0.00	34.78	0.00	0.00	0.00	
	RCx	1	0.00	0.00	17.39	0.00	0.00	10.00	
	RD	1	0.00	0.00	17.39	0.02	0.00	0.00	
	RDc	1	0.00	0.00	34.78	0.00	0.00	0.00	
	RDx	1	0.00	0.00	17.39	0.00	0.00	70.00	
	1	1	0.00	3.04	12.25	24.85	0.00	0.55	
	2	1	0.00	0.10	5.86	1.62	0.00	0.00	
	3	2	0.00	3.24	7.50	43.21	0.00	0.91	
	4	1	0.00	3.02	7.48	40.33	0.00	0.53	
	5	1	0.00	0.45	3.00	14.95	0.00	4.00	
	6	1	0.00	4.29	2.98	143.67	0.00	0.18	
	7	1	0.00	8.70	18.87	46.13	0.00	0.00	
	8	1	0.00	5.55	16.20	34.29	0.00	30.71	
	10	1	0.00	0.24	7.37	3.22	0.00	0.00	
	11	1	0.00	0.03	2.00	1.57	0.00	0.00	
	12	1	0.00	0.11	6.85	1.66	0.00	38.00	
	13	1	0.00	0.00	15.58	0.00	0.00	38.00	
	14	1	0.00	0.00	10.50	0.00	0.00	20.00	
	15	1	0.00	3.51	22.21	15.80	0.00	27.68	
		2	0.00	3.51	22.78	15.40	0.00	27.69	
	16	1	0.00	9.47	9.59	98.75	0.00	0.00	
	16	2	0.00	13.48	9.67	139.33	0.00	1.37	
		3	0.00	3.69	9.76	37.76	0.00	0.37	
	17	1	0.00	2.39	5.50	43.38	0.00	12.21	
	18	1	0.00	0.05	10.89	0.43	0.00	30.00	
		2	0.00	0.10	10.90	0.90	0.00	23.00	

19	1	0.00	2.89	4.50	64.12	0.00	12.00	
	2	0.00	3.41	4.50	75.74	0.00	10.00	
20	1	0.00	3.33	8.77	37.96	0.00	18.86	
	2	0.00	9.69	8.72	111.16	92.76	4.00	
21	3	0.00	1.48	8.89	16.68	0.00	23.05	
	1	0.00	3.49	8.24	42.34	0.00	4.31	
22	2	0.00	1.46	8.75	16.67	0.00	2.63	
	1	0.00	0.00	10.55	0.00	0.00	19.00	
23	1	0.00	11.78	12.85	91.69	0.00	0.68	
24	1	0.00	3.55	7.50	47.30	0.00	0.00	
25	1	0.00	9.52	8.70	109.46	0.00	0.00	
26	1	0.00	0.05	3.39	1.53	0.00	0.00	
27	1	0.00	0.19	7.08	2.69	0.00	0.00	
28	1	0.00	5.94	6.30	94.21	0.00	19.75	
	2	0.00	1.69	6.80	24.85	0.00	39.32	
29	1	0.00	0.00	15.07	0.00	0.00	34.00	
30	1	0.00	13.36	18.65	71.63	0.75	1.26	
	2	0.00	6.68	18.52	36.05	0.00	9.63	
	3	0.00	9.24	18.41	50.18	0.00	6.79	
31	1	0.00	1.66	19.91	8.32	0.00	0.16	
32	1	0.00	3.59	3.00	119.65	0.00	0.37	
33	1	0.00	5.52	16.03	34.44	0.00	29.00	
34	1	0.00	1.53	3.00	51.04	0.00	2.11	
35	1	0.00	0.28	32.53	0.87	0.00	10.00	
36	1	0.00	7.51	19.62	38.30	0.00	18.63	
	2	0.00	16.44	18.75	87.68	18.15	5.47	
	3	0.00	0.34	18.01	1.88	0.00	34.00	
37	1	0.00	3.71	16.79	22.12	0.00	0.37	
38	1	0.00	8.85	8.00	110.61	0.00	0.63	
39	1	0.00	3.94	8.00	49.24	0.00	0.37	
40	1	0.00	0.05	6.11	0.88	0.00	0.00	
41	1	0.00	0.00	26.42	0.00	0.00	26.00	
42	1	0.00	2.36	11.59	20.31	0.00	12.24	
43	1	0.00	0.00	15.56	0.00	0.00	43.00	
44	1	0.00	13.54	14.32	94.58	2.75	4.00	

	45	2	0.00	0.06	25.38	0.23	0.00	13.00	
	46	1	0.00	0.18	11.35	1.59	0.00	0.00	
	47	1	0.00	0.43	5.70	7.52	0.00	0.00	
	48	1	0.00	12.16	33.65	36.13	0.00	0.89	
	49	1	0.00	2.61	10.35	25.18	0.00	0.26	
		2	0.00	12.16	10.47	116.06	0.00	0.89	
	50	1	0.00	0.09	23.03	0.39	0.00	0.00	
	51	1	0.00	8.97	28.04	32.01	0.00	0.79	
		2	0.00	8.97	28.24	31.78	0.00	0.79	
	52	1	0.00	0.00	28.18	0.00	0.00	13.00	
	53	1	0.00	0.10	1.22	8.13	0.00	21.00	
		2	0.00	0.04	1.22	3.27	0.00	21.00	
		3	0.00	0.04	1.22	3.00	0.00	21.00	
	54	1	0.00	2.33	1.22	191.20	0.00	4.91	
		2	0.00	2.33	1.22	191.20	0.00	4.91	

Traffic Stream Results: Flare

Time Segment	Arm	Traffic Stream	Flare present	Flare components	Degree of saturation (%)	Mean max queue (PCU)	Calculated capacity (PCU/hr)	Practical reserve capacity (%)
16:45-17:45	11	1		CTM flare: 11/1,3/2,4/1	49	6.29	949	82
	26	1		CTM flare: 26/1,24/1,25/1	94	13.12	556	-4
	33	1		CPDM flare: 33/1,34/1,32/1	86	10.64	689	5
	40	1		CTM flare: 40/1,39/1,38/1	93	12.84	567	-4

Traffic Stream Results: Advanced

Time Segment	Arm	Traffic Stream	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	Mean Max Queue EoTS (PCU)	Max End of Green Queue EoTS (PCU)	Max End of Red Queue EoTS (PCU)	PCU Factor	Cost of traffic penalties (£ per hr)	Performance Index (£ per hr)
16:45-17:45	RA	1	0.00	0.00		0.15			1.00	0.00	2.20
	RAc	1	0.00	0.00		0.00			1.00	0.00	0.00
	RAx	1	0.00	0.00		0.14			1.00	0.00	1.93
	RB	1	0.00	0.00		0.02			1.00	0.00	0.25
	RBc	1	0.00	0.00		0.00			1.00	0.00	0.00
	RBx	1	0.00	0.00		0.00			1.00	0.00	0.00
	RC	1	0.00	0.00		0.07			1.00	0.00	1.00
	RCc	1	0.00	0.00		0.00			1.00	0.00	0.00
	RCx	1	0.00	0.00		0.00			1.00	0.00	0.00
	RD	1	0.00	0.00		0.00			1.00	0.00	0.05
	RDc	1	0.00	0.00		0.00			1.00	0.00	0.00
	RDx	1	0.00	0.00		0.00			1.00	0.00	0.00
	1	1	0.00	0.00		3.04	0.07	2.84	1.00	0.00	16.40
	2	1	0.00	0.00		0.10			1.00	0.00	1.35
	3	2	0.00	0.00		3.24	0.07	3.11	1.00	0.00	17.70
	4	1	0.00	0.00		3.02	0.07	2.89	1.00	0.00	16.35
	5	1	0.00	0.00		0.45	0.01	0.45	1.00	0.00	3.66
	6	1	0.00	0.00		4.31	1.41	4.31	1.00	0.00	45.72
	7	1	0.00	0.00		8.72	1.36	7.80	1.00	0.00	62.86
	8	1	0.00	0.00		5.56			1.00	0.00	27.60
	10	1	0.00	0.00		0.24			1.00	0.00	3.36
	11	1	0.00	0.00		0.03			1.00	0.00	0.45
	12	1	0.00	0.00		0.11			1.00	0.00	1.62
	13	1	0.00	0.00		0.00			1.00	0.00	0.00
	14	1	0.00	0.00		0.00			1.00	0.00	0.00
15	1		0.00	0.00		3.51			1.00	0.00	17.75
	2		0.00	0.00		3.51			1.00	0.00	17.72
16	1		0.00	0.00		9.47	0.99	8.41	1.00	0.00	59.84
	2		0.00	0.00		13.87	5.18	14.35	1.00	0.00	130.33

		3	0.00	0.00		3.69	0.10	3.52	1.00	0.00	19.64
17	1	0.00	0.00		2.39	0.19	2.36	1.00	0.00		10.96
18	1	0.00	0.00		0.05			1.00	0.00		0.66
	2	0.00	0.00		0.10			1.00	0.00		1.39
19	1	0.00	0.00		2.89	0.38	2.89	1.00	0.00		22.50
	2	0.00	0.00		3.41	0.08	3.30	1.00	0.00		14.13
20	1	0.00	0.00		3.33	0.31	3.10	1.00	0.00		15.39
	2	0.00	0.00		9.73	2.45	7.20	1.00	92.76		151.80
	3	0.00	0.00		1.48	0.03	0.60	1.00	0.00		3.06
21	1	0.00	0.00		3.49	0.08	3.08	1.00	0.00		7.13
	2	0.00	0.00		1.46	0.01	1.15	1.00	0.00		1.95
22	1	0.00	0.00		0.00			1.00	0.00		0.00
23	1	0.00	0.00		13.00	6.81	12.48	1.00	0.00		123.97
24	1	0.00	0.00		3.55	0.44	3.45	1.00	0.00		27.72
25	1	0.00	0.00		9.85	3.72	9.43	1.00	0.00		91.35
26	1	0.00	0.00		0.05			1.00	0.00		0.74
27	1	0.00	0.00		0.19			1.00	0.00		2.71
28	1	0.00	0.00		5.94	0.67	5.86	1.00	0.00		38.22
	2	0.00	0.00		1.69	0.01	1.45	1.00	0.00		3.88
29	1	0.00	0.00		0.00			1.00	0.00		0.00
30	1	0.00	0.00		13.37	1.33	7.70	1.00	0.75		60.17
	2	0.00	0.00		6.68	0.33	6.64	1.00	0.00		36.42
	3	0.00	0.00		9.24	0.49	8.26	1.00	0.00		47.30
31	1	0.00	0.00		1.66	0.02	1.62	1.00	0.00		9.41
32	1	0.00	0.00		3.59	0.59	3.59	1.00	0.00		32.96
33	1	0.00	0.00		5.52			1.00	0.00		23.01
34	1	0.00	0.00		1.53	0.07	1.53	1.00	0.00		12.33
35	1	0.00	0.00		0.28			1.00	0.00		4.01
36	1	0.00	0.00		7.51	0.18	5.25	1.00	0.00		15.63
	2	0.00	0.00		16.46	1.85	10.89	1.00	18.15		87.75
	3	0.00	0.00		0.34	0.00	0.34	1.00	0.00		1.47
37	1	0.00	0.00		3.72	0.33	3.60	1.00	0.00		27.30

	38	1	0.00	0.00		9.08	3.18	8.55	1.00	0.00	81.98
	39	1	0.00	0.00		3.94	0.36	3.76	1.00	0.00	28.39
	40	1	0.00	0.00		0.05			1.00	0.00	0.77
	41	1	0.00	0.00		0.00			1.00	0.00	0.00
	42	1	0.00	0.00		2.36			1.00	0.00	13.42
	43	1	0.00	0.00		0.00			1.00	0.00	0.00
	44	1	0.00	0.00		13.57	1.96	6.46	1.00	2.75	63.73
	45	2	0.00	0.00		0.06	0.06	0.06	1.00	0.00	0.84
	46	1	0.00	0.00		0.18			1.00	0.00	2.57
	47	1	0.00	0.00		0.43			1.00	0.00	6.09
	48	1	0.00	0.00		12.54	4.45	11.64	1.00	0.00	110.74
	49	1	0.00	0.00		2.61	0.08	2.56	1.00	0.00	16.47
		2	0.00	0.00		12.54	4.45	11.64	1.00	0.00	110.74
	50	1	0.00	0.00		0.09			1.00	0.00	1.26
	51	1	0.00	0.00		9.02	1.75	8.12	1.00	0.00	68.97
		2	0.00	0.00		9.02	1.75	8.12	1.00	0.00	68.97
	52	1	0.00	0.00		0.00			1.00	0.00	0.00
		1	0.00	0.00		0.10			1.00	0.00	1.40
	53	2	0.00	0.00		0.04			1.00	0.00	0.57
		3	0.00	0.00		0.04			1.00	0.00	0.52
	54	1	0.00	0.00		2.34	1.13	2.34	1.00	0.00	24.57
		2	0.00	0.00		2.34	1.13	2.34	1.00	0.00	24.57



Pedestrian Crossing Results

Pedestrian Crossings: Pedestrian summary

Time Segment	Crossing	Side	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s (per cycle))	Mean Delay Per Ped (s)	Mean max queue (Ped)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
16:45-17:45	1	1	0	0	11000	28	0.00	0.00	0.00	0.00
		2	0	0	11000	28	0.00	0.00	0.00	0.00
	2	1	0	0	11000	27	0.00	0.00	0.00	0.00
		2	0	0	11000	27	0.00	0.00	0.00	0.00
	3	1	0	0	11000	37	0.00	0.00	0.00	0.00
		2	0	0	11000	37	0.00	0.00	0.00	0.00
	4	1	0	0	11000	6	0.00	0.00	0.00	0.00
		2	0	0	11000	6	0.00	0.00	0.00	0.00
	5	1	0	0	11000	39	0.00	0.00	0.00	0.00
		2	0	0	11000	39	0.00	0.00	0.00	0.00
	6	1	0	0	11000	8	0.00	0.00	0.00	0.00
		2	0	0	11000	8	0.00	0.00	0.00	0.00
	7	1	0	0	11000	31	0.00	0.00	0.00	0.00
		2	0	0	11000	31	0.00	0.00	0.00	0.00

Pedestrian Crossings: Flows and signals

Time Segment	Crossing	Side	Calculated flow entering (Ped/hr)	Calculated flow out (Ped/hr)	Flow discrepancy (Ped/hr)	Adjusted flow warning	Calculated sat flow (Ped/hr)	Calculated capacity (Ped/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity	Mean modulus of error	Actual green (s (per cycle))
16:45-17:45	1	1	0	0	0		11000	4871	0		Unrestricted	0.00	28
		2	0	0	0		11000	4871	0		Unrestricted	0.00	28
	2	1	0	0	0		11000	4714	0		Unrestricted	0.00	27
		2	0	0	0		11000	4714	0		Unrestricted	0.00	27
	3	1	0	0	0		11000	6286	0		Unrestricted	0.00	37
		2	0	0	0		11000	6286	0		Unrestricted	0.00	37
	4	1	0	0	0		11000	707	0		Unrestricted	0.00	6
		2	0	0	0		11000	707	0		Unrestricted	0.00	6
	5	1	0	0	0		11000	6600	0		Unrestricted	0.00	39
		2	0	0	0		11000	6600	0		Unrestricted	0.00	39
	6	1	0	0	0		11000	1729	0		Unrestricted	0.00	8
		2	0	0	0		11000	1729	0		Unrestricted	0.00	8

	7	1	0	0	0		11000	5343	0		Unrestricted	0.00	31
		2	0	0	0		11000	5343	0		Unrestricted	0.00	31

Pedestrian Crossings: Stops and delays

Time Segment	Crossing	Side	Mean Cruise Time per Ped (s)	Mean Delay per Ped (s)	Total delay (Ped-hr/hr)	Weighted cost of delay (£ per hr)
16:45-17:45	(ALL)	(ALL)	1.00	0.00	0.00	0.00

Pedestrian Crossings: Queues and blocking

Time Segment	Crossing	Side	Mean max queue (Ped)	Max queue storage (Ped)	Utilised storage (%)	Excess queue penalty (£ per hr)
16:45-17:45	(ALL)	(ALL)	0.00	10.00	0.00	0.00

Pedestrian Crossings: Advanced

Time Segment	Crossing	Side	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Mean Max Queue EoTS (Ped)	Ped Factor	Cost of traffic penalties (£ per hr)	Performance Index (£ per hr)
16:45-17:45	(ALL)	(ALL)	0.00	0.00	0.00	1.00	0.00	0.00

Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
6	04/11/2019 14:35:07	04/11/2019 14:35:09	16:45	70	1949.65	117.75	95.45	23/1	5	5	23/1	42/1	23/1	

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
16:45-17:45	95	-6	44200	4307	9.59	1671.99	163.25	1949.65

Network Results: Pedestrian summary

Time Segment	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Actual green (s (per cycle))	Mean Delay Per Ped (s)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
16:45-17:45	0	0	352	0.00	0.00	0.00

Network Results: Flows and signals

Time Segment	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Actual green (s (per cycle))
16:45-17:45	44200	44200	-24		95		-6	4659

Network Results: Stops and delays

Time Segment	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Total stops (Stops per hr)	Weighted cost of stops (£ per hr)
16:45-17:45	9.08	9.59	117.75	1671.99	29.61	13089.68	163.25

Network Results: Queues and blocking

Time Segment	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time total (s (per cycle))
16:45-17:45	191.20	114.41	935.28

Network Results: Advanced

Time Segment	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	PCU Factor	Cost of traffic penalties (£ per hr)	Controller stream penalties (£ per hr)	Performance Index (£ per hr)
16:45-17:45	0.00	0.00		1.00	114.41	0.00	1949.65

Point to Point Journey Time

Average Journey Time (s) for Local Matrix: 1

From	To					
	1	2	3	4	5	6
1	0.0	76.5	140.9	172.3	241.7	239.8
2	115.5	0.0	60.1	0.0	118.6	122.3
3	98.8	126.5	0.0	61.5	119.4	134.3
4	101.9	0.0	148.4	0.0	69.7	101.3
5	0.0	0.0	0.0	0.0	0.0	0.0
6	45.0	65.6	118.0	114.5	140.5	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (PCU/hr)	Normal journey time (s)	Calculated Total Flow (PCU/hr)	Avg journey time (s)
1	1	1	0	0.00	0	0.00
3	1	2	89	82.19	89	82.19
4	1	2	89	70.73	89	70.73
6	2	1	60	117.61	60	117.61
9	1	3	178	140.90	178	140.90
10	2	3	194	60.09	194	60.09
13	3	1	13	100.07	13	100.07
16	1	4	166	153.90	166	153.90
17	2	4	0	0.00	0	0.00
18	3	4	208	61.50	208	61.50
19	1	4	165	190.84	165	190.84
20	2	4	0	0.00	0	0.00
21	3	4	0	0.00	0	0.00
22	4	1	425	102.42	425	102.42
28	1	5	74	241.68	74	241.68
29	2	5	148	118.62	148	118.62
30	3	5	119	119.38	119	119.38
31	4	5	175	69.70	175	69.70
35	6	2	0	0.00	0	0.00
36	6	3	312	117.99	312	117.99
37	6	4	407	126.29	407	126.29
38	6	4	272	96.82	272	96.82
39	6	5	21	140.54	21	140.54
40	1	6	53	239.96	53	239.96
41	2	6	125	122.51	125	122.51
42	3	6	102	134.54	102	134.54
43	4	6	475	101.32	475	101.32
44	6	6	0	0.00	0	0.00
45	1	6	53	239.57	53	239.57
46	2	6	125	122.12	125	122.12
47	3	6	102	134.15	102	134.15
48	4	6	475	101.32	475	101.32
49	6	6	0	0.00	0	0.00
59	6	2	552	65.63	552	65.63

60	6	1	22	45.38	22	45.38
61	6	1	22	44.66	22	44.66
62	1	1	0	0.00	0	0.00
63	2	2	0	0.00	0	0.00
64	2	2	0	0.00	0	0.00
65	2	1	60	113.42	60	113.42
66	3	2	89	128.38	89	128.38
67	3	3	0	0.00	0	0.00
68	3	2	89	124.60	89	124.60
69	3	1	13	97.58	13	97.58
70	4	2	0	0.00	0	0.00
71	4	3	305	148.35	305	148.35
72	4	4	0	0.00	0	0.00
73	4	2	0	0.00	0	0.00
74	4	1	120	99.85	120	99.85

Average Journey Time (s) for Local Matrix: 2

		To		
		1	2	3
From	1	0.0	0.0	20.6
	2	54.8	0.0	50.9
	3	30.9	0.0	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (PCU/hr)	Normal journey time (s)	Calculated Total Flow (PCU/hr)	Avg journey time (s)
1	2	1	223	52.94	223	52.94
2	2	1	223	52.92	223	52.92
3	2	1	451	56.65	451	56.65
4	1	3	746	21.51	746	21.51
5	2	3	67	50.93	67	50.93
6	1	3	746	19.74	746	19.74
7	3	1	227	30.68	227	30.68
8	3	1	243	30.93	243	30.93
9	3	1	226	30.95	226	30.95

Average Journey Time (s) for Local Matrix: R1

	To				
	1	2	3	4	
From	1	0.0	24.6	36.6	48.6
	2	49.0	0.0	24.3	0.0
	3	37.2	48.5	0.0	0.0
	4	24.9	36.2	48.2	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (PCU/hr)	Normal journey time (s)	Calculated Total Flow (PCU/hr)	Avg journey time (s)
1	1	1	0	0.00	0	0.00
2	1	4	1	48.57	1	48.57
3	4	4	0	0.00	0	0.00
4	4	1	62	24.87	62	24.87
5	1	2	121	24.57	121	24.57
6	4	2	2	36.19	2	36.19
7	2	2	0	0.00	0	0.00
8	2	1	168	49.00	168	49.00
9	2	4	0	0.00	0	0.00
10	1	3	855	36.57	855	36.57
11	2	3	23	24.33	23	24.33
12	4	3	8	48.19	8	48.19
13	3	3	0	0.00	0	0.00
14	3	2	9	48.50	9	48.50
15	3	1	495	37.18	495	37.18
16	3	4	0	0.00	0	0.00

Final Prediction Table

Traffic Stream Results

				SIGNS		FLOWS		PERFORMANCE				PER PCU			QUEUE S	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Waste time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
RA	1		R3			977	2311	70	10.00	42	113	12.57	0.57	0.00	0.15	100	100	0.00	2.20
RAc	1		R3			19	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00
RAx	1					725	1800	70	0.00	40	123	12.67	0.67	0.00	0.14	100	100	0.00	1.93
RB	1		R4			191	1125	70	0.00	17	430	12.33	0.33	0.00	0.02	100	100	0.00	0.25
RBc	1		R4			864	Unrestricted	70	10.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00
RBx	1					132	Unrestricted	70	16.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00
RC	1		R1			504	1616	70	0.00	31	188	12.50	0.50	0.00	0.07	100	100	0.00	1.00
RCc	1		R1			169	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00
RCx	1					886	Unrestricted	70	10.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00
RD	1		R2			72	857	70	0.00	8	971	12.19	0.19	0.00	0.00	100	100	0.00	0.05
RDc	1		R2			672	Unrestricted	70	0.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00
RDx	1					1	Unrestricted	70	70.00	0	Unrestricted	12.00	0.00	0.00	0.00	100	100	0.00	0.00
1	1	Burtonwood Road South	1	1	B	227	1980	26	0.55	30	197	24.62	16.17	67.56	3.04	100	100	0.00	16.40
2	1	Burtonwood Road South	1			696	1980	70	0.00	35	156	4.54	0.49	0.00	0.10	100	100	0.00	1.35
3	2	Burtonwood Road South	1	1	B	243	2120	26	0.91	31	193	22.27	16.29	68.58	3.24	100	100	0.00	17.70

4	1	Burtonwood Road South	1	1	B	226	1975	26	0.53	30	197	22.31	16.16	68.63	3.02	100	100	0.00	16.35
5	1	Charon Way Left	1	1	C	67	1995	21	4.00	11	742	14.78	12.77	34.42	0.45	100	100	0.00	3.66
6	1	Charon Way Right	1	1	C	451 <	1842	21	0.18	79	15	26.22	24.16	48.29	4.29 +	100	100	0.00	45.72
7	1	Charon Way Right	1	1	C	446	1819	21	0.00	78	15	45.66	32.64	97.19	8.70	100	100	0.00	62.86
8	1	Charon Way	1			518	1653	70	30.71	56	61	22.93	11.76	55.02	5.55	100	100	0.00	27.60
10	1	Charon Way	1			964	1962	70	0.00	49	83	5.97	0.88	0.00	0.24	100	100	0.00	3.36
11	1	Burtonwood Road South	1			469	2120	70	0.00	22	307	2.81	0.24	0.00	0.03	100	100	0.00	0.45
12	1	Burtonwood Road South	1			746	1980	70	38.00	38	139	5.27	0.55	0.00	0.11	100	100	0.00	1.62
13	1		1			746	Unrestrict ed	70	38.00	0	Unrestrict ed	10.75	0.00	0.00	0.00	100	100	0.00	0.00
14	1					813	Unrestrict ed	70	20.00	0	Unrestrict ed	7.24	0.00	0.00	0.00	100	100	0.00	0.00
	1	Omega Road North	1			755	1934	70	27.68	59	53	20.54	5.21	23.66	3.51	100	100	0.00	17.75
15	2	Burtonwood Road North	1			755	1937	70	27.69	59	53	20.92	5.20	23.65	3.51	100	100	0.00	17.72
	1		2	2	D	596	1900	29	0.00	73	23	29.48	22.87	81.48	9.47	100	100	0.00	59.84
16	2		2	2	D	719 <	1900	29	1.37	93	-3	49.65	42.98	93.63	13.48 +	100	100	0.00	130.33
	3		2	2	D	293	1900	29	0.37	36	147	21.67	14.94	64.67	3.69	100	100	0.00	19.64
17	1		2	2	C	394	1900	31	12.21	46	97	9.86	6.07	31.14	2.39	100	100	0.00	10.96
18	1		2			498	1900	70	30.00	26	243	7.85	0.34	0.00	0.05	100	100	0.00	0.66
	2		2			675	1900	70	23.00	36	153	8.04	0.52	0.00	0.10	100	100	0.00	1.39
19	1		2	2	C	498	1900	31	12.00	57	57	14.93	10.51	29.83	2.89	100	100	0.00	22.50
	2		2	2	C	282	1900	31	10.00	32	178	14.88	10.75	62.20	3.41	100	100	0.00	14.13
	1		3	2	E	641	1900	47	18.86	53	68	11.31	5.26	26.22	3.33	100	100	0.00	15.39
20	2		3	2	E	1113 <	1900	47	4.00	85	5	18.26	12.25	37.98	9.69 +	100	100	92.76	151.80
	3		3	2	E	293	1900	47	23.05	23	300	8.45	2.31	10.57	1.48	100	100	0.00	3.06

21	1		4	3	K	520	1900	120	4.31	33	174	8.62	2.94	17.08	3.49	100	100	0.00	7.13
	2		4	3	K	215	1900	120	2.63	13	572	7.91	1.87	13.70	1.46	100	100	0.00	1.95
22	1					735	Unrestricte d	140	19.00	0	Unrestricte d	7.28	0.00	0.00	0.00	100	100	0.00	0.00
23	1		3	2	F	345	1900	13	0.68	95	-6	94.87	86.00	160.1 9	11.78	100	100	0.00	123.9 7
24	1		3	2	G	178	1900	10	0.00	60	51	42.00	36.24	102.1 2	3.55	100	100	0.00	27.72
25	1		3	2	F	343 <	1900	13	0.00	90	0	69.66	63.17	136.8 2	9.52 +	100	100	0.00	91.35
26	1		3			521	1900	70	0.00	27	228	2.69	0.36	0.00	0.05	100	100	0.00	0.74
27	1		3			866	1900	70	0.00	46	97	5.68	0.79	0.00	0.19	100	100	0.00	2.71
28	1		3	2	I	730	1900	47	19.75	67	35	16.03	11.68	50.35	5.94	100	100	0.00	38.22
	2		3	2	I	178	1900	47	39.32	16	474	8.19	3.50	64.20	1.69	100	100	0.00	3.88
29	1					907	Unrestricte d	70	34.00	0	Unrestricte d	10.40	0.00	0.00	0.00	100	100	0.00	0.00
30	1		5	4	A	795	1900	38	1.26	78	16	29.31	16.44	78.91	13.36	100	100	0.75	60.17
	2		5	4	A	572	1900	38	9.63	55	64	26.99	14.21	60.69	6.68	100	100	0.00	36.42
	3		5	4	A	638	1900	38	6.79	62	46	29.26	16.56	70.30	9.24	100	100	0.00	47.30
31	1		5	4	B	120	1900	22	0.16	19	365	31.36	17.62	70.95	1.66	100	100	0.00	9.41
32	1		5	4	B	398 <	1900	22	0.37	65	39	21.98	19.47	47.74	3.59 +	100	100	0.00	32.96
33	1		5			592	1900	70	29.00	49	82	19.39	8.33	47.89	5.52	100	100	0.00	23.01
34	1		5	4	B	194	1900	22	2.11	31	188	17.22	14.83	40.59	1.53	100	100	0.00	12.33
35	1		6			989	1900	70	10.00	52	73	23.47	1.03	0.00	0.28	100	100	0.00	4.01
36	1		6	5	C	572	1900	47	18.63	44	102	18.63	5.09	57.70	7.51	100	100	0.00	15.63
	2		6	5	C	1036	1900	47	5.47	82	10	27.56	14.62	75.72	16.44	100	100	18.15	87.75
	3		6	5	C	120	1900	47	34.00	9	877	15.06	2.64	14.49	0.34	100	100	0.00	1.47
37	1		6	5	D	203	1900	13	0.37	55	64	42.69	31.11	93.90	3.71	100	100	0.00	27.30
38	1		6	5	D	322 <	1900	13	0.63	89	1	67.45	60.22	136.2 0	8.85 +	100	100	0.00	81.98
39	1		6	5	D	208	1900	13	0.37	56	60	38.69	31.51	97.19	3.94	100	100	0.00	28.39
40	1		6			530	1900	70	0.00	28	223	4.58	0.37	0.00	0.05	100	100	0.00	0.77
41	1					780	Unrestricte d	70	26.00	0	Unrestricte d	18.23	0.00	0.00	0.00	100	100	0.00	0.00
42	1		7			1358	1900	70	12.24	72	25	10.40	2.40	3.44	2.36	100	100	0.00	13.42
43	1					437	Unrestricte d	70	43.00	0	Unrestricte d	10.74	0.00	0.00	0.00	100	100	0.00	0.00
44	1		7	6	A	921	1900	40	4.00	83	9	24.77	14.89	59.54	13.54	100	100	2.75	63.73

45	2			7	6	A	323	1900	40	13.00	29	210	18.17	0.66	0.00	0.06	100	100	0.00	0.84
46	1			7			850	1900	70	0.00	45	101	8.60	0.77	0.00	0.18	100	100	0.00	2.57
47	1			7			1125	1900	70	0.00	59	52	5.31	1.37	0.00	0.43	100	100	0.00	6.09
48	1			7	6	B	475	1900	19	0.89	92	-2	78.29	55.07	127.0 6	12.16	100	100	0.00	110.7 4
49	1			7	6	B	175	1900	19	0.26	33	176	28.57	21.42	76.60	2.61	100	100	0.00	16.47
	2			7	6	B	475 <	1900	19	0.89	92	-2	62.30	55.07	127.0 6	12.16 +	100	100	0.00	110.7 4
50	1			7			650	1900	70	0.00	34	163	16.38	0.49	0.00	0.09	100	100	0.00	1.26
51	1			7	6	B	425	1900	19	0.79	82	10	57.19	37.84	103.7 8	8.97	100	100	0.00	68.97
	2			7	6	B	425	1900	19	0.79	82	10	57.33	37.84	103.7 8	8.97	100	100	0.00	68.97
52	1						537	Unrestricte d	70	13.00	0	Unrestricte d	19.45	0.00	0.00	0.00	100	100	0.00	0.00
53	1			1			678	1900	70	21.00	36	152	1.53	0.53	0.00	0.10	100	100	0.00	1.40
	2			1			466	1900	70	21.00	25	267	1.31	0.31	0.00	0.04	100	100	0.00	0.57
	3			1			449	1900	70	21.00	24	281	1.29	0.29	0.00	0.04	100	100	0.00	0.52
54	1			1	1	A	746 <	1980	35	4.91	75	20	8.99	7.99	15.90	2.33 +	100	100	0.00	24.57
	2			1	1	A	746 <	1980	35	4.91	75	20	8.99	7.99	15.90	2.33 +	100	100	0.00	24.57

Pedestrian Crossing Results

				SIGNALS		FLOWS		PERFORMANCE			PER PED		QUEUES	WEIGHTS	PENALTIES	P.I.
Pedestrian	Side	Name	Traffic node	Controller stream	Phase	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Ped (s)	Mean max queue (Ped)	Delay weighting (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	(untitled)		1	D	0	11000	28	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
	2	(untitled)		1	D	0	11000	28	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
2	1	(untitled)		1	E	0	11000	27	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
	2	(untitled)		1	E	0	11000	27	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
3	1	(untitled)		1	F	0	11000	37	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
	2	(untitled)		1	F	0	11000	37	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
4	1	(untitled)		3	L	0	11000	6	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
	2	(untitled)		3	L	0	11000	6	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
5	1	(untitled)	3	2	H	0	11000	39	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
	2	(untitled)	3	2	H	0	11000	39	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
6	1	(untitled)	3	2	J	0	11000	8	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00

	2	(untitled)	3	2	J	0	11000	8	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
7	1	(untitled)	5	4	E	0	11000	31	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00
	2	(untitled)	5	4	E	0	11000	31	0	Unrestricted	0.00	0.00	0.00	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU- hr/hr)	Mean journey speed (kph)	Total delay (PCU- hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	3341.95	229.28	14.58	117.75	1671.99	163.25	114.41	1949.65
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	3341.95	229.28	14.58	117.75	1671.99	163.25	114.41	1949.65

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX



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